Roadmap of research infrastructures in

Republic of Srpska (Bosnia and Herzegovina)

“Roadmap of Research Infrastructures in the Republic of Srpska”

Contents

EXECUTIVE SUMMARY

The Ministry of Scientific and Technological development, Higher Education and Information Society is responsible for preparation and implementation of the Research Infrastructure Roadmap in the Republic of Srpska.

International cooperation and integration of research and innovation community in Republic of Srpska into European Research Area and wider S&T community is legally predefined within Science Law. Action plan for the realization of the Strategy of Scientific and Technological Development of the Republic of Srpska 2017-2021 - "Knowledge for Development", clearly defines that the Research Infrastructures Roadmap need to be developed in line with the guidelines of the European Strategy Forum on Research Infrastructures (ESFRI) and the relevant investment needs in the country.

Based on the overview of research infrastructure in the Republic of Srpska, it can be concluded that there is a potential that needs to be thoroughly investigated in the process of mapping of research infrastructures. The Ministry for Scientific and Technological Development, Higher Education and Information Society invests in research equipment through the *Program for ensuring and maintenance of research equipment and space for scientific research*. Participation in consortia for research projects financed from EU sources (FP7, H2020, etc.) is considered as potential RI, particularly if such projects belong to investments in establishment of wider EU platform for integration of research resources in specific fields of science and technology. In the Republic of Srpska, there are 4 projects realized under FP7 and H2020 that have been important in the context of the development of research infrastructures in the Republic of Srpska.

Research Infrastructures Roadmap has to be related to the implementation of other strategic documents in the Republic of Srpska, primarily the Strategy of Scientific and Technological Development of the Republic of Srpska 2017-2021 – "Knowledge for Development".

The Ministry of Scientific and Technological development, Higher Education and Information Society should continue with activities on the adoption of the Research Infrastructures Roadmap in the Republic of Srpska by the end of year 2019.

Research Infrastructures Roadmap should be treated as a key strategic document for improvement of Scientific and research system in the Republic of Srpska and as a tool for the identification of research potential in order to direct further development of research infrastructures. The importance of Research Infrastructures Roadmap has multiple benefits:

- Recognition of research infrastructures is one of the basic conditions for enriching the knowledge base, strengthening research capacities, improving the development of all scientific disciplines and accelerating the dynamics of technological progress.
- It encourages institutions to cooperate in planning and implementation of major infrastructure projects of national significance in order to avoid overlapping and to increase investment efficiency
- Supported competitive research infrastructures gather excellent researchers and research teams, strengthen their mutual cooperation, improve the development of certain research areas, address the economic and social challenges, stimulate innovation, and attract foreign researchers and other users, which significantly contribute to strengthening the competitiveness of national economy on the international scene.

- The Research Infrastructures Roadmap provides a framework for improving the model of co-operation that involves the joint use of infrastructure capacities (research space and equipment, knowledge and resources) in order to optimally and efficiently use the existing infrastructure and investments in new research equipment in the Republic of Srpska.
- Through the adoption of the Research Infrastructures Roadmap, The Ministry of Scientific and Technological development, Higher Education and Information Society will significantly increase the visibility of national infrastructures in order to be visible and transparent to potential users who should be able to draw benefits from such an access to infrastructure.
- Open access to research infrastructures opens up numerous opportunities for cooperation; it becomes apparent to the wider community and reveals the space to assess competitive advantages and complementarities with other infrastructures. This approach also opens up a better chance of fostering interdisciplinarity, international and intersectoral mobility, as well as better use of the EU and other available funds.
- In the context of the preparation of the Smart Specialization Strategy, the mapping of research infrastructures takes an important role, as it provides the framework for analysis of research potential and indicates how key national infrastructures can influence the strengthening of research and innovation as key elements of regional development. Therefore, the process of mapping Research Infrastructure and presenting the current state of research infrastructure is an important element of the process of preparing a Smart Specialization Strategy and is the basis for the preparation of future activities of the instruments in this field.
- The Research Infrastructure Roadmap should serve as major instrument for integration of research and innovation community with economy and society of the Republic of Srpska;

In the process of developing Research Infrastructure Roadmap, first step was comprehensive mapping of research infrastructure. The methodology of mapping research infrastructures involves comprehensive questionnaires / interviews to collect a whole range of information. The analysis of data obtained in this way enables optimization of existing infrastructure, more rational use and future development of planned research infrastructures, and it is also a significant source of information for decision makers, who in this way have an overview and state of the research infrastructures on the basis of which they can plan future investments and strategic directions towards international research infrastructures. The survey questionnaire as well as detailed instructions for launching and conducting survey is developed in summer 2019. Survey was conducted in autumn 2019, and Roadmap is drafted in early winter 2019.

The Republic of Srpska should take a step with other Western Balkan economies in the process of opening up to the international scientific research community as well as activities undertaken on the path to integration into the European Research Area (ERA). In order to successfully integrate into the ERA, it is necessary to recognize research infrastructures of strategic importance for the development of the Republic of Srpska, which have the potential to enable excellent research, encourage interdisciplinarity and foster a service oriented approach "access to users".

The Republic of Srpska should ensure transparency of information on the possibilities of cooperation between different research infrastructures. Strengthening macro-regional cooperation in this regard can significantly contribute to saving of resources and facilitation of implementation of individual tasks during research process. Finally, access to large international infrastructures and cooperation with international research teams contributes to strengthening research capacities and encourages the transfer of knowledge and technology.

The Ministry of Scientific and Technological development, Higher Education and Information Society should continue the process of establishing the E-CRIS system in the Republic of Srpska. The establishment of the E-CRIS system will greatly benefit both the Ministry in charge and scientific community and organizations, in order to enhance cooperation and promotion at both the national and international levels.

The Republic of Srpska should consider options for accessing large European research infrastructures. Supporting international engagement is a smart investment that provides the Republic of Srpska with access to a much greater range of high quality research infrastructures. This is infrastructure that the Republic of Srpska alone cannot build but is essential to the research needs of the nation. Benefits of access to large research infrastructures for researchers and research institutions from the Republic of Srpska are multiple:

- Capacity building through trainings and work with experienced researchers and research groups in international infrastructures would enable researchers to be able to transfer acquired knowledge to home country and other members of the research groups;
- Realization of a certain stage of the research process that is not possible in the country due to the lack of appropriate equipment;
- Strengthening of scientific excellence through cooperation with renowned research teams (participation in joint projects, integration of current initiatives, etc.);
- Important for young researchers - scholarships for doctors and postdoctoral students, participation in conferences, workshops.

The Republic of Srpska should provide stronger support to organizations for providing infrastructure support to innovation and research activities. It is particularly important to support opening up new business incubators, innovation centers, as well as to consider establishing Science and Technology Park.

Eventual changes in The Strategy of Scientific and Technological Development of the Republic of Srpska or in the text of new Strategy in future should include explicate positioning of the policy and decision makers toward priorities of the Republic of Srpska in the area of research and innovation. Eventually, among the precisely defined future priorities, particular attention should be given to position of the Research Infrastructures in the Republic of Srpska;

Eventual changes of Science Law in future should include separate article(s):

- directly related to establishment and use of the Research Infrastructures Roadmap in the Republic of Srpska;
- directly related to collection of necessary data, creation of data bases, data and information security and exchange, analysis and statistical treatment – all these in relation on establishment and use of the Research Infrastructures Roadmap in the Republic of Srpska;
- directly related to integration of the Research Infrastructures Roadmap in the Republic of Srpska into The European Strategy Forum on Research Infrastructures (ESFRI) Roadmap.

Further investments from public sources in national/regional level RIs in the Republic of Srpska should be clearly planned within and derivate from Research Infrastructures Roadmap in the Republic of Srpska. These investments should be prioritised as national capital investments with adequate support with human, institutional and financial resources. In addition, future investments should be based on results of regular monitoring and evaluation of research and academic sector in the Republic of Srpska, with identified level of use of RIs and calculated cost / benefit analysis if investments and use of RIs.

1. INTRODUCTION: SCOPE AND PURPOSE OF THE DOCUMENT

The main aim of the document is to present to domestic as well as international research and innovation community the very first attempt of integrating data and information constituting the Roadmap of Research Infrastructures in the Republic of Srpska.

The next section provides methodological instructions for development of the research infrastructures roadmap within framework and conditions of existing research and innovation system in the Republic of Srpska. Third chapter is presentation of survey findings, in form of mapping of existing research infrastructures and analysis of collected data and information. Forth chapter is discussion on open access policy as mode of integration of research infrastructures in Republic of Srpska into regional and wider, EU research infrastructures. Final chapter provides recommendations for adoption and further use of Research Infrastructures Roadmap document. The survey questionnaire accompanying with detailed instructions for launching and conducting survey and further integration of RIs data are provided in Appendix 1 and 2. Appendix 3 is list of capital equipment at purchase price higher than 40.000 BAM as it is provided in collected survey questionnaires.

1.1. Definition of research infrastructures

The definition of Research Infrastructures (RI) of the European Commission is adopted for the purpose of this document: Research Infrastructures are facilities that provide resources and services for research communities to conduct research and foster innovation. They include:

- major scientific equipment or sets of instruments;
- collections, archives or scientific data;
- computing systems and communication networks;
- any other research and innovation infrastructure of a unique nature which is open to external users.

Research infrastructures can be centralised, that is, based in a single location. They can also be distributed or virtual, and can form mutually complementary wholes and networks.

Unique Research Infrastructure– facilities, research centres, and integrated complexes which have highly specialized equipment and instrumentation, offer specialized scientific service, are without analogue on a national level, and/or are a partnership structure of infrastructures, identified by the European Strategy

Roadmap – a national strategic document, by which conditions are created to solve a specific problem, which outlines a vision for development in the science and innovation area. It contains specific objectives that must be achieved based on already implemented measures and instruments, provided in European documents and strategies to support the development of research infrastructure.

E-Infrastructure for scientific research –provides computing services for the scientific community.

1.2. Purpose of the Roadmap

The primary target group of the Roadmap is the domestic, European and international research community. It presents the internationally acclaimed state-of-the-art domestic research infrastructures and outlines the research communities that are already working together with European research infrastructures. Importantly though, the document also records research groups that are not yet connected to any EU RI, either because they have not been given the opportunity, or their research area is not closely connected to any RIs that exist or are under construction. The National Roadmap also provides a great opportunity for policy-makers and other stakeholders involved in the background support work and management tasks related to the research infrastructures to become aware of the main advantages, strengths and trends of domestic research. In addition, the Roadmap may also be of interest to a wider audience and may therefore increase the visibility and acknowledgement of domestic scientific research.

1.3. Implementation of the Research Infrastructures Roadmap of the Republic of Srpska

Implementation of the Research Infrastructures Roadmap of the Republic of Srpska must be considered having in mind potential gaps and fits between national research and innovation (R&I) priorities and existing RIs:

(1) Identified existing RIs in the Republic of Srpska, together with centres and laboratories which are candidates for list of national RIs, belongs to **national and/or regional level RIs**.

Recommendation 1: Further investments from public sources in national/regional level RIs in the Republic of Srpska should be defined within Smart Specialisation Strategy (S3) of the Republic of Srpska, following priorities identified within S3, in order to integrate research and academic sector in the Republic of Srpska with economy of the country;

(2) Investments in RIs from public sources, i.e. from budget of the ministries in charge for research and innovation in the Republic of Srpska, in general, are **in line with national R&I priorities**.

Recommendation 2: Further investments from public sources in national/regional level RIs in the Republic of Srpska should be clearly planned in accordance with Research Infrastructures Roadmap in the Republic of Srpska (this document);

(3) Academic Network **SARNET** could be considered as major RI in the Republic of Srpska. This is national RI but in the same time, this network has provided integration of research and academic sector in the Republic of Srpska with EU and wider research and academic society. Further updates on Research Infrastructures Roadmap in the Republic of Srpska will provide more information about support which is needed to be part of future investments in RIs in the Republic of Srpska in order to develop conditions for SARNET to become integral part of EU research and academic network.

Recommendation 3: Further investments from public sources in major RIs in the Republic of Srpska should be prioritised as national capital investments with adequate support with human, institutional and financial resources;

(4) Identification of use of and benefits from identified existing RIs in the Republic of Srpska, together with centres and laboratories which are candidates for list of national RIs, must be part of regular monitoring and evaluation of research and academic sector in the Republic of Srpska.

Recommendation 4: Further investments from public sources in national/regional level RIs in the Republic of Srpska should be based on results of regular monitoring and evaluation of research and academic sector in the Republic of Srpska, with identified level of use of RIs and calculated cost / benefit analysis.

2. GUIDELINES FOR THE DEVELOPMENT OF RESEARCH INFRASTRUCTURES ROADMAP

2.1. Organization of Overall Research Infrastructures and Legal Framework

Legal framework for research and innovation activities in the Republic of Srpska

Legal framework for research and innovation activities in the Republic of Srpska are defined by the Law on Scientific Activities and Technological Development, so called Science Law. Using EC definition of Research Infrastructures (RI), the following are findings and conclusions of the analysis of relations between Science Law and Research Infrastructures Roadmap in the Republic of Srpska, i.e. the relevance and possible influence of Science Law on, as well as legal bases for the development of Research Infrastructures Roadmap in the Republic of Srpska:

(1) Legal bases for establishment of the Research Infrastructures Roadmap in the Republic of Srpska is not directly (in word) defined within Science Law. Nevertheless, all necessary legal elements are already present and could be used without changes of existing Science Law.

Recommendation 1: Eventual changes or adaptations of Science Law in future should include separate article(s) directly related to establishment and use of the Research Infrastructures Roadmap in the Republic of Srpska.

(2) All institutions, individuals, as well infrastructures, equipment and facilities within S&TD community or for use in research and innovation activities could be subject of the information treatment and retrieval: collection of necessary data, creation of databases, data and information security and exchange, analysis and statistical treatment. Articles within the Science Law are sufficient for obligatory provision of data and information from S&TD community to Ministry in charge for research and innovation, as well as for data handling and dissemination of information.

Recommendation 2: Eventual changes of Science Law in future should include article(s) directly related to collection of necessary data, creation of data bases, data and information security and exchange, analysis and statistical treatment – all these in relation on establishment and use of the Research Infrastructures Roadmap in the Republic of Srpska.

(3) International cooperation and integration of research and innovation community in the Republic of Srpska into European Research Area and wider S&TD community is legally predefined within Science Law. Therefore, integration of the Research Infrastructures Roadmap in the Republic of Srpska into The European Strategy Forum on Research Infrastructures (ESFRI) Roadmap, although not directly (in word) predefined with articles of the Science Law, is possible and welcome.

Recommendation 3: Eventual changes of Science Law in future should include article(s) directly related to integration of the Research Infrastructures Roadmap in the Republic of Srpska into The European Strategy Forum on Research Infrastructures (ESFRI) Roadmap.

Findings and Recommendations extracted from the STD Strategy with Action Plan

The Strategy of Scientific and Technological Development of the Republic of Srpska (hereinafter: Strategy) is the major instruments for planning of research and innovation activities in the Republic of Srpska. It is defined by the Science Law. The findings and conclusions of the analysis of relations between the Strategy with Action Plan and Research Infrastructures Roadmap in the Republic of Srpska, i.e. the relevance and possible influence of Strategy with Action Plan on the development and implementation of Research Infrastructures Roadmap in the Republic of Srpska are:

(1) Obligation for establishment of the Research Infrastructures Roadmap in the Republic of Srpska is directly (in word) defined. Within *Objective 5.4: Strengthening administrative capacities in the field of science and technology through the development of human resources and digitization*, there is *Measure 5.4.2.: By mid-2018, develop the Research Infrastructures Roadmap in line with the guidelines of the European Strategy Forum on Research Infrastructures (ESFRI) and the relevant investment needs in the country*. Although deadline for realisation of the Measure 5.4.2. has already expired, activities on preparation of the Research Infrastructures Roadmap in the Republic of Srpska are launched in first half of the 2019 and it is rational to expect the adoption of the Research Infrastructures Roadmap in the Republic of Srpska by the end of year 2019.

    Recommendation 1: Continue with activities on the preparation of all organisational and other necessary conditions for finalisation and adoption of the Research Infrastructures Roadmap in the Republic of Srpska by the end of year 2019.

(2) Internationalisation, as well as integration of research and innovation community of the Republic of Srpska into regional (Western Balkan; Danube region), and European Research Area, is well positioned within the Strategy.

    Recommendation 2: Finalisation of the Research Infrastructures Roadmap in the Republic of Srpska by the end of year 2019 could strongly support integration of research and innovation community of the Republic of Srpska into WBC and ERA.

(3) Incentives for more efficient research and innovation system in the Republic of Srpska, particularly integration with economy, together with identification of weak links between researchers and industry, are well explored within the Strategy.

    Recommendation 3: The Research Infrastructures Roadmap in the Republic of Srpska should serve as major instrument for integration of research and innovation community with economy and society of the Republic of Srpska.

R&D institutions in the Republic of Srpska

According to the *Register of the R&D institutions in the Republic of Srpska*, there are in total 162 institutions in this sector belonging to 4 types of institutions:

- Public Institutes: 33
- Private Institutes: 60
- Public Universities and Faculties: 38
- Private Universities and Faculties: 31

There are 23 R&D institutions participating in EU projects, i.e. 14.2% out of all R&D organisations in the Republic of Srpska.

There are several universities in the Republic of Srpska that are mostly located in three regional centres: Banja Luka, Istočno Sarajevo and Bijeljina. Two public and most important universities in the Republic of Srpska are:

- The University of East Sarajevo
- The University of Banja Luka

The University of East Sarajevo

The University of East Sarajevo, under the name of the University of Sarajevo, Republic of Srpska, was established on 14 September 1992 by the decision of the National Assembly of Republic of Srpska.

Considerable resources have been invested in the modernization of laboratories and IT equipment, especially in the 7 research centers at the University of East Sarajevo, thus enabling the practical application of knowledge and giving impetus to the development of science. The University of East Sarajevo, as a partner or coordinator, has been actively involved in major projects and programs such as IPA, Erasmus + (including former Tempus program), Horizon 2020, providing improvement of academic community, exchange of teaching staff and students, volunteering or work abroad, cooperation with industry in order to commercialize innovative products or services, improvement of infrastructure etc.

The University of East Sarajevo is a member of the European University Association - EUA, Danube Rectors' Conference, Alpe-Adria Rectors' Conference, and the Rectors' Conferences of Bosnia and Herzegovina and Republic of Srpska. Mobility is achieved through CEEPUS program, Erasmus + program, national programs of the Ministry of Education and Culture of Republic of Srpska, as well as through bilateral cooperation of certain organizational units with related institutions of higher education from abroad.

In the field of international and inter-university cooperation, the University has 55 signed general cooperation agreements with higher education institutions in the country, region, Europe and the world, as well as 119 special agreements defining the cooperation of organizational units with related universities, commercial enterprises, institutes and agencies.

It consists of 17 faculties: Academy of Fine Arts, Faculty of Orthodox Theology, Faculty of Economics - Pale, Faculty of Economics – Brčko, Faculty of Electrical Engineering, Faculty of Philosophy, Faculty of Physical Education and Sport, Faculty of Business and Economics, Production and Management Faculty, Faculty of Mechanical Engineering, Academy of Music, Faculty of Medicine, Faculty of Pedagogy, Faculty of Agriculture, Faculty of Law, Faculty of Transport and Traffic Engineering, Faculty of Technology.

The University of Banja Luka

The University of Banja Luka has been established in 1975. It consists of seventeen faculties and one Institute: Academy of Arts, Faculty of Architecture and Civil Engineering, Faculty of Economics, Faculty of Electrical Engineering, Faculty of Mechanical Engineering, Faculty of Philology, Faculty of Political Sciences, Faculty of Mine Engineering, Faculty of Agriculture, Faculty of Law, Faculty of Natural Sciences and Mathematics, Faculty of Technology, Faculty of Physical Education and Sport, Faculty of Philosophy and Faculty of Forestry, Faculty of Security Sciences, and Institute for Genetic Resources.

The University of Banja Luka has 52 licensed study programs. There are around 600 professors, 400 assistants and 450 administrative staff members currently employed at the University. At present there are around

17000 students at the University. As of 1st January 2008 the University of Banja Luka is integrated, with faculties as organizational units. The Steering Board, Senate and Rector govern the University. The Rector legally represents the University. There are four Vice-Rectors (in charge of: research and scientific work, international relations, teaching and student issues and human resources). It is a public university, and therefore the main source of funding is provided by the Government of the Republic of Srpska.

The equipment and facilities are situated at the respective faculties. At some of the units, there are well equipped laboratories, but also there is a permanent need of further development. The University has plans for development, but it is not possible to realize it only by use of own resources. That is why the University has been active in many different projects.

Supporting research infrastructures in the Republic of Srpska

The only institution whose aim is to support research and innovation initiatives in the Republic of Srpska is the innovation Centre Banja Luka. There are no other supporting institutions like Incubators, Science and Technology parks etc.

The Innovation Centre Banja Luka (ICBL) is a centre for the support and development of entrepreneurship in the Republic of Srpska, with the purpose to support the development of knowledge-based enterprises and the application of innovative and advanced technologies. ICBL is the first modern equipped centre for entrepreneurship support and development in the Republic of Srpska.

ICBL, in cooperation with accredited companies, educational institutions and experienced specialists, provides professional development services through the delivery of commercial, internationally certified and nationally recognized training courses in the fields of business, information technology, project management, e-education, etc. ICBL offers to its users through incubation, all the necessary elements for successful professional development through a wide range of services.

As one of the founders of the Innovation Center in Banja Luka, the Ministry for Scientific and Technological Development, Higher Education and Information Society participates in the financing of operational costs and continuously works on identifying and providing key resources and support to the Center. Its financial support to ICBL has increased for 25% in the period from 2012 to 2018.

2.2. National Research e-Infrastructure

The e-Infrastructure provides the framework for all research priorities and is therefore highlighted as a separate unit that precedes the description of the priorities themselves. It allows researchers access to devices and other resources, regardless of their geographic location. Furthermore, it supports new working methods based on cooperation and partnership of different research units around the Republic of Srpska.

The e-infrastructures in the Republic of Srpska are, as follow:

- Academic and research network SARNET
- National and University Library of the Republic of Srpska
- E-CRIS system

1. Academic and research network SARNET

Academic and Research Network of the Republic of Srpska - SARNET" was founded by the Government of the Republic of Srpska in 2006. SARNET is responsible for the construction, development, maintenance and use of information and communication infrastructure for the needs of higher education and scientific research institutions of the Republic of Srpska, which will connect them to each other, with related institutions and neighbouring networks and with European and Global Networks. By the decision of the Government of the Republic Srpska from 24 January 2019 the Public Institution SARNET was taken over by the Ministry for Scientific and Technological Development, Higher Education and Information Society.

The Science Law of the Republic of Srpska has determined that the SARNET belongs to the scientific-research infrastructure of general importance for the Republic of Srpska.

SARNET should enable improvement and acceleration of the development of higher education and scientific research institutions in the Republic of Srpska. The main tasks of SARNET include the following:

- the construction and development of information and communication infrastructure for science, research and education in the Republic of Srpska;
- implementation and support to the experimental work of state-of-the-art equipment and solutions in the field of information and communication technologies (ICT);
- Experimental application of ICT in different fields;
- creating conditions for the wider use of ICT in the Republic of Srpska and Bosnia and Herzegovina;
- Creation of appropriate conditions for education, development and employment of domestic staff in the field of ICT;
- Overall improvement of domestic information potentials.

2. National and University Library of the Republic of Srpska

The National and University Library of the Republic of Srpska (NUB) in Banja Luka is a public institution that unifies three basic functions of its activities: national, university and city. The unification of the national, university and city function within the activities of NUB has stipulated that this library, through a national function, is the parent organization for all libraries in the territory of the Republic of Srpska, through a university function, which is in charge of all public higher education libraries in its entity, through city or public function it is also the parent library for all libraries in the Banja Luka region. NUB performs the library activities through:

- connecting all libraries to the unique information system in the Republic of Srpska and their inclusion in the world information systems,
- organizing and supervising the professional work of parent libraries,
- encouraging and organizing the cooperation of libraries in the Republic of Srpska in the coordination of procurement, collection, processing, information flows and interlibrary loans,
- co-ordinating the work of libraries performing the roles of library activities and taking care of the purchase of technical equipment for libraries,
- preparation of methodical instructions and norms for the professional operation of libraries.

NUB is also engaged in the following activities:

- keeping a register of libraries
- keeping a catalogue of library materials,
- providing professional help to libraries,
- supervision of the professional work of libraries,

- care for staff training for performing library activities,
- monitoring and studying the condition, needs and conditions of work in libraries,
- proposing measures for improving the library activity and their implementation

3. E-CRIS system

The E-CRIS.RS system includes databases of research organizations, researchers and research projects in the Republic of Srpska. All databases are interconnected and include English language data. The complete system was realized with the support of the Institute of Information Science from Maribor, who developed the web application E-CRIS. In order to coordinate all activities related to the implementation of the E-CRIS system, the E-CRIS Center is located in the Ministry in charge of Science and Technology in the Republic of Srpska.

There are 94 R&D institutions and 1210 researchers registered in E-CRIS.RS system in the Republic of Srpska as well.

> The CRIS (Current Research Information System) system in Europe is being built and applied for several decades. Due to incompatible methodologies in the past, the integration and widespread use of CRIS systems in many countries was prevented. For this reason, it has been seriously working on standardization lately on the basis of recommendations related to the CERIF-Common European Research Information Format, which is maintained and developed by EuroCRIS. In accordance with the recommendations of CERIF, the E-CRIS web application developed by the Institute of Information Science in Maribor (IZUM) was provided free of charge to users of COBISS (COBISS-cooperative online bibliographic systems and services) applications in the COBISS.Net network, in order to establish as complete a record of researchers, research organizations and projects as necessary to monitor and evaluate results. National CRIS systems are linked to the national library-information systems COBISS, which allows immediate access to bibliographies of scientific workers and institutions.

2.3. Research Infrastructure and Smart Specialization

In the context of the preparation of the Smart Specialization Strategy, the mapping of research infrastructures takes an important role, as it provides the framework for analysis of research potential and indicates how key national infrastructures can influence the strengthening of research and innovation as key elements of regional development. Therefore, the process of mapping Research Infrastructures and presenting the current state of research infrastructures is an important element of the process of preparing a Smart Specialization Strategy and is the basis for the preparation of future activities of the instruments in this field.

2.4. Cooperation within European Research Area

The Republic of Srpska should take a step with other Western Balkan economies in the process of opening up to the international scientific research community as well as activities undertaken on the path to integration into the European Research Area (ERA). In order to successfully integrate into the ERA, it is necessary to recognize research infrastructures of strategic importance for the development of the Republic of Srpska, which have the potential to enable excellent research, encourage interdisciplinarity and foster a service oriented approach "access to users".

The Republic of Srpska should ensure transparency of information on the possibilities of cooperation between different research infrastructures. Strengthening macro-regional cooperation in this regard can

significantly contribute to saving of resources and facilitation of implementation of individual tasks during research process. Finally, access to large international infrastructures and cooperation with international research teams contributes to strengthening research capacities and encourages the transfer of knowledge and technology.

2.4. Financing Research Infrastructure

Investments in research equipment

The Ministry for Scientific and Technological Development, Higher Education and Information Society is supporting research institutions through the *Program for ensuring and maintenance of research equipment and space for scientific research*. In total, 45 different research institutions have received financial support for research equipment in the period of 2010-2018. Table 1 shows the first 16 research institutions that have received at least 40.000 BAM in the period 2010-2018.

Table 1: Research institutions in the Republic of Srpska that have received financial support for research equipment by the Ministry for Scientific and Technological Development, Higher Education and Information Society in the period of 2010-2018

Research Institution	**Total received Amount (BAM) in period 2010-2018**
Faculty of Agriculture, University of Banja Luka	129.500
Faculty of Electrical Engineering, University of Banja Luka	123.600
Academy of Sciences and Arts of the Republic of Srpska	92.000
Faculty of Electrical Engineering, University of East Sarajevo	91.300
Faculty of Natural Sciences and Mathematics, University of Banja Luka	88.500
Institute of Genetic Resources, University of Banja Luka	85.500
Faculty of Technology, University of Banja Luka	77.500
Faculty of Mechanical Engineering, University of East Sarajevo	72.500
Faculty of Medicine, University of Banja Luka	68.000
Agricultural Institute of the Republic of Srpska	68.000
Faculty of Mechanical Engineering, University of Banja Luka	60.500
Faculty of Technology Zvornik, University of East Sarajevo	57.800
Faculty of Architecture and Construction and Geodesy, University of Banja Luka	52.000
Institute for the Protection of Ecology and Informatics of the Republic of Srpska	51.900
Faculty of Mining Prijedor, University of Banja Luka	49.000
Faculty of Economics, University of Banja Luka	45.000

Further investments from public sources in national/regional level RIs in the Republic of Srpska should be clearly planned within Research Infrastructures Roadmap in the Republic of Srpska. These investments should be prioritised as national capital investments with adequate support with human, institutional and financial resources. In addition, future investments should be based on results of regular monitoring and evaluation of research and academic sector in the Republic of Srpska, with identified level of use of RIs and calculated cost / benefit analysis of investments and use of RIs.

3. OVERVIEW, SITUATION AND PRIORITIES OF RESEARCH INFRASTRUCTURES IN THE REPUBLIC OF SRPSKA

3.1. The process of mapping research infrastructures in RS – methodological instructions and implementation

The process of lunching survey and integration of infrastructure data consisted of two steps:

1. Survey launching

Methodological instructions

The entire process of launching and conducting survey was carried out in broad cooperation with the scientific and research community. Ministry for Scientific and Technological Development, Higher Education and Information Society was responsible for lunching and gathering the information from the survey. The process of surveying was complemented with the integration of infrastructures data from other sources i.e. memberships in international research infrastructures organizations, research infrastructures on national level developed from domestic and EU funds etc.

The Survey questionnaire contained several sets of questions that served as input for the identification and evaluation of research infrastructures potential. The aim of this questionnaire was to map the research infrastructures in the Republic of Srpska as the first and indispensable step in the process of designing the Research infrastructures Roadmap.

The survey questionnaire consisted of 5 sections:

1. General information
2. Data on Human resources
3. Data on expenditures and funding
4. Data on infrastructure and equipment
5. Information on Access, Collaboration and Networks

The questionnaire was filled in for one Research Infrastructure and all data and descriptions were given for the specific infrastructure that was the subject of the questionnaire. The Survey questionnaire is provided in the Appendix 1 of this document.

In addition to the survey questionnaire, detailed instructions for launching and conducting survey, and further integration of infrastructure data is provided in Appendix 2. This guide comprises detailed instructions for web based or email based launching questionnaire to the research community as well as gathering and necessary data processing and integration of all responses that served as main input for the selection and mapping of research infrastructures in the Republic of Srpska.

Implementation

The Ministry of Scientific and Technological development, Higher Education and Information Society has launched email based questionnaire to the research community in September 2019, and collection of the replies was completed in mid-November 2019. The following text will present main findings of the analysis of collected data and information.

2. Selection of infrastructures to be included in the Roadmap

Methodological instructions

After collecting the questionnaires, it is necessary to continue the process through the selection of the infrastructures that will be included in the final Roadmap. Ministry for Scientific and Technological Development, Higher Education and Information Society is responsible for this process as well as for mapping the domestic research infrastructures, planning cooperation with foreign research infrastructures, and monitoring scientific performance resulting from such cooperation. Where it is necessary, external stakeholders should also be involved in the process of selection of research infrastructures and planning of the Roadmap. In order to select research infrastructures to be included in the Roadmap, evaluation criteria need to be developed. Evaluation criteria should be defined depending on the current state of the Register so as to cover the most important research infrastructures in the Republic of Srpska.

In order to create the roadmap, a set of criteria will be necessary for the classification of RIs operating in Republic of Srpska. The list of RIs to be included in the Roadmap might be too heterogeneous. So, their classification should be based on and justified according to the following selection criteria:

- **Open access and capacity** – provides access to any domestic and international research community subject to the availability of capacities; open to industrial cooperation (for a fee); able to provide and operate the services necessary for open use (number of cooperation agreements).
- **International connection** – maintains and is actively involved in actual international research cooperation; able to host foreign researchers; and able to participate in international research projects (number of international research infrastructure cooperation agreements generated by the research infrastructure).
- **Uniqueness, scientific excellence** – outstanding technology level and associated expertise makes it comparable with the relevant European RIs (number of publications and patents authored together with external researchers, broken down by research institution).
- **National (strategic) importance** – has scientific importance for at least the domestic research community (number of researchers served, including PhD students).
- **Room for further development –** keeps abreast of new development trends; has the potential of adapting and developing further technologies.
- **Purchase price of capital equipment** – select only capital equipment valued more than specific value (for example, only capital equipment with purchase prices higher than 20,000.00 eur).

Implementation

The key criterion for the selection of equipment included in this document is the price of the equipment at its acquisition. It was decided to include in the Research Infrastructures Roadmap of the Republic of Srpska only equipment that cost at least 40,000 BAM.

3.2. Analysis of the existing research infrastructures in RS

The questionnaire for providing data and information about existing research infrastructures was sent to all institutions of the SR (scientific research) and RD (research and development) sector in the Republic of Srpska. The responses are illustrated in Table 2. It is indicative that only about 16% of registered scientific research organizations (institutes and faculties) stated that they had equipment relevant to the roadmap. This is a key fact that limits the scope of this document - Research Infrastructures Roadmap, that is, indicates

the need to introduce a legal obligation for all registered SROs (scientific research organizations) to provide the information necessary to update the comprehensive document "Research Infrastructures Roadmap".

Table 2: Statistics on completing the Research Infrastructure Record Questionnaire in the Republic of Srpska

SRO (scientific research organizations)	**Registe-red**	**Completed the question-naire**	**SRO with equipment relevant to the roadmap**	**% SRO with equipment relevant to the roadmap**	**Equipment worth more than 40,000 BAM**
Public institutes	33	5	4	80%	29
Private institutes	60	4	3	75%	15
Public faculties	38	28	17	60.71%	126
UBL-University ofBanja Luka		*18*	*11*		*68*
UIS- University of Ist Sarajevo		*10*	*6*		*58*
Private faculties	31	4	1	25%	1
Specific infrastructures (e-infrastructure: SARNET)	1	1	1	100%	1
Total	**163**	**42**	**26**	**61.90% (15.92% registered SRO)**	**172**

Table 3 illustrates the thematic purpose and type of the Research Infrastructures in Republic of Srpska. The highest number of SROs that reported equipment relevant to the research Infrastructures roadmap were in the fields of “Physical Sciences and Engineering”, followed by “Health and Food Sciences” and “Environment”. Consequently, the distribution of equipment worth BAM 40,000 is the same. Most SROs are type "single-site facilities", with relatively few "mobile facilities" and "distributed facilities", and only two are "virtual facilities".

Table 3: Research infrastructures in the Republic of Srpska by thematic categorization and type

Thematic categorization of research infrastructures	**Number of SRO**			**Total no. of SRO**	**Equipment worth more than 40,000 BAM**			**Total equipment**
	Institutes	**Faculties**	**Spec.Inf.**		**Institutes**	**Faculties**	**Spec.Inf.**	
1.Energy	1	3		**4**	15	7		**22**
2.Environment	4	6		**10**	23	12		**35**
3.Health and Food Sciences	2	11		**13**	19	48		**67**
4.Physical Sciences and Engineering	1	16		**17**	10	108		**118**
5.Social and Cultural innovation	2	3		**5**	2	7		**9**
6.e-infrastructures	1	2		**3**	1	6	1	**8**
Type of research infrastructures								
1. single-site facilities	6	28		**34**	34	126		**160**
2. distributed facilities	2	2	1	**5**	15	6	1	**22**
3. mobile facilities	2	5		**7**	14	11		**25**
4. virtual facilities	1	1		**2**	1	1		**2**

Table 4 lists data on staff employed at the SROs, who reported to the Ministry on equipment relevant to the roadmap of the research infrastructures in the Republic of Srpska. A total of 1458 employees are employed in these SROs, of which 766 are researchers, 250 are associates and 185 are technical staff.

Table 4: Employees of the SRO that has research infrastructure in the Republic of Srpska

SRO employees	**Institutes**	**Faculties**	**Spec.Inf.**	**Total**
Researchers	73	693		**766**
Professional associates	52	198		**250**
Technical staff	67	116	2	**185**
Management staff	7	47	1	**55**
Other staff (support staff)	61	141		**202**
Total number of employees	260	1195	3	**1458**

Table 5 illustrates the value of equipment in the SROs reported by the Ministry on equipment relevant to the roadmap for research infrastructures in the Republic of Srpska. Data on the percentage of depreciation of this equipment (54.19%) is indicative of planning new procurement and providing the necessary funds for investments in planned procurement, which were reported by almost all SROs analysed.

Table 5: Value of equipment in research infrastructures in the Republic of Srpska

Value of equipment (BAM)	**Purchase value of equipment (BAM)**	**Current value (BAM)**	**Depreciation (%)**
Institutes	10.879.971	6.217.066	**42.86%**
Faculties	24.502.911	10.070.476	**58.90%**
Specific infrastructures	**1.020.082**	**390.095**	**61.76%**
Total	**36.402.964**	**16.677.637**	**54.19%**

The “LIST OF CAPITAL EQUIPMENT AT PURCHASE PRICE HIGHER THAN 40.000 BAM” is provided in the Appendix 3 of this document. The following data and information are extracted from the established data base of existing research infrastructures in the Republic of Srpska:

- Name of SRO
- Place
- Address
- Website
- Thematic categorization of research infrastructures: ON1, ON2, ON3, ON4, ON5, ON6
- Type of research infrastructures: T1, T2, T3, T4
- NAME OF INDIVIDUAL EQUIPMENT
- Purchase value of equipment (BAM) (related individual equipment)
- Year of purchase (related individual equipment)
- Estimated duration of equipment (in years) (related individual equipment)
- Estimated number of users annually (related individual equipment)
- Access policies and procedures for users of research infrastructure

3.3. National Priorities in Developing Research Infrastructures in the Republic of Srpska

The *Strategy of Scientific and Technological Development of the Republic of Srpska* (hereinafter: *Strategy*) is the major instruments for planning of research and innovation activities in the Republic of Srpska. The National Assembly of the Republic of Srpska, within the Eighteenth Session on April 27, 2017, has adopted the Science and Technology Development Strategy of the Republic of Srpska, 2017 - 2021, "Knowledge for Development" (hereinafter: Strategy).

After adoption of the Strategy, the Government has adopted an Action Plan, developed by the Ministry in charge, for realisation of the Strategy in accordance with the Science Law (Article 15, paragraph 2). This Action Plan presents a schematic representation:

- the six strategic objectives,
- 28 sub-targets,
- 75 measures,
- performance indicators,
- deadlines for the realization of goals, and
- competent institutions / organizations obliged for realisation of the Strategy.

Analysis of the Strategy in search for priorities of the Republic of Srpska in the area of Research and Innovation, lead the team of experts to the conclusion that there are NO precisely/directly (in word) defined R&I priorities. Instead, this document has defined:

- Six key challenges in research and innovation in Republic of Srpska;
- Six goals-objectives in Republic of Srpska which should be realised with research and innovation;
- Compliance with six ERA priorities; and
- In addition, analysis of realisation of the five objectives of the former Strategy is provided in the beginning of this document.

Six **key challenges** in research and innovation in Republic of Srpska are:

- Human resources;
- Participation in international cooperation programs;
- Scientific Productivity;
- Investments in research and development;
- Innovation;
- Smart specialization – priority areas defined for smart specialisation are those already selected for sectoral policies:
    - ICT,
    - Energy,
    - Food production,
    - Creative economy.

The **main goal** of the Republic of Srpska in the field of science and innovation for period 2017-2021 is: significant improving of the efficiency and effectiveness of the scientific and innovation system. Six **particular objectives** in Republic of Srpska which should be realised with research and innovation in this period, defined by the Strategy, are:

- OBJECTIVE 1: Stimulating the scientific and research quality and excellence;
- OBJECTIVE 2: Stimulating the internationalization of science and innovation;
- OBJECTIVE 3: Stimulating the cooperation between the research and innovation community with the economy;

- OBJECTIVE 4: Creating conditions for increasing the budgetary allocation for science and innovation;
- OBJECTIVE 5: Developing human resources in science and innovation;
- OBJECTIVE 6: Promoting smart specialization.

The Strategy is in line with the main strategic documents in the Republic of Srpska, as well as with six **ERA priorities**:

- Main strategic documents in the Republic of Srpska:
    - Education Strategy of the Republic of Srpska for the period 2016-2021,
    - Industrial Strategy of the Republic of Srpska for the period 2016-2020,
    - Strategy for the Development of Small and Medium Enterprises of the Republic of Srpska 2016-2020,
    - Strategy for encouraging foreign investments in the Republic of Srpska from 2016 to 2020,
    - Strategic plan for the development of agriculture and rural areas of the Republic of Srpska
    - 2016-2020
    - Strategy for the Development of Forestry of the Republic of Srpska 2011-2021,
    - Regional strategy for research, development and innovation of Western Balkan Countries,
    - Danube Region Strategy,
    - Energy Development Strategy of the Republic of Srpska until 2030,
- Six ERA (European Research Area) priorities:
    - More efficient national research systems,
    - Optimal transnational cooperation and competition,
    - An open labour market for researchers,
    - Gender equality in research,
    - Optimal circulation, access and transfer of scientific knowledge, including digitization of the ERA,
    - Open access to research results financed from public funds.

The Strategy has provided very brief analysis of the accomplishment of the following five objectives of the former Strategy:

- Strengthening social awareness about importance and role of science and technology;
- Developing a favourable environment for research and development;
- Development of human resources;
- Strengthening cooperation and transfer of research results from the scientific research to the economic sector;
- Increasing financial investment in research and development.

Having in mind that, after adoption of the Strategy, the Government has adopted an Action Plan, which is elaborated as plan for realisation of the six particular objectives, it is reasonable to conclude that these six particular objectives are, in fact, the **six priorities of the Republic of Srpska in the area of research and innovation**, together with **four priority sectors** for involvement of available resources for science and innovation in the Republic of Srpska, derivate from specific approach in defining new innovation policy using smart specialisation concept and all actions in the area of science and innovation that will be organised in compliance with six ERA priorities.

As conclusion, the six priorities of the Republic of Srpska in the area of research and innovation are:

- **OBJECTIVE 1: Stimulating the scientific and research quality and excellence;**
- **OBJECTIVE 2: Stimulating the internationalization of science and innovation;**

- **OBJECTIVE 3: Stimulating the cooperation between the research and innovation community with the economy;**
- **OBJECTIVE 4: Creating conditions for increasing the budgetary allocation for science and innovation;**
- **OBJECTIVE 5: Developing human resources in science and innovation;**
- **OBJECTIVE 6: Promoting smart specialization.**

Four priority sectors for involvement of available resources for science and innovation in the Republic of Srpska are:

- **ICT,**
- **Energy,**
- **Food production,**
- **Creative economy.**

4. ACCESS TO RESEARCH INFRASTRUCTURE IN THE REPUBLIC OF SRPSKA

4.1. Open access to research infrastructure in RS

According to the European Commission, access refers to the legitimate and authorised physical, remote and virtual admission to, interactions with and use of Research Infrastructures and to services offered by Research Infrastructures to Users. Such Access can be granted, amongst others, to machine time, computing resources, software, data, data-communication services, trust and authentication services, sample preparation, archives, collections, the set-up, execution and dismantling of experiments, education and training, expert support and analytical services.[1] Access to research infrastructure is an important factor in creating greater synergies between researchers in a particular field of science and connecting business and research sectors in order to promote the development of research and innovation.

Research infrastructure in the Republic of Srpska is mostly used for in-house research and educational purposes. The research equipment is available to the users with the prior approval of the Institute's or faculty management. The access policy is mostly based on the acts regulating the working procedures as well as additional acts, arising from the process of accreditation of certain laboratories.

Access to research equipment at higher education institutions is performed as part of regular teaching, student's research projects and research papers with the presence of a professor or assistant. In most cases it is used for the purposes of national and international research projects as well as for the conduction of doctoral theses. In addition, research equipment and infrastructure is available to other researchers from the Republic of Srpska. Research equipment is used according to agreed timing and financial terms. Procedures for users of research infrastructure services are described in internal documents. Research groups intending to use the infrastructure need to provide a description of the activities they wish to undertake, time dynamics, means of providing funds and other information that will enable them to comply with regular activities in the research infrastructure and thus ensure the smooth implementation of the desired activities.

According to the information gathered through questionnaire, the following groups of researchers have access to research equipment in the Republic of Srpska:

- Professors, associates, researchers, junior researchers, students employed in research institution.
- Researchers from other institutions, faculties and institutes with the obligation to apply for access to research infrastructure
- Access through scientific research projects, bilateral cooperation projects and exchange programs. If there is a signed cooperation agreement through the project or staff exchange programs, users are permitted to use the infrastructure for the duration of the project or exchange program.
- Through cooperation in the field of education and training

Institute directors and heads of laboratories approve the ways and use of research equipment in accordance with the internal rules of the institutes and faculties. Access procedures are defined and strictly adhered to, because of the security aspects that must be met.

The users of research infrastructures are mainly researchers from the Republic of Srpska: research groups within the same research or educational institution; research groups from other institutions in the Republic

[1] https://ec.europa.eu/research/infrastructures/pdf/2016_charterforaccessto-ris.pdf

of Srpska – faculties, institutes, schools and public institutions and to a lesser extent the business sector. To a much lesser extent, the research infrastructure is used by BiH institutions: Partner Research Institutes and researchers from business entities.

Access to research equipment for Western Balkan was mainly provided to educational institutions and partner research institutions from Serbia, Croatia and Slovenia. The access is also provided for Visiting researchers and within Regional education programs. Users - EU Research Groups: Through H2020 projects as well as bilateral scientific and technological cooperation projects.

4.2. Access to regional research infrastructures

Research infrastructures in the Republic of Srpska are not integrated into Pan-European Research infrastructures. The only link that the most of research institutions have with regional or European RIs are through collaborative research projects founded within Horizon 2020, Eureka and other programmes. According to the responses gathered through questionnaire, respondents highlighted the following international associations, projects and infrastructures: International society of soil and geotechnical engineering, International society of rock mechanic, International consortium of landslides, National Initiatives for Open Science in Europe, Global Seed Vault, International Union Forest Research Organization, and COBISS etc. One of the most important research infrastructures, Academic and Research Network of the Republic of Srpska – SARNET, was founded by the Government of the Republic of Srpska. It is responsible for the construction, development, maintenance and use of information and communication infrastructure for the needs of higher education and scientific research institutions of the Republic of Srpska. The external connection to the Pan-European Research Network (GÉANT) has been carried out in cooperation with the Academic Network of Serbia - AMRES.

Access to regional research infrastructures is important for Research institutions in the Republic of Srpska, and more efforts need to be put in place by the Ministry of Scientific and Technological Development, Higher Education and Information Society, in order to provide necessary conditions to connect them with regional and European research infrastructures.

4.3. Internationalization and potential for access to EU research infrastructure

Participation of research institutions from the Republic of Srpska in international projects related to RI development

Participation in consortia for research projects financed from EU sources (FP7, H2020, etc.) could be considered as potential RI, particularly if such projects belong to investments in establishment of wider EU platform for integration of research resources in specific fields of science and technology. In the process of identifying research institutions from the Republic of Srpska that have participated in international projects in the field of research infrastructure, several sources have been used. In addition to internal evidence from the Ministry for Scientific and Technological Development, Higher Education and Information Society, it has

been shown that the most comprehensive source of information was portal: *RIs Observatory*[2] that presents the single entry point for information on H2020 and FP7 projects related to RI development.

According to RIs Observatory, several projects realized under FP7 and H2020 that have been important in the context of the development of research infrastructures in the Republic of Srpska in the last 10 years are the following:

1. **VRE for regional Interdisciplinary communities in Southeast Europe and the Eastern Mediterranean**
   - **Funding Programmes**: H2020, Dates: 01/10/2015 - 30/09/2018
   - **Research institution from the Republic of Srpska**: University of Banja Luka
   - **Description of the project**: VI-SEEM proposal brings together e-Infrastructures to build capacity and better utilize synergies, for an improved service provision within a unified Virtual Research Environment (VRE) for the inter-disciplinary scientific user communities in the combined SEE and EM regions (SEEM). The overall objective is to provide user-friendly integrated e-Infrastructure platform for regional cross-border Scientific Communities in Climatology, Life Sciences, and Cultural Heritage for the SEEM region; by linking compute, data, and visualization resources, as well as services, models, software and tools. This VRE provides the scientists and researchers with the support in full lifecycle of collaborative research: accessing and sharing relevant research data, using it with provided codes and tools to carry out new experiments and simulations on large-scale e-Infrastructures, and producing new knowledge and data - which can be stored and shared in the same VRE. Climatology and Life Science communities are directly relevant for Societal Challenges.

2. **SEE-GRID e-Infrastructure for Regional e-Science**
   - **Funding Programmes:** FP7, Dates: 30/04/2008 - 30/04/2010
   - **Research institution from the Republic of Srpska:** Faculty of Electrical Engineering in Banja Luka
   - **Description of the project:** SEE-GRID-SCI leverages the SEE e-Infrastructure to enable new scientific collaborations among SEE user communities. SEE-GRID-SCI will stimulate widespread integrated e-Infrastructure uptake by new cross-border user groups extending over the region, fostering collaboration and providing advanced capabilities to more researchers, with an emphasis on strategic groups in seismology, meteorology and environmental protection. The initiative thus aims to have a catalytic and structuring effect on a variety of user communities that currently do not directly benefit from the available e-Infrastructures.

3. **EGI-INSPIRE - European Grid Initiative: Integrated Sustainable Pan-European Infrastructure for Researchers in Europe**
   - **Funding Programmes**: H2020, Dates: 30/04/2010 - 30/04/2014
   - **Research institution from the Republic of Srpska**: Faculty of Electrical Engineering, University of Banja Luka

     Description of the project: The EGI-InSPIRE project continued the transition to a sustainable pan-European e-Infrastructure started in EGEE-III. It sustained support for Grids of high-performance and high-throughput computing resources, while seeking to integrate new Distributed Computing Infrastructures (DCIs), i.e. Clouds, SuperComputing, Desktop Grids, etc., as they are required by the European user community. It established a central coordinating organisation, EGI.eu, and supported

[2] RIs Observatory (http://observatory.rich2020.eu/rich/) is a single access point to all information on H2020 and FP7 projects related to RI development. The National Contact Points for H2020-RI programme gather, organise and provide access to information on RI projects, their transnational access opportunities, policy issues, stakeholders, national and regional initiatives on RIs, etc. The information covers all countries and all thematic fields.

the staff throughout Europe necessary to integrate and interoperate individual national grid infrastructures. EGI.eu provides a coordinating hub for European DCIs, working to bring existing technologies into a single integrated persistent production infrastructure for researchers within the European Research Area.

4. **High-Performance Computing Infrastructure for South East Europe's Research Communities**
   - **Funding Programmes**: H2020, Dates: 31/08/2010 - 31/05/2013
   - **Research institution from the Republic of Srpska**: Faculty of Electrical Engineering, University of Banja Luka
   - **Description of the project**: HP-SEE focused on a number of strategic actions. First, it linked the existing and upcoming HPC facilities in the region in a common infrastructure, and provided operational solutions for it. As a complementary action, the project established and maintained the GÉANT link for Caucasus. Second, it opened this HPC infrastructure to a wide range of new user communities, including those of less-resourced countries, fostering collaboration and providing advanced capabilities to researchers, with an emphasis on strategic groups in computational physics, chemistry and life sciences. Finally, it ensured establishment of national HPC initiatives, and act as a SEE bridge for PRACE. In this context, HP-SEE aimed to attract the local political & financial support for long-term sustainable e-Infrastructure. HP-SEE aspires to contribute to the stabilisation and development of South-East Europe, by overcoming fragmentation in Europe and stimulating e-Infrastructure development and adoption by new virtual research communities, thus enabling collaborative high-quality research across a spectrum of scientific fields.

5. POLICY RECOMMENDATION FOR RESEARCH INFRASTRUCTURES IN THE REPUBLIC OF SRPSKA

Important part of the Roadmap of Research Infrastructures in the Republic of Srpska are policy recommendations for decision / policy makers with activities, instruments and procedures necessary for adoption and successful implementation of Roadmap of Research Infrastructures in the Republic of Srpska:

Policy Recommendation 1:

The Ministry of Scientific and Technological development, Higher Education and Information Society is responsible for preparation and implementation of the Research Infrastructure Roadmap in the Republic of Srpska.

Research Infrastructure Roadmap should be treated as a key strategic document for improvement of Scientific and research system in the Republic of Srpska and as a tool for the identification of research potential in order to direct further development of research infrastructures. The importance of Research Infrastructure Roadmap has multiple benefits:

- Recognition of importance of research infrastructures is one of the basic conditions for enriching the knowledge base, strengthening research capacities, improving the development of all scientific disciplines and accelerating the dynamics of technological progress;
- It encourages institutions to cooperate in planning and implementation of major infrastructures projects of national significance in order to avoid overlapping and to increase investment efficiency;
- Supported competitive research infrastructures gather excellent researchers and research teams, strengthen their mutual cooperation, improve the development of certain research areas, address the economic and social challenges, stimulate innovation, attract foreign researchers and others users, which significantly contribute to strengthening the competitiveness of national economy on the international scene;
- The Research Infrastructures Roadmap provides a framework for improving the model of co-operation that involves the joint use of infrastructures capacities (research space and equipment, knowledge and resources) in order to optimally and efficiently use the existing infrastructures and investments in new research equipment in the Republic of Srpska;
- Through the adoption of the Research Infrastructures Roadmap, The Ministry of Scientific and Technological development, Higher Education and Information Society will significantly increase the visibility of national infrastructures in order to be visible and transparent to potential users who should be able to draw benefits from such an access to infrastructures;
- Open access to research infrastructures opens up numerous opportunities for cooperation; it becomes apparent to the wider community and reveals the space to assess competitive advantages and complementarities with other infrastructures. This approach also opens up a better chance of fostering interdisciplinarity, international and intersectoral mobility, as well as better use of the EU and other available funds;
- In the context of the preparation of the Smart Specialization Strategy, the mapping of research infrastructures takes an important role, as it provides the framework for analysis of research potential and indicates how key national infrastructures can influence the strengthening of research and innovation as key elements of regional development. Therefore, the process of mapping Research Infrastructures and presenting the current state of research infrastructures is an important element of the process of preparing a Smart Specialization Strategy and is the basis for the preparation of future activities of the instruments in this field;

- The Research Infrastructures Roadmap should serve as major instrument for integration of research and innovation community with economy and society of the Republic of Srpska.

Policy Recommendation 2:

The Republic of Srpska should take a step with other Western Balkan economies in the process of opening up to the international scientific research community as well as activities undertaken on the path to integration into the European Research Area (ERA). In order to successfully integrate into the ERA, it is necessary to recognize research infrastructures of strategic importance for the development of the Republic of Srpska, which have the potential to enable excellent research, encourage interdisciplinarity and foster a service oriented approach "access to users".
The Republic of Srpska should ensure transparency of information on the possibilities of cooperation between different regional research infrastructures. Strengthening macro-regional cooperation in this regard can significantly contribute to saving of resources and facilitation of implementation of individual tasks during research process. Finally, access to large international infrastructures and cooperation with international research teams contributes to strengthening research capacities and encourages the transfer of knowledge and technology.

Policy Recommendation 3:

The Ministry of Scientific and Technological development, Higher Education and Information Society should continue the process of establishing the E-CRIS system in the Republic of Srpska. The establishment of the E-CRIS system will greatly benefit both the Ministry in charge and scientific community and organizations, in order to enhance cooperation and promotion at both the national and international levels.

Policy Recommendation 4:

The Republic of Srpska should consider options for accessing large European research infrastructures. Supporting international engagement is a smart investment that provides the Republic of Srpska with access to a much greater range of high quality research infrastructures. These are infrastructures that the Republic of Srpska alone cannot build but is essential to the research needs of the nation. Benefits of access to large research infrastructures for researchers and research institutions from the Republic of Srpska are multiple:

- Capacity building through trainings and work with experienced researchers and research groups in international infrastructures would enable researchers to be able to transfer acquired knowledge to home country and other members of the research groups;
- Realization of a certain stage of the research process that is not possible in the country due to the lack of appropriate equipment;
- Strengthening of scientific excellence through cooperation with renowned research teams (participation in joint projects, integration of current initiatives, etc.);
- Perspective for young researchers - scholarships for doctors and postdoctoral students, participation in conferences, workshops.

Policy Recommendation 5:

The Republic of Srpska should provide stronger support to organizations for providing infrastructures support to innovation and research activities. It is particularly important to support opening up new business incubators, innovation centers, as well as to consider establishing Science and Technology Park.

Policy Recommendation 6:

Eventual changes in The Strategy of Scientific and Technological Development of the Republic of Srpska or in the text of new Strategy in future should include explicate positioning of the policy and decision makers toward priorities of the Republic of Srpska in the area of research and innovation. Eventually, among the precisely defined future priorities, particular attention should be given to position of the Research Infrastructures in the Republic of Srpska.

Policy Recommendation 7:

Eventual changes of Science Law in future should include separate article(s):

- directly related to establishment and use of the Research Infrastructures Roadmap in the Republic of Srpska;
- directly related to collection of necessary data, creation of data bases, data and information security and exchange, analysis and statistical treatment – all these in relation on establishment and use of the Research Infrastructures Roadmap in the Republic of Srpska;
- directly related to integration of the Research Infrastructures Roadmap in the Republic of Srpska into The European Strategy Forum on Research Infrastructures (ESFRI) Roadmap.

Policy Recommendation 8:

Further investments from public sources in national/regional level RIs in the Republic of Srpska should be clearly planned according to Research Infrastructures Roadmap in the Republic of Srpska. This investments should be prioritised as national capital investments with adequate support with human, institutional and financial resources and within Smart Specialisation Strategy (S3) for Republic of Srpska, following priorities identified within S3, In addition, future investments should be based on results of regular monitoring and evaluation of research and academic sector in the Republic of Srpska, with identified level of use of RIs and calculated cost / benefit analysis if investments and use of RIs.

APPENDIX 1: Draft Questionnaire

The Survey questionnaire contains several sets of questions that should serve as an input for the identification and evaluation of research infrastructure potential in the Republic of Srpska. The aim of this questionnaire is to map the research infrastructure in the Republic of Srpska as the first and indispensable step in the process of designing the Research infrastructure Roadmap.

According to the definition of European Commission, Research Infrastructures (RI) are facilities that provide resources and services for research communities to conduct research and foster innovation. They include:

- major scientific equipment or sets of instruments;
- collections, archives or scientific data;
- computing systems and communication networks;
- any other research and innovation infrastructure of a unique nature which is open to external users.

Research infrastructures can be centralised, that is, based in a single location. They can also be distributed or virtual, and can form mutually complementary wholes and networks.

Please note that the questionnaire should be filled in for one research Infrastructure and all data and descriptions should be given for the specific infrastructure that is the subject of the questionnaire.

1. General information

1.1. Data about respondent

Full name	
Name of your institution	
Institution’s address	
Your position in the institution	
Your telephone number	
Your email address	
Institution's website address	

1.2. General information about research infrastructure

Name of research infrastructure	
Parent organization	
Research Infrastructure’s address:	
Research infrastructure’s website	
Organisation / institution type of RI	
Thematic categorisation of RI by field of science*	
Type of RI**	
Main scientific domain	
Other scientific and technological domains served by RI	
Total number of employees	
Name and position of a person responsible on behalf of research infrastructure:	

Year of establishment of RI:		
Founder	Institution(s)	Ownership share (%)

*Thematic categorisation of RI types by field of science

Research infrastructures can also be grouped thematically. The ESFRI Roadmap 2016 sets the following 6 thematic areas:

1. energy;
2. environment;
3. health and food sciences;
4. physical sciences and engineering
5. social and cultural innovation;
6. e-infrastructures

E-Infrastructure for scientific research–provides computing services for the scientific community.

**Four types of RI are commonly distinguished:

1. single-site facilities;
2. distributed facilities;
3. mobile facilities;
4. virtual facilities

1.3. Description of Research Infrastructure. Provide description on main objectives, activities and services provided to users and researchers

2. Data on Human resources

2.1. Employees in research and development (R&D) activities with full and part-time job, status on 31.12.2018.

		Total employees engaged in R & D	Total (full-time) employees engaged in R & D	Total (part-time) employees engaged in R & D
01	Total number of employees (02+03+04+05+06)			
02	Researchers			
03	Professional associates			
04	Technical staff			
05	Management staff			
06	Other staff (support staff)			

3. Data on expenditures and funding

3.1. Total expenditures for research and development activities in 2018.

	Total expenditures for research and development activities			2018.	Planned in 2020.
	A			*Amount in BAM*	*Amount in BAM*
01	**Total expenditures for R&D (02+06+09)**				
02	Current costs	Labour costs and employee benefits	**Total (03+05)**		
03			gross earnings for all employees in R&D activities		
04			gross earnings of researchers		
05			Other labour costs		
06		Other current costs	**Total (07 + 08)**		
07			Material costs for R&D activities (raw materials, small equipment, energy)		
08			Other operating costs		
09	Investment costs		**Total (10+11+13+14+15)**		
10			for land and buildings		
11			for machinery and equipment		
12			for imported machinery and equipment		
13			for patents, licenses, studies and projects		
14			for software and hardware		
15			Other costs		

Instructions for completing Table 3.1.:

In Table 3.1 please fill in all expenditures that were spent in 2018 for the R&D activity, as well as those planned for 2020.
The table is designed so that expenditures are grouped into two main categories: one represents current costs and other investment costs. Within the category current costs, there is an additional division into sub-categories named "labour costs and employee benefits" and "other current costs". This categories and subcategories are further classified into the classes of costs.

3.2. Sources of financial resources spent for scientific research and research and development activities in 2018

	Funding sources			Amount in BAM
	A			*1*
01	**Funds spent on R&D by source - total (02 to 19)**			
02	Domestic funding sources (from the Republic of Srpska)	budget funds for R&D	from the Ministry of Scientific and Technological development, High Education and Information Society	
03			from other ministries	
04		funds for R&D from state funds, agencies and foundations		
05		funds for R&D from the local self-government bodies		
06		funds for R&D from business entities		
07		funds from non-profit organizations		
08		funds from patents, licenses, etc.		
09		funds from other own sources		
10	Funding sources from abroad	funds from the agreement on technological licenses		
11		funds from services for foreign purchasers		
12		funds from joint investment in R&D		
13		funds from foreign governments		
14		funds for R&D from universities and other institutions belonging to higher education		
15		funds from non-profit organizations		
16		funds from the European Commission		
17		funds from international organizations		
18		funds from donations		
19		Other		

Instructions for completing Table 3.2:
Table 3.2. should include funding sources for R&D activities. The amount in line 01 must be the same as in Table 3.1, row 1 (expenditures for R&D). Funding sources are divided into two categories: the first category refers to domestic funding sources, and the other to funding sources of financing from abroad.

4. Data on infrastructure and equipment

4.1. Estimated value of research equipment

Total estimated value of research capital equipment (in EUR):

– purchase value: EUR

– current value (amortization): EUR

4.2. List of capital equipment at purchase price higher than 20.000 eur.

	Equipment	**Purchase Price (EUR)**	**Year of Purchase**	**The source of funds for the purchase of equipment**	**Estimated Duration of Equipment (yrs.)**	**Estimated Number of Users**
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
…						
…						
n						

Instructions for completing Table 4.2:

In column: „Equipment“ please enter only those equipments which purchase value is above EUR 20,000.

In the column „The source of funds for the purchase of equipment“ please enter the funding source. If there are two or more sources, please indicate each one with the participation share:

a. Own funds

b. Resources of the Ministry of Scientific and Technological development, Higher Education and Information Society.

c. Resources of other ministries

d. Resources of public funds from the Republic of Srpska

e. Donation from the Republic of Srpska

f. Funds from international projects

g. Funds / donations from abroad

h. Other sources - specify which!

5. Information on Access, Collaboration and Impact

5.1. Information on access

Please provide short description of access policy and procedures for users of this research infrastructure. Please provide average number of users per year (national, European, international) and average rate of usage, where available

5.1.1. Information on users

Users of RI	**Please specify the name of Institution, department**
Research groups from the Republic of Srpska	
Research groups from the Federation of Bosnia and Herzegovina	
Research groups from Western Balkan Countries	
Research groups from EU	
Research groups from other countries	

5.2. Information on cooperation

List of international co-operation agreements and partnerships which exist for this RI, between different organisations in different European countries.

5.2.1. Integration into larger RIs

Is RI connected or integrated in larger RIs (international) or is it a member of any European RI? If yes, please specify the details: the name of larger RI, membership conditions: active, joined, membership fee, who finances it, is it a physical or virtual network…

5.3. Development of RIs in the form of projects

Have you been engaged in the development of RIs in the form of project? If yes, please specify the details: Title of the project, time duration, coordinator, link to web, national or international, partners...

5.4. Scientific impact

Main international structured co-operation research projects. Please highlighting the recognition of this Research Infrastructure at international level

5.5. Plan for the Future

Please describe in detail the plans for the next period, at least for 2-5 years: future investments, investments in equipment, employment, integration into RIs outside the Republic of Srpska…

APPENDIX 2: Guide for Survey

Detailed instructions for launching and conducting survey and further integration of RIs data

This guide comprises detailed instructions for, optional, web based or mail based launching questionnaire to the research community as well as gathering and necessary data processing and integration of all responses which should serve as main input for the selection and mapping of research infrastructures in the Republic of Srpska. The main aim of the survey questionnaire is mapping of the most important characteristics and development needs of the existing research infrastructures in the Republic of Srpska. The main information on research infrastructures of utmost importance for scientific, economic and social development should be recorded to the Register of research infrastructures as a first step towards developing Research Infrastructure Roadmap.

Key definitions:

Research Infrastructure -According to the definition of European Commission, Research Infrastructures (RI) are facilities that provide resources and services for research communities to conduct research and foster innovation. They include:

- major scientific equipment or sets of instruments;
- collections, archives or scientific data;
- computing systems and communication networks;
- any other research and innovation infrastructure of a unique nature which is open to external users.

Research infrastructures can be centralised, that is, based in a single location. They can also be distributed or virtual, and can form mutually complementary wholes and networks.

Unique Research Infrastructure– facilities, research centres, and integrated complexes which have highly specialized equipment and instrumentation, offer specialized scientific service, are without analogue on a national level, and/or are a partnership structure of infrastructures, identified by the European Strategy

Roadmap – a national strategic document, by which conditions are created to solve a specific problem, which outlines a vision for development in the science and innovation area. It contains specific objectives that must be achieved based on already implemented measures and instruments, provided in European documents and strategies to support the development of research infrastructure.

E-Infrastructure for scientific research –provides computing services for the scientific community.

The process of lunching survey and integration of infrastructure data consists of two steps:

1. **Lunching the survey**

The entire process of launching and conducting survey needs to be carried out in broad cooperation with the scientific and research community. Ministry for Scientific and Technological Development, Higher Education and Information Society is responsible for lunching and gathering the information from the survey. The

process of surveying need to be complemented with the integration of infrastructure data from other sources i.e. memberships in international research infrastructure organizations, research infrastructures on national level developed from domestic and EU funds etc.

2. Selection of infrastructures to be included in the Roadmap

After collecting the questionnaires, it is necessary to continue the process through the selection of the infrastructures that will be included in the final Roadmap. Ministry for Scientific and Technological Development, Higher Education and Information Society is responsible for this process as well as for mapping the domestic research infrastructure, planning cooperation with foreign research infrastructures, and monitoring scientific performance resulting from such cooperation. Where it is necessary, external stakeholders should also be involved in the process of selection of research infrastructures and planning of the Roadmap. In order to select research infrastructures to be included in the Roadmap, evaluation criteria need to be developed. Evaluation criteria should be defined depending on the current state of the Register so as to cover the most important research infrastructures in the Republic of Srpska.

The next section provides detailed instructions for completing survey questionnaire.

Detailed instructions for completing the survey

The survey questionnaire consists of 5 sections:

1. General information
2. Data on Human resources
3. Data on expenditures and funding
4. Data on infrastructure and equipment
5. Information on Access, Collaboration and Networks

The questionnaire should be filled in for one Research Infrastructure and all data and descriptions should be given for the specific infrastructure that is the subject of the questionnaire. In the text below, detailed instructions for completing the questionnaire are provided.

Instructions for completing Part 1: General information: Tables 1.1., 1.2. and 1.3:

In table 1.1., it should be filled in the main information about respondent (person who is filling in the questionnaire). The second table 1.2 refers to the general information about research infrastructure which is the main focus of the questionnaire.
In the field „Thematic categorisation of RI types by field of science“, research infrastructure should be grouped thematically. The ESFRI Roadmap 2016 sets the following 6 thematic areas:

1. energy;
2. environment;
3. health and food sciences;
4. physical sciences and engineering
5. social and cultural innovation;
6. e-infrastructures.

Research infrastructures should be linked to one of these defined categories.

In the next field „Type of RI“, there are four types of RI that are commonly distinguished:

1. single-site facilities;
2. distributed facilities;
3. mobile facilities;
4. virtual facilities.

Each research infrastructure should belong to one of these 4 types.

In the table 1.3. detailed description of research infrastructure should be provided. Description of main objectives, activities and services provided to users and researchers should be specified and explained.

Instructions for completing Table 2.1.:

Table 2.1. entitled: "Employees in research and development (IR) activities with full and part-time job, status on 31.12.2018." should include the total number of full-time and part-time employees engaged in R&D activities, , according to their research status.

Instructions for completing Table 3.1.:

In Table 3.1 it should be included all expenditures that were spent in 2018 for the R&D activity, as well as those planned for 2020. The table is designed so that expenditures are grouped into two main categories: current costs and investment costs. Within the category current costs, there is an additional division into sub-categories named "labour costs and employee benefits" and "other current costs". This categories and subcategories are further classified into the classes of costs.

The costs of R&D staff are the largest item in current costs. Other current costs include non-investments costs in materials and equipment required for R&D within one year.

Investment costs are the total annual real estate costs that are used for IR for the reporting unit. They are stated in full for the period in which they were incurred and do not contain an element of depreciation. They consist of: land and building costs, as well as the cost of instruments and equipment. Costs for land and buildings: land refers to that which is necessary for R&D (land for testing, for laboratories and pilot plants) and r buildings refers to those intended for some improvements, modifications and repairs. The proportion of these costs is difficult to determine and the estimation method should be used.

Instructions for completing Table 3.2:

Table 3.2. should include funding sources for R&D activities. The amount in line 01 must be the same as in Table 3.1, row 1 (total expenditures for R&D). Funding sources are divided into two categories: the first category refers to domestic funding sources, and the second to funding sources from abroad. Within two broad categories there are sub-categories of funding sources. It is necessary to indicate the funding sources so it is clear to which sub-category each source belongs to.

Instructions for completing Table 4.1:

In table 4.1., total estimated value of research equipment should be entered. It is important to enter two types of values: the purchase value and the current value which take into account the depreciation of equipment.

Instructions for completing Table 4.2:

In Table 4.2, all research equipment used for research purposes should be listed. Only capital equipment at purchase price higher than EUR 20,000 should be recorded.

In the column „The source of funds for the purchase of equipment” funding source should be entered. If there are two or more funding sources, each one should be indicated with the participation share. One of the following funding sources needs to be inserted:

- Own funds
- Resources of the Ministry of Scientific and Technological development, Higher Education and Information Society

- Resources of other ministries
- Resources of public funds from the Republic of Srpska
- Donation from the Republic of Srpska
- Funds from international projects
- Funds / donations from abroad
- Other sources - specify which!

Instructions for section 5: Information on Access, Collaboration and Impact

The part 5 consists of 5 open questions and it requires the Information on access, collaboration and impact of research infrastructure. Short description of access policy and procedures for users of research infrastructure, average number of users per year and average rate of usage, where available need to be provided. The information on access policy and the estimated number of users of research infrastructure is very important for determining the importance of the selected research infrastructure for the research community at the national and international level. Information on cooperation with other research institutions is important for determining the relevance of research infrastructure as well as the level of interaction with other actors in the research community. Of particular interest in this part is the data on membership in international or Pan-European Research infrastructures if there are any. The third question of section 5 applies to the engagement in Research projects which aimed at the establishment of Research infrastructures on a national or international level.

Recognition of research infrastructure and scientific impact on the international level should be emphasized within the last question of this questionnaire. This information is of particular interest for determining the relevance of research infrastructure on an international level. The last question refers to future plans of RI management. The respondent needs to briefly specify the future investment, employment policy, integration into wider RI, etc.

APPENDIX 3: LIST OF CAPITAL EQUIPMENT AT PURCHASE PRICE HIGHER THAN 40.000 BAM

R.br. NIO	R.br. RI	Naziv NIO - INSITITUTI	Mesto	Adresa	Website	ON1	ON2	ON3	ON4	ON5	ON6	T1	T2	T3	T4	Oprema	Nabavna vrijednost (KM)	Godina kupovine	Procijenjeno trajanje opreme (u godinama)	Procijenjen broj korisnika na godišnjem nivou	Politika pristupa i procedura za korisnike istraživačke infrastrukture
1	1	JU Poljoprivredni institut Republike Srpske	Banja Luka	Knjaza Miloša 17; Svetozara Cvjetojevića 7	www.poljoinstrs.org		1	1				1	1			Sistem elektroforeze na bazi tehnologije sa mikročipom	53,053.60 KM	01.07.2014.	10	300	
	2															Genetski analizator-sekvenator sa računarom	216,119.22 KM	01.07.2014.	10	100	
	3															Real Time PCR sa laptopom	75,000.00 KM	01.07.2014.	10	600	
	4															Liofilizator sa vakum pumpom	73,683.94 KM	01.07.2014.	10	100	
	5															GASNOMASNI HROMATOGRAF sa opremom	91,291.55 KM	27.03.2008.	20	700	
2	1	Institut za građevinarstvo "IG" d.o.o.	Banja Luka	Kralja Petra I Karađorđevića 92-98	www.institutig.com	1	1		1				1	1		Polumobilna laboratorija za monitoring kvaliteta vazduha.	160,000.00 KM	2009	15	10	Istraživač podnosi zahtjev za odobravanje pristupa istraživačkoj infrastrukturu Naučnom vijeću. Naučno vijeće odobrava pristup istraživačkoj infrastrukturi u skladu sa raspoloživim terminima.
	2															Polumobilna laboratorija za monitoring kvaliteta vazduha	160,000.00 KM	2009	15	10	
	3															Mobilna laboratorija za monitoring kvaliteta vazduha	143,600.00 KM	2018	15	10	
	4															Prenosni gasni analizatora za mjerenje emisija iz stacionarnih izvora	72,000.00 KM	2019	15	10	
	5															Kidalica za čelik	143,500.00 KM	2019	10	50	
	6															Fraste bušaća garnitura	295,406.07 KM	2014	10	10	
	7															Asfalt analizator	56,992.00 KM	2019	10	50	
	8															Roller compactor	82,669.00 KM	2019	10	50	
	9															Wheel tracking apparatus	74,536.00 KM	2019	10	50	
	10															Gyratory compactor	63,687.00 KM	2019	10	50	
3	1	JNU Institut za zaštitu i ekologiju Republike Srpske	Banja Luka	Vidovdanska 43 i 37	www.institutzei.net		1					1		1		Oprema za praćenje emisije zagađujućih materija	65,963.78 KM	2015	15	50	Na osnovu pisanog zahtjeva se odobrava korišćenje infrastrukture uz naknadu, jer je Institut samofinansirajuća ustanova.
	2															Prenosna oprema za ispitivanje kvaliteta vazduha životne i radne sredine, za osnovne i specifične parametre u vazduhu (Gasmet Dx 4030)	129,519.00 KM	2009	15	200	
	3															Mjerna stanica za kvalitet vazduha	116,923.53 KM	2013	15	300	
	4															Oprema za mjerenje elektromagnetnog zračenja	68,475.24 KM	2015	10	15 korisnika, preko 500 ispitivanja	
4	1	"IPIN" Institut	Bijeljina	Vidovdanska 48	www.ipininstitut.com		1					1				Geomehanička laboratorija	160,000.00 KM	2012			
	2															Geofizička laboratorija	345,000.00 KM	2012			
	3															Laboratorija za hidrogeologiju i remedijaciju podzemnih voda	235,000.00 KM	2007			

R.br. NIO	R.br. RI	Naziv NIO - INSITITUTI	Mesto	Adresa	Website	ON1	ON2	ON3	ON4	ON5	ON6	T1	T2	T3	T4	Oprema	Nabavna vrijednost (KM)	Godina kupovine	Procijenjeno trajanje opreme (u godinama)	Procijenjen broj korisnika na godišnjem nivou	Politika pristupa i procedura za korisnike istraživačke infrastrukture
	4															Mehanizacija i terenska oprema	1,200,000.00 KM	2011			
5	1	Oikos institut-Istraživački centar	Bijeljina	Neznanih junaka 9-11	www.oikosinstitut.org					1		1				OJS OPEN JOURNAL SYSTEMS PKP I PUBLIC KNOWLEDGE PROJECT	50,000.00 KM	2019	15	100	Istraživačka infrastruktura potpuno je transparentna i dostupna na sajtu Instituta www.oikosinstitut.org Sve ono što se radi, vidljivo je na sajtu u različitim menijima, a časopis je posebno predstavljen na sajtu www.economicsrs.com koji dalje reverišu indeks centri preko Scienda https://content.sciendo.com/view/journals/eoik/eoik-overview.xml?tab_body=overview sa kojim imamo ugovor o indeksiranju odnosno referisanju. Većina tekstova se objavljuje na Engleskom jeziku tako da je ista dostupna široj akademskoj zajednici.
6	1	JU "Andrićev institut"	Višegrad	Trg Nikole Tesle bb, Andrićgrad, 73240 Višegrad	http://www.andricevinstitut.org/					1	1	1			1	Biblioteka instituta					Pristup Biblioteci instituta: Pristup Biblioteci Andrićevog instituta omogućen je svim naučnoistraživačkim radnicima, studentima i drugim zainteresovanim korisnicima čija je oblast interesovanja podudarna sa oblastima kojima se sam Institut bavi. Korisnici mogu da neposredno pristupe biblioteci u prostorijama Instituta ili da se sa njenim fondom upoznaju putem elekstronskog kataloga u okviru baze podataka COBISS.RS. -Pristup digitalnom arhivu Ive Andrića uz odobrenje Zadužbine Ivo Andrić; -Uključivanje u programe seminara i Ljetne škole „Akademija Andrić": Održavanju seminara i letnjih škola prethodi objavljivanje javnog poziva za učešće na sajtu Andrićevog instituta. Pravo prijavljivanja imaju naučno-istraživački radnici i studenti studija svih nivoa. Nakon izvršene selekcije prijavljenih kandidata, prihvaćeni učesnici obavještavaju se putem elektronske pošte. -Učešće na konferencijama i u izdavačkim planovima: - obavještavanje preko sajta i pozivima, - recenziranje radova od strane nezavisnih recenzenata, - odlučivanje Uređivačkog odbora.
7	1	Veterinarski institut RS "Dr Vaso Butozan"	Banja Luka	Branka Radicevica 18	www.virs-vb.com			1				1				Autoklav-MMM medical technology group; l.B.2711	234,000.00 KM	2014	15		Veterinarski institut poslije kao otvorena, javnodostupna institucija svima kojima je potrebna usluga koju pruza ova institucija. Korisnici usluga VI su proizvodjaci, farmer, subjekti koji posluju sa hranom, inspekcija, drzavne i privatne institucije, gradjani, odnosno svi kojima je usluga potrebna. Sve usluge su navedene u katalogu usluga koju zainteresovane strane mogu da vide, da izaberu i da po vazecem cjenovniku zahtijevaju uslugu ili da sklope ugovor na odredjeni period po kojem se definisu specificni zahtevi i obaveze ugovornih strana.
	2															Masina za razlijevanje mikrobioloskih podloga-Biotool: ser.br.: 950.1400.124	49,995.00 KM	2012	10		
	3															Masina za pranje laboratorijskog sudja; Ken: ser.br. 5850112	90,000.00 KM	2012	7		
	4															Bactoscan 150X (FOSS Danska) IB 1156	528,496.21 KM	2004	25		
	5															Bactoscan 100X (FOSS Danska) IB 1004	321,412.18 KM	2004	25		
	6															Combyfoss 200X (FOSS Danska) IB 1157	490,948.76 KM	2004	25		
	7															Combyfoss 200X (FOSS Danska) IB 1005	490,527.64 KM	2004	25		
	8															Tip (model): UPLC/GC MS/MS sa vakuum pumpom za LC/-MS/MS i Generator azota Proizvodjac: HEVO TQ MS; 749-9365 R005; NM32LA Oznaka: Waters, Agilent Technologies; Peak Scientific IB: IB 2513	958,298.00 KM	2012	25		
	9															Tip (model): Gasni hromatograf (GC) Proizvodjac: SCION 456-GC Oznaka: Bruker IB: SB-GC1404F233	55,000.00 KM	2014	10		

R.br. NIO	R.br. RI	Naziv NIO - INSITITUTI	Mesto	Adresa	Website	ON1	ON2	ON3	ON4	ON5	ON6	T1	T2	T3	T4	Oprema	Nabavna vrijednost (KM)	Godina kupovine	Procijenjeno trajanje opreme (u godinama)	Procijenjen broj korisnika na godišnjem nivou	Politika pristupa i procedura za korisnike istraživačke infrastrukture
	10															Tip (model): AAS-Grafitna tehnika Proizvodjac: AA 2402 Oznaka: Agilent Technologies IB: IB2544	51,047.20 KM	2012	10		
	11															Tip (model): FOODSCAN Proizvodjac: FOSS, Danska Oznaka: FOSS, Danska, 78800 IB: IB2694	136,139.47 KM	2013	20		
	12															Tip (model): Tecni hromatograf sa UV/VIS detektorom Proizvodjac: InfinityLab LCSeries 1260 Infenty II Quaternery System Oznaka: Agilent Technologies IB: IB2983	60,216.84 KM	2018	15		
	13															Invertni mikroskop, Axio Obesrver. A 1, IB. 2790, Carl Zeiss	62,860.38 KM	2014	20		
	14															Stratagen Mx 3005P, Agilent Technologies, 2133	64,005.77 KM	2009	20		
	15															Olimpys Bx 40- IB 1292	44,925.96 KM	1996			
	16															Autoklav oko 205 l 161379	59,275.20 KM	2002	20		
	17															Autoklav 205 l 161444	54,037.70 KM	2002	20		
	18															Automatski ekstraktor IB 2321	51,908.49 KM	2010	20		
	19															Sistem za pripremu pod - IB 2541	43,000.00 KM	2012	10		
R.br. NIO	**R.br. RI**	**Naziv NIO - FAKULTETI**	**Mesto**	**Adresa**	**Website**	**ON1**	**ON2**	**ON3**	**ON4**	**ON5**	**ON6**	**T1**	**T2**	**T3**	**T4**	**Oprema**	**Nabavna vrijednost (KM)**	**Godina kupovine**	**Procijenjeno trajanje opreme (u godinama)**	**Procijenjen broj korisnika na godišnjem nivou**	**Politika pristupa i procedura za korisnike istraživačke infrastrukture**
1	1	Arhitektonsko-građevinsko-geodetski fakultet, Univerzitet u banja Luci	Banja Luka	Vojvode Stepe Stepanovića 77/3; Bulevar vojvode Petra Bojovića bb	http://www.aggf.unibl.org				1			1	1	1		Nemamo iznad 40000KM					Pravo pristupa i primjenu procedura imaju svi zaposleni Arhitektonsko-građevinsko-geodetskog fakulteta, ali i ostalih OJ Univerziteta u Banjoj Luci, kao i fizička i pravna lica, koja imaju sklopljene ugovore o poslovno-tehničkoj I naučno-istraživačkoj saradnji.
2	1	Univerzitet u Banjoj Luci, Elektrotehnički fakultet	Banja Luka	Patre 5, Banja Luka	http://etf.unibl.org				1			1				Sistem za učenje MULTI FMS	619221.65	2013.	5	10	Pristup istraživačkoj infrastrukturi je slobodan za nastavnike, saradnike i studente Fakulteta.
	2															Sistem za instrumente i kontrolu	46339.48	2013.	5	10	Pristup infrastrukturi se može odobriti nastavnicima, saradnicima i studentima drugih organizacionih jedinica Univerziteta u Banjoj Luci. Korisnici iz ove grupe podnose zahtjev dekanu Fakulteta koji odobrava korištenje infrastrukture na ad hoc osnovi. Kroz naučnoistraživačke projekte, projekte bilateralne saradnje i programe razmjene naučnoistraživačkog osoblja i studenata pristup infrastrukturi se može omogućiti i osoblju i studentima sa partnerskih ustanova. Korisnicima iz ove grupe se odobrava korištenje infrastrukture za vrijeme trajanja projekta ili razmjene pod uslovom da postoji potpisan ugovor o saradnji kroz projekat ili program razmjene osoblja. Kroz programe cjeloživotnog učenja korištenje infrastrukture se može omogućiti polaznicima obuka, prezentacija i seminara. Korištenje infrastrukture se omogućava za vrijeme trajanja obuke, prezentacije ili seminara pod uslovima definisanim konkretnim programom obuke, prezentacije ili seminara.
	3															Analizator spektra	52032.9	2013.	5	10	
	4															Analizator mreža	56588.03	2013.	5	10	
	5															Analizator spektra	77685.57	2013.	5	10	
	6															Analizator spektra	41674.83	2013.	5	10	
	7															3D skener Steinbichler Comet L3D 5M	172914.93	2013.	5	10	
	8															Analizator signala	196529.62	2013.	5	10	
	9															Generator vektorskog signala	109784.65	2013.	5	10	
	10															Oprema za digitalno emitovanje	49920	2018.	5	10	
	11															Radne stanice sa grafičkim procesorima opšte namjene (GPGPU)	89592.93	2018.	5	10	
	12															Bespilotna letjelica Aibotix X6	93378.17	2015.	5	10	

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3	1	Institut za genetičke resurse, Univerzitet u Banja Luci	Banja Luka	Univerzitetski grad, Bulevar v. Petra Bojovića 1a	http://igr.unibl.org/		1	1				1		1		Nemamo iznad 40000KM					U skladu sa Pravilnikom o radu laboratorija Instituta za genetičke resurse Univerziteta u Banjoj Luci, definisane su obaveze i pravila koja moraju da se poštuju od strane izstraživača koji koriste istraživačku infrastrukturu.
4	1	Univerzitet u Banjoj Luci, Mašinski fakultet	Banja Luka	Stepe Stepanovića 71	http://mf.unibl.org/				1			1				**Oprema razvrstana po laboratorijama**					Korisnici istraživačke infrastruture ostvaruju kontakt preko Centra za podršku privredi Mašinskog fakulteta, Centra za akreditovane laboratorije i katedri fakulteta. Centri su hijerarhijski uređeni pi više niovoa organizacije i upravljanja u skladu sa pravilnicima o unutrašnjoj organizaciji, kojim je definisan način saradnje I poslovanja sa korisnicima.
	2	MAŠINSKI FAKULTET - B0-07 LABORATORIJA ZA HIDRAULIKU I PNEUMATIKU														SET EKSPERIMENTALNIH HIDRAULIČKIH KOMPONENTI (2 kompleta)	45 000	2013	15	20	
	3															HIDRAULIČNI AGREGAT SA PUMPOM	41 000	2013	15	30	
	4															MOBILNA RADNA STANICA ZA PNUMATIKU		2013	15	40	
	5															ELEMENTI PROPORCIONALNE PNEUMATIKE (2 kompleta)	42 000	2013	15	10	
	6															HIDRAULIČNI AGREGAT	51 000	2018	15	10	
	7	MAŠINSKI FAKULTET - B0-09 LABORATORIJA ZA MEHATRONIKU I ROBOTIKU														ROBOT MOTOMAN HP6	70.000,00	2007	15	10	
	8															POZICIONER	40.000,00	2008	15	15	
	9															LABORATORIJA ZA MEHATRONIKU-FLEKSIBILNI SISTEM	1.100.000,00	2013	1	30	
	10															MJERNA OPREMA (multimetar digitalni VC130, endoskop rucni BS-150XSD, digitalni osciloskop VDO 2052, digitalni mjerac sile 5000N FH 5K, pretrazivac greda metala I700, multimetar digitalni VC840, 4-kanalni signal rekorder, frekvenci-metar fluke 1953A, generator funkcija 8116A, RLC metar 4274A, Kvarcni Termomet. 2804A, modul za vibrator RSA30, analizator spektra, osciloskop 1703A, itd.)	41 000 KM	2010	15	40	
	11	MAŠINSKI FAKULTET - B0-12 LABORATORIJA ZA MOTORE I VOZILA														UREDJAJ ZA ISPITIVANJE MOTORA	40000	1990	15	30	
	12															DINAMOMETAR EC 240 kW (kočnica za ispit. snage)	140000	2013	15	40	
	13															OPREMA ZA INDICIRANJE SA 8 KANALA	80000	2013	5	10	
	14	MAŠINSKI FAKULTET - A0-03 LABORATORIJA ZA CAD I PLM SISTEME														NC GLODALICA WF-800	240 000	2010	15	40	
	15															SKENER 3D SA ZGLOBNOM RUKOM	180 000	2013	15	10	
	16															ROBOT MOTOMAN DX-100	70000	2015	15	10	
	17	MAŠINSKI FAKULTET - B0-11 LABORATORIJA ZA TEHNOLOGIJU PLASTIČNOSTI														PRINTER STARI 3D	45 000	2005	10	10	
	18															PRINTER NOVI 3D	62 000	2013	15	10	
	19															SISTEM ZA VAKUMSKO LIVENJE MK-MINI	68 000	2013	5	10	

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	20	MAŠINSKI FAKULTET - A0-10 LABORATORIJA ZA REZANJE														MAŠINA EMCO PC TURN	55000	2005	15	150	
	21															BRUSILICA GA4530 720W-115MM	50 000	1990	5	10	
	22															UNIVERZALNA GLODALICA TOS OLO MOUC	70 000	1990	5	10	
	23															UNIVERZALNI STRUG POTISJE	60000	1990	5	10	
	24															UNIVERZALNA GLODALICA ALG 100	48 000	1990	5	10	
	25															VERTIKALNI OBRADNI CENTAR EMCO	180 000	2013	15	100	
	26	MAŠINSKI FAKULTET - B0-10 LABORATORIJA ZA ZAVARIVANJE														UREĐAJ ZA REZANJE PLAZMOM	42000	2013	15	10	
	27															AUTOMATSKI UREZIVAČ ŽLIJEBA NA EPRUVETI	32237.62	2018	20	10	
	28	MAŠINSKI FAKULTET - B0-03 LABORATORIJA ZA MATERIJALE														KIDALICA UNIVERZALNA	20000	2013	15	10	
	29															UREĐAJ ZA ISPITIVANJE ŽILAVOSTI UDARNIM KLATNOM	165 000	2013	15	10	
6	1	Institut za reprodukciju domaćih životinja, Poljoprivredni fakultet	Banja Luka	Bulevar vojvode Petra Bojovića 1A	www.agro.unibl.org			1				1									Istraživačka infrastruktura se koristi za naučno-istraživačke i obrazovne svrhe. Oprema je dostupna širem krugu korisnika uz prethodno odobrenje od strane rukovodstva Instituta. Raspolaganje opremom podrazumijeva potpunu odogovornost svakog korisnika u pogledu pravilnog čuvanja i upotrebe materijala i uređaja.
7	1	Institut za ekonomiku poljoprivrede i ruralni razvoj, Poljoprivredni fakultet	Banja Luka	Bulevar vojvode Petra Bojovića 1A	www.agro.unibl.org			1				1				Nemaju opremu vrednosti veće od 40.000 KM					Raspoloživa istraživačka infrastruktura se koristi u naučno-istraživačke i obrazovne svrhe. Jedan dio informaitčke infrastrukture je perosnalno zadužen, a drugi dio je dostupan širem krugu korisnika uz prethodnu autorizaciju. Svaki korisnik je odgovoran za očuvanje i ispravnu upotrebu opreme. Uprava organizacione jednice odobrava i odgovorna je za održavanje, nadogradnju i konfigurisanje informatičke opreme.
8	1	Institut za agroekologiju i zemljište, Poljoprivredni fakultet	Banja Luka	Bulevar vojvode Petra Bojovića 1A	www.agro.unibl.org		1	1				1				HPLC Agilent sa dodatnom opremom	300000	2015	10	15	Sva raspoloživa istraživačka infrastruktura se koristi u naučno-istraživačke i obrazovne svrhe. Laboratorijska i ostala materijalno tehnička oprema je personalno zadužena. Svaki korisnik je odgovoran za čuvanje i ispravnu upotrebu opreme. Direktor instituta i šefovi laboratorija odobravaju načine i upotrebu opreme u skladu sa pravilnikom dobre laboratorijske prakse i internim pravilnicima rada instituta.
9	1	Institut za hortikulturu, Poljoprivredni fakultet	Banja Luka	Bulevar vojvode Petra Bojovića 1A	www.agro.unibl.org			1				1				Staklenik	150.061,15	2005	20	40	Politika pristupa istraživačkoj infrastrukturi bazirana je na aktima koji regulišu rad (Pravilnik o radu instituta, Pravilnik o radu laboratorije) kao i dodatnim aktima, proizašlih iz procesa akreditacije određenih laboratorijskih metoda u okviru istraživačke infrastrukture. Istraživačke grupe koje žele da koriste insfrastrukturu, potrebno je da dostave opis aktivnosti koje žele da realizuju, vremensku dinamiku, način obezbeđivanja sredstava i druge informacije, koje će omogućiti usaglašavanje sa redovnim aktivnostima u istraživačkoj infrastrukturi i na taj način obezbediti nesmetanu realizaciju željenih aktivnosti.
	2															Mikroskop Nikon Eclipse Ni-E	165,948.26	2013	20	30	
	3															Invertni mikroskop Nikon Eclipse Ti-U sa Normanski optikom	134,132.78	2013	20	30	
10	1	Institut za ratarstvo i poljoprivrednu mehanizaciju, Poljoprivredni fakultet	Banja Luka	Bulevar vojvode Petra Bojovića 1A	www.agro.unibl.org			1				1									
11	1	Institut za Stočarstvo, Poljoprivredni fakultet	Banja Luka	Bulevar vojvode Petra Bojovića 1A	www.agro.unibl.org			1				1									Postojeća infrastruktura je namjenjena za naučno-istraživački rad. Infrastruktura je kupljena i korišćena u okviru domaćih i međunarodnih projekata. Laboratorije koje postoje na Institutu za stoačarstvo Poljoprivrednog fakulteta imaju proceduru po kojoj se

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																					koristi oprema. Infrastruktura je dostupna za naučno - istraživački rad sa cilje unapređenja naučne baze Fakulteta i unapređenje stočarstva u Republici Srpskoj.
12	1	Pravni fakultet Univerziteta u Banjoj Luci	Banja Luka	Bulevar vojvode Stepe Stepanovića 77	www.pf.unibl.org					1		1									Pravni fakultet omogućuje pristup korisnicima istraživačke infrastrukture u skladu sa modelima utvrđenim Evropskom poveljom za pristup istraživačkim infrastrukturama (zasnovan na izvrsnosti, usmjeren na tržište i široki pristup), u zavisnosti od prirode korisnika i karaktera usluga koje se pružaju. Preduzimaju se koraci kako bi se unaprijedila vidljivost i široki pristup naučnim podacima i uslugama Fakulteta.
13	1	Prirodno-matematički fakultet	Banja Luka	Mladena Stojanovića 2	www.pmf.unibl.org	1	1	1	1	1	1	1	1	1		Planetarijum	70 000	2019	5 godina	10 000	Sva oprema i cjelokupna istraživačka infrastruktura je na raspolaganju zaposlenim i studentima u skladu sa internim pravilima. Nadležni rukovodioci odobravaju konkretne eksperimente i nadgledaju korištenje laboratorija i pojedinih sredstava. Ukoliko postoji mogućnost oprema i infrastruktura su na raspolaganju i ostalim istraživačima iz Republike Srpske.
	2															Softver za GIS	40 000	2014	10 godina	100	
	3															Oprema za GIS laboratoriju	50 000	2016	10 godina	100	
	4															Savremeni mikroskopi	200 000	2015	10 godina	100	
	5															Gasno-maseni hromatograf (GCM)	70 000	2014	10 godina	100	
14	1	Rudarski fakultet Prijedor	Prijedor	Save Kovačevića bb	www.rf.unibl.org		1		1			1		1		Laboratorijska flotaciona mašina "Laarman	47 894,37	2013	12	45	Oprema se koristi prema dogovorenim uslovima-vremenskim /terminskim i finansijskim.
	2															Čeljusna drobilica "Metso morse"	78 980,33	2013	15	45	
	3															Laboratorijski mlin sa kuglama, mikronizirajući, "Matest"	54 735,86	2013	15	45	
15	1	Šumarski fakultet	Banja Luka	Bulevar vojvode Stepe Stepanovića 75 A	www.sf.unibl.org		1		1			1		1		U 2018. godini nismo nabavljali opremu preko projekta čija je vrijednost veća od 40.000KM					Korisnici istraživačke infrastrukture Šumarskog fakulteta Univerziteta u Banjoj Luci, su predstavnici privrednog sektora odnosno JPŠ „Šume Republike Srpske" sa svojim organizacionim dijelovima (šumska gazdinstva, centar za sjemensko-rasadničarsku proizvodnju Doboj, Centar za krš Trebinje). Pored toga, korisnici su i privredna društva, privatni rasadnici, te lokalne samouprave čiji je pristup opremi, resursima i uslugama definisan Sporazumima i/Ili Ugovorima potpisanim između fakulteta i druge strane. Navedeni dokumenti propisuju mogućnost i uslove pristupa istraživačkoj infrastrukturi u zavisnosti od obima ugovorenog posla, zahtjevima za korištenjem instraživačke infrastrukture, te trajanja aktivnosti u okviru ugovorene saradnje. Osim toga, Šumarski fakultet svakodnevnom promocijom i kontaktima sa privredom, nudi svoje usluge i resurse čime pokazuje jedan proaktivan pristup u cilju unapređenja saradnje sa postojećim ali i potencijalnim korisnicima istraživačke infrastrukture.
16	1	Tehnološki fakultet, Univerzitet u Banja Luci	Banja Luka	Stepe Stepanovića 73, 78 000 Banja Luka	www.tf.unibl.org				1			1				ICP OES spektrofotometar OPTIMA 8000	160 000	2014	15	50	Korisnici istraživačke infrastrukture sve podatke o uslugama i aktivnostima mogu naći na web stranici Tehnološkog fakulteta. Procedure za korisnike usluga istraživačke strukture su opisane internim dokumentima.
	2															UV i VIS spektrofotometar Lambda 25	60 000	2014	20	80	
	3															Stanica za kontrolu kvaliteta vazduha	55 000	2014	15	5	
	4															Gasni hromatograf Clarus	65 000	2014	15	10	
	5															FTIR spektrofometar	60 000	2014	15	50	
	6															Kalorimetar	70 000	2014	15	40	
17	1	Medicinski fakultet, Univerzitet u Istočnom Sarajevu	Foča	Studentska 5	mef.ues.rs.ba			1				1				Frezer	42302.98	2012	5 godina	50	Centrom rukovodi Akademik Miodrag Čolić, koji odobrava upotrebu I pristup infrastrukturi. Istraživačka infrastruktura je dostupna i nastavnicima i studentima. Centrom rukovodi Akademik Miodrag Čolić. Studenti se uključuju u istraživanja I svake godine više studenata radi sa nastavnicima istraživačima.
	2															Olympus biokularni mikroskop	57544.49	2012	5 godina	50	
	3															Spektrofotometar	131248.96	2012	5 godina	50	
	4															Rieder	44401.5	2018	5 godina	30	Najveće upotreba infrastrukture je za potrebe izrade

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	5															Fluocitometar	80000	2017	5 godina	30	doktorskih disertacija i nuačnih projekata, bilo domaćih, bilo međunarodnih.
18	1	Tehnološki fakultet Zvornik, Univerzitet u Istočnom Sarajevu	Zvornik	Karakaj 34/A 75 400 Zvornik	www.tfzv.ues.rs.ba			1	1			1				Višenamenski emisioni spektrometar ICP-EOS	179470.87	2015	8		Na osnovu sklapanja sporazuma o saradnji, zaposleni na fakultetu pripremaju procedure i pristup istraživačkoj infrastrukturi pri čemu odrađuju dogovorene poslove.
	2															Gasni hromatograf sa ECD i FID detektorom	89735.44	2015	8		
	3															HPLC sistem sa UV-VIS i FLD detektorima	149558.41	2015	8		
	4															Gasni hromatograf sa masenim detektorom	149558.41	2015	8		
	5															Kapilarna elektroforeza sa masenim detektorom	259118.77	2015	8		
	6															FTIR spektrometar	44868.7	2015	8		
	7															Farinograf	107682.13	2015	8		
	8															Ekstenzograf	100549.22	2015	8		
	9															Amilograf	62815.39	2015	8		
	10															Uređaj za analizu teksture hrane	80531.3	2015	8		
	11															Stacionarni spektrofotometar CM-5	62123.03	2015	8		
	12															Transmisioni svetlosni mikroskop	276793.11	2012	8		
	13															Injektor	42022.96	2015	8		
	14															Punilica	70421.61	2015	8		
	15															Rezač zaleđenog mesa	48267.93	2015	8		
	16															Sistem za masažu mesa-tambler	46670.02	2015	8		
	17															Komora za barenje i dimljenje	126769.08	2015	8		
	18															Komora za zrenje	42552.99	2015	8		
	19															Laminator	102697.02	2012	8		
	20															Modularna peć	80251.24	2012	8		
	21															Depozitor za proizvodnju keksa	84294.9	2012	8		
	22															Automatski laboratorijski reaktor	230091.66	2015	8		
	23															Ekstrakciona jedinica tečno-tečno	147258.35	2015	8		
	24															Apsorpciona kolna za sistem gas-tečnost	87435.38	2015	8		
	25															Sprej drajer	79381.27	2015	8		
	26															Laserski analizator raspodele veličine čestica	96637.56	2015	8		
	27															Izmjenjivač toplote	123559.56	2015	8		
	28															Stacionarna komora za ciklično ispitivanje	57522.92	2015	8		
19	1	Fotonaponska elektrana - Elektrotehnički fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.etf.ues.rs.ba	1						1									Pristup fotonaponskoj elektrani je moguć svim nastavnicima I istraživačima Univerziteta u Istočnom Sarajevu, uz prisustvo saradnika/laboranta koji je zadužen za ispravno funkcionisanje elektrane.
20	1	Laboratorija za elektromagnetiku - Elektrotehnički fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.etf.ues.rs.ba				1			1									Pristup Laboratoriji za elektromagnetiku je moguć svim nastavnicima I istraživačima Univerziteta u Istočnom Sarajevu, uz prisustvo saradnika/laboranta koji je zadužen za ispravno funkcionisanje laboratorijske opreme.
21	1	Laboratorija za embedded sisteme - Elektrotehnički fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.etf.ues.rs.ba				1			1				ProtoMat S63 - glodalica za izradu štampanih pločica sa vakumskim stolom i dodatnim materijalima	72356.71	2012	20	20	Navedena oprema je dostupna studentima Elektrotehničkog fakulteta u svrhu izvođenja praktičnih projekata. Studenti imaju mogućnost izrade štampanih ploća, polu-automatsko postavljanje komponetni na štampane ploće, lemljene i sastavljanje štampanih ploća. Svi studenti kojima se odobri praktična realizacija

R.br. NIO	R.br. RI	Naziv NIO - INSITITUTI	Mesto	Adresa	Website	ON1	ON2	ON3	ON4	ON5	ON6	T1	T2	T3	T4	Oprema	Nabavna vrijednost (KM)	Godina kupovine	Procijenjeno trajanje opreme (u godinama)	Procijenjen broj korisnika na godišnjem nivou	Politika pristupa i procedura za korisnike istraživačke infrastrukture
																					projekta, uz prisustvo predmetnog profesora ili asistenta može da koristi resurse istraživačke infrastrukture odnosno laboratorije.
22	1	Laboratorija za električne mašine i elektromotorne pogone - Elektrotehnički fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.etf.ues.rs.ba				1			1				Laboratorijski sto za ispitivanje električnih mašina, sa izvorima naizmjeničnog I jednosmjernog napona	59999	2012	5	20	Pristup opremi se izvodi u okviru redovne nastave, pisanja studentskih projekata i završnih radova na prvom i drugom ciklusu studija. U okviru ostalih naučno-istraživačkih procesa pristup se izvodi uz prisustvo zaduženih radnika Elektrotehničkog fakulteta, Univerziteta u Istočnom Sarajevu. Pristup opremi imaju i ostali istraživači uz redovno odobrenje Elektrotehničkog fakulteta.
23	1	Laboratorija za mehatroniku i automatiku - Elektrotehnički fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.etf.ues.rs.ba				1			1				Robotska stanica	400.000,00	2012	20	15	
	2															AS-RS stanica	80,000.00	2012	20	10	
	3															Pokretna traka	80,000.00	2012	20	20	
	4															Mill 105, računarom upravljanja glodarica	400,000.00	2012	20	5	
	5															TURN 105, računarom upravljan strug	400,000.00	2012	20	5	
	6															Robotski sistem sa robotom MITSUBISHI RV-3SDB	460,000.00	2012	20	5	
	7															MPS PA kompaktna stnica	108,000.00	2012	20	5	
24	1	Laboratorija za programabilne logičke kontrolere - Elektrotehnički fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.etf.ues.rs.ba				1			1				Eksperimentalni simulator SIMATIC za el.	42000	2012	20	20	Laboratorija otvorene za sve student na I I II ciklusu studija i za polaznike kurseva
	2															Pneumatski uređaj za savijanje	75000	2012	20	20	
	3															Tehnološka stanica	56000	2012	20	20	
25	1	Laboratorija za telekomunikacije - Elektrotehnički fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.etf.ues.rs.ba				1			1				Radio oprema	44886,28	2012	10	50	Korisnici istraživačke infrastrukture su nastavno osoblje, studenti treće i četvrte godine osnovnih akademskih studija elektrotehničkog fakulteta. Na osnovu priručnika proizvođača opreme i u skladu sa silabusom nastavnih predmeta iz oblasti telekomunikacija realizovan je praktikum za laboratorijske vježbe iz telekomunikacija.
	2															Ostala komunikaciona oprema	330221.64	2012	10	50	
26	1	Laboratorija za visoki napon - Elektrotehnički fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.etf.ues.rs.ba	1						1				Udarni naponski generator maksimalnog izlaznog napona 500 kV, energije 4,4 kWs	237 790	1975	55	10	Pristup istraživačkoj infrastrukturi mogu da imaju svi potencijalni partneri, pod komercijalnim uslovima. Izuzetno, pristup infrastrukturi se može imati i u okviru određenih naučno-istraživačkih projekata, ili eventualno po osnovu saradnje u oblasti edukacije. Procedure za pristup su definisane i strogo sa poštuju, zbog sigurnosnih aspekata koji moraju biti zadovoljeni prilikom ove vrste ispitivanja. Profesionalna ispitivanja provodi doc. dr Mladen Banjanin, zbog poštovanja sigurnosnih propisa i zaštite opreme od eventualnih kvarova.
27	1	Laboratorija za CNC mašine alatke i CIM sisteme - Mašinski fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.maf.ues.rs.ba				1			1				Obradni centar EMCO Concept Mill 450	322.100,09	2012	10		Laboratorija otvorena za sve studente na I i II ciklusu studija i za polaznike kurseva, nastavnike i asistente. Takođe je otvorena za korisnike sa drugih organizacionih jedinica Univerziteta u Istočnom Sarajevu kao i za korisnike sa drugih univerziteta.
	2															CNC strug EMCO Concept Turn 450	267,965.43	2012	10		
	3															Obradni centar EMCO Concept Mill 250	217,703.32	2012	10		

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28	1	Laboratorija za zavarivanje i ispitivanje materijala - Mašinski fakultet, Univerzitet u Istočnom Sarajevu	Istočno Sarajevo	Vuka Karadžića 30, 71123 Istočno Sarajevo	www.maf.ues.rs.ba				1			1				1. Industrijska AC/AD mašina za TIG i REL postupak zavarivanje-tip MagicWave Comfort 3000 – 2 radna mjesta	1-4 ukupno: 144.563,22	2016	10		Laboratorija otvorena za sve studente na I i II ciklusu studija i za polaznike kurseva, nastavnike i asistente. Takođe je otvorena za korisnike sa drugih organizacionih jedinica Univerziteta u Istočnom Sarajevu, kao i za korisnike sa drugih univerziteta.
	2															2. Industrijska mašina za MIG i MAG postupak zavarivanja-tip TransPuls 3200 Synergic – 2 radna mjesta		2016	10		
	3															3. Prenosiva MMA & TIG mašina za zavarivanje – tip TransPocket 1500 TIG – 1 radno mjesto		2016	10		
	4															4. Uređaj za sječenje plazmom – tip PowerMax 45 – 1 radno mjesto		2016	10		
	5															5. Univerzalna test mašina (kidalica) Schimatzu – osnovno sredstvo, koje se vodi na Rektorat UIS	5. 65.800,00	2015	10		
29	1	Institut za naučnoistraživački rad, Nezavisni univerzitet Banja Luka	Banja Luka	Veljka Mlađenovića 12e	www.nubl.org		1			1	1	1			1						Podnošenje idejnog projekta, odobravanje projekta i formiranje tima, izrada projekta, podnošenje zahtjeva za finansiranje i odobrenje, rad na projektu

R.br. NIO	R.br. RI	Naziv specifične infrastrukture	Mesto	Adresa	Website	ON1	ON2	ON3	ON4	ON5	ON6	T1	T2	T3	T4	Oprema	Nabavna vrijednost (KM)	Godina kupovine	Procijenjeno trajanje opreme (u godinama)	Procijenjen broj korisnika na godišnjem nivou	Politika pristupa i procedura za korisnike istraživačke infrastrukture
1	1	Akademska i istraživačka mreža -SARNET	Banja Luka	Patre 5, 78000 Banja Luka	usarnet.net						1		1								Osnovni korisnici Akademske i istraživačke mreže Republike Srpske su visokoškolske ustanove upisane u Registar visokoškolskih ustanova koji vodi Ministarstvo prosvjete i kulture Republike Srpske i naučno-istraživačke ustanove upisane u Registar naučno-istraživačkih ustanova koji vodi Ministarstvo nauke i tehnologije Republike Srpske. Prava i obaveze korisnika su uređena Pravilnikom o korišćenju usluga SARNETa.