



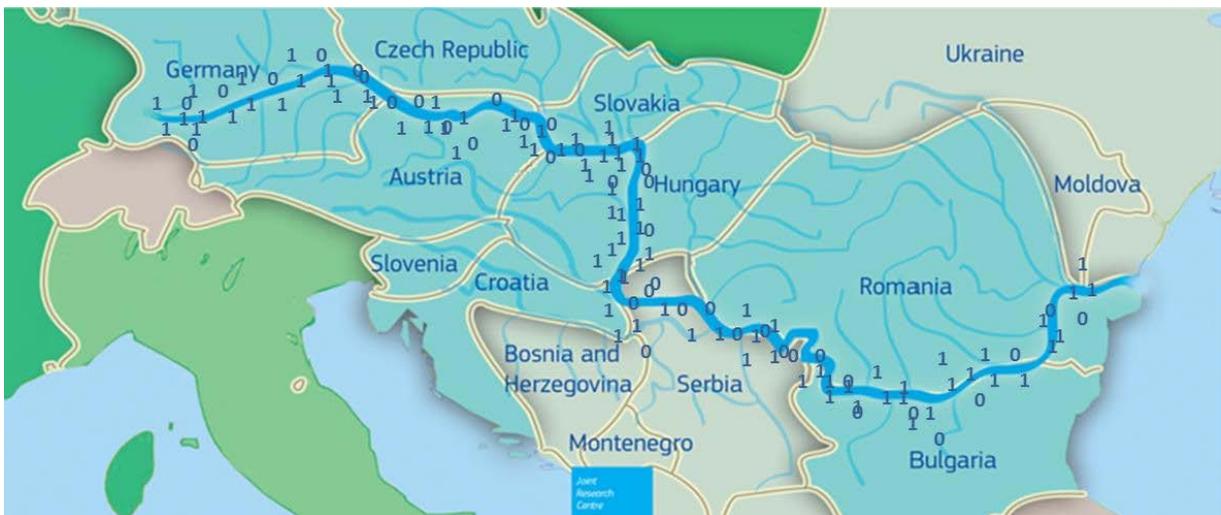
Danube Reference Data and Services Infrastructure

Danube_Net (D1)

State-of-play and organisational context of data infrastructure in the Bosnia and Herzegovina

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1 Introduction

EU Danube Strategy covers parts of or the entire territory of the 14 member countries of the Danube Cooperation Process (Germany - state of Baden-Württemberg and Bavaria, Austria, Slovakia, Czech Republic, Hungary, Slovenia, Croatia, Serbia, Bosnia and Herzegovina, Montenegro, Romania, Bulgaria, Moldova and Ukraine - Zakarpattia, Ivano-Frankivsk, Chernivets'ka and Odessa area). These countries are also signatories to the Convention on the Protection of the Danube River, and members of the International Commission for the Protection of the Danube River (International Commission for the Protection of the Danube River – ICPDR.) Action Plan for the EU Danube Strategy has four sets and eleven priority areas:

I. Connecting the Danube area:

- a) improve mobility and multimodality
- b) encourage more sustainable energy
- c) promote culture and tourism, people to people contacts

II. Protecting the environment in the Danube region:

- a) restore and maintain water quality
- b) manage environmental risks
- c) preserve biodiversity, landscapes and the quality of air and land

III. Work on the prosperity of the Danube region:

- a) developing the society through research, education and information technologies
- b) support the competitiveness of enterprises, including cluster development
- c) investing in people and skills

IV. Strengthening the Danube region:

- a) enhancing institutional capacity and cooperation
- b) working together to promote security and fighting organized crime

1.1 The political structure and management hierarchy in Bosnia and Herzegovina

Bosnia and Herzegovina does not have direct access to the river Danube, but a large part of its area belongs to the Danube basin, including the Sava river. On 26.08.2010, The Council of Ministers of Bosnia and Herzegovina adopted an informal document entitled "EU Strategy for the Danube Region - priorities and contributions to Bosnia and Herzegovina in the region of the Danube" on their 131 session. They identified priorities and contributions of B&H in the framework of sustainable development of the Sava River Basin. Their participation in the Strategy can be seen through the river Sava and the Sava committee made up of Bosnia and Herzegovina, Serbia, Croatia and Slovenia (URL1).

Although B&H is involved in the different regional and European Commissions, its participation is often irregular and inactive. The reason for that is, largely, the complex system of its political structure resulting in difficulties in making timely decisions and responses to the demands of international initiatives. Therefore it is necessary to summarize the political and administrative structure of Bosnia and Herzegovina.

Government levels	State	Entities		Brcko District	Total
		FB-H	RS		
Central	1				1
Entity		1	1		2
Canton		10			10
Municipality		84	63	1	148
District				1	1

FB-H = B-H Federation
RS = Republic of Srpska

Figure 1. Administrative hierarchy of Bosnia and Herzegovina

Bosnia and Herzegovina is a complex political and administrative system, which is not represented by a president, but a presidency, consisting of 3 presidents (one from each constituent people of Bosnia and Herzegovina). Furthermore, instead of having a government, Bosnia and Herzegovina has the Council of Ministers. Under the Dayton Agreement, Bosnia and Herzegovina is divided into two entities: the Federation of B&H (51% of the country) and the Republic of Serbia (49% of the territory of B&H). By the Decision International Court of Arbitration of the 08 March 2000, the Brcko District is a single administrative unit of local self-government under the sovereignty of Bosnia and Herzegovina. Figure 1 shows the number of governments according to the administrative division of Bosnia and Herzegovina.

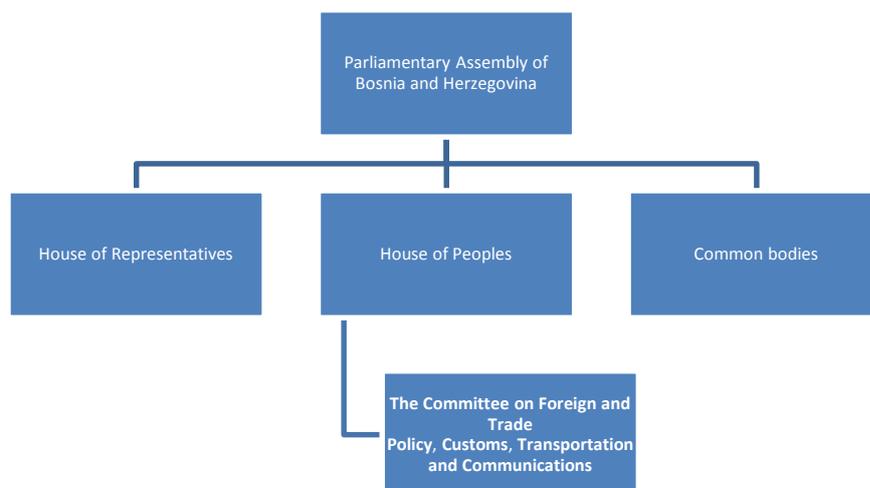


Figure 2. Organization of the B&H Parliamentary Assembly

Currently the House of Peoples is responsible for all activities related to the Strategy of the Danube Region (Figure 2), i.e. the permanent Committee on Foreign and Trade Policy, Customs, Transportation and Communications is in charge of monitoring:

- the conduct of foreign policy, the Presidency and the Council of Ministers;
- it is in charge of the cooperation of Bosnia and Herzegovina with the United Nations and the international community;
- it is in charge of the co-operation with the Council of Europe, Inter-Parliamentary Union, the Central European Initiative and the Organization for Security and Cooperation and other international organizations;
- in charge of the state institutions responsible for foreign affairs and international relations;
- in charge of activities of permanent or temporary delegations of the Parliamentary Assembly of B&H in inter-parliamentary institutions;
- in charge of granting and revoking consent to the ratification of international treaties, agreements and conventions;
- responsible for foreign trade policy;
- the agreements on international trade;
- customs policy, tariffs, regulations and laws in their area;
- international obligations;
- responsible for relations with international trade institutions;
- issues related to travel documents; the establishment and operation of common and international communications;
- the regulation of international and inter-entity traffic;
- the regulation of civil aviation and information and communication technology.

Commission is also responsible for other issues in the field of international relations, foreign affairs, foreign trade, customs, transport and communications (URL 2).

Administrative Structure

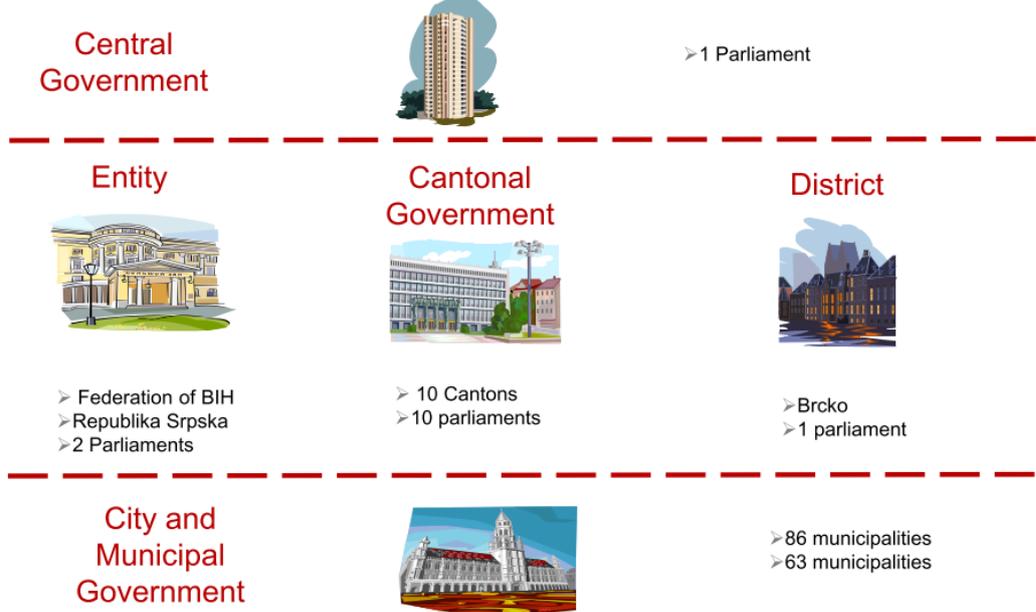


Figure 3. Number of parliaments assemblies according to their hierarchy

The displayed administrative hierarchy is just the tip of the pyramid. In order to be familiar with the number of institutions responsible for the collection and recording of spatial data we must consider the hierarchy of administration in the Federation of Bosnia and Herzegovina, Republic Srpska and the Brcko District. Thus, the Federation is comprised of 10 cantons/districts that have their own constitutions and their own administration structures, which differ significantly from each other. On the other hand, municipalities act as local governments. Republic Srpska is organized according to a centralized system. The government of RS consists of 16 ministries and 26 administrations, agencies, centers and other administrative institutions. Administrative structures of B&H are shown in Figure 3.

1.2 Necessary data for DRSDI

The infrastructural development- DRSDI should go in parallel with the implementation of the INSPIRE infrastructure. Back in 2008, The Stabilization and Association Agreement between the EU and Bosnia and Herzegovina were signed. One of the objectives of the Agreement is that the EU should provide guidance to B&H through partnerships concerning the reform priorities in the harmonization of regulations (among which is the INSPIRE Directive). However, to this day the directive has not been established and implemented on the entire territory of B&H.¹ However the Law on Copyright and Related Rights, Freedom Of Access To Information Act and the Administration Act were all adopted at all state levels. It is clear that the various organizations are responsible for various registers, some of which are made in accordance with the INSPIRE specifications, and some which are not. Therefore, DRSDI should use all existing registers, as well as other information and services, in order to obtain further data.

In addition to official data (either spatial or non-spatial), a large amount of information is available from non-governmental institutions which are, generally, not spatially oriented, but manage and use standard ICT tools for different registers. It is estimated that there are about 12,000 NGOs in B&H.

This document provides an overview of official data providers, political and other organizations directly or indirectly involved in the exchange of data. For each of the above categories we will give an introduction and analysis of the structure of the organization. Also, we've presented the readiness assessment for introducing DRSDI for each category. In the end, we've made the conclusion in terms of assessing the state-of-play in B&H, as well as recommendations on how to implement them with key stakeholders in DRSDI.

2 Data suppliers

Two key roles in the supply of spatial data in Bosnia and Herzegovina are held by two entities Geodetic Administrations (Administration for Geodetic and Property Affairs of the Federation of Bosnia and Herzegovina (FGA)² and Administration for Geodetic and Property Affairs of the Republic Srpska

¹ At the beginning of 2012, the Law on Survey and Cadastre of the Republic Srpska was passed (Official Gazette of the Republic Srpska, b. 6/12), whose section 10 discusses Spatial Data Infrastructure of the Republic Srpska (IGPRS). In 2014, the Regulation on the spatial data infrastructure of the Federation of B&H was adopted which sets the coordinator for the establishment of the IPP. So far neither has the IPP body not been established nor has the IPP been implemented. There is no information on the adoption of legal acts in the area of Brcko District.

² FGA performs administrative and other professional tasks within the jurisdiction of the Federation related to: surveys, the establishment and renewal of land registry and cadastre of communal devices except for tasks legally assigned to the jurisdiction of the canton or the municipality, mapping the territory of the Federation, geodetic and cartographic tasks of importance for defense, keeping technical archive of original plans and maps of basic

(GARS)³) and the Public Register Brcko District⁴. FGA has no jurisdiction over the cadastral offices in local communities, nor of the cantonal geodetic administrations, unlike GARS which is organized under centralized principle. In late 2014 the Government of the Federation of B&H passed the Decree under which the FGA is responsible for the establishment, maintenance and management of the Geoportal SDI FB&H.

In early 2012, the Government of the Republic Srpska passed the Law on Survey and Cadaster, according to which the GARS is in charge of establishing, maintaining and managing the Geoportal Spatial Data Infrastructure of the Republic Srpska (IGPRS).

The Public Register of Brcko District has not adopted any legislation that would regulate the field of spatial data infrastructure (SDI).

As the implementation of the IPP started at different times in each of the entities, due to the organization and jurisdiction of the geodetic administrations, the implementation and maintenance of geoportals also started at different times in different entities. The IGPRS geoportal, which provides an overview of 17 sets of data, the data may be obtained by submitting a request and making a payment. FGA still has not created an IPP FB&H geoportal, but has their own geoportal which offers an overview of six data sets. Information may be obtained by submitting a request and making a payment for all the users who do not work in the public administration.

Spatial data themes defined in the INSPIRE Annexes I and II (reference data) are under the jurisdiction of the geodetic administrations (coordinate reference system, cadastral parcels, height and orthoimagery), Agency for Statistics (administrative unit), Road fund (the road at various hierarchical levels), Agency for the Sava River Basin and the Adriatic Sea (hydrography) and so on. Table 1 shows the main data suppliers corresponding to INPIRE data subjects.

geodetic operations and other data obtained through geodetic works, land consolidation and land survey for special purposes, record the estate giving proposals for the privatization of the assets and inspection over survey and real property cadastre, land cadastre and communal facilities. FGA perform other administrative and professional tasks (URL3).

³ GARS performs administrative and other professional tasks related to: survey and establishment, restoration and maintenance of cadastral survey and immovable property cadastre of communal facilities except for tasks legally transferred to the jurisdiction of the local government unit, cadastral classification and land quality evaluation, maps of the territory of the Republic, conducting technical archives of original plans and maps, basic geodetic works, expert supervision over survey and real estate cadastre, land cadastre, utilities cadastre, land consolidation and land survey for special needs, legal ownership and other real-legal relations on real estate owned by the state, property rights to land and buildings, expropriation, land acquisition, agrarian relations, termination of property rights, the establishment of the earlier property relations on public land - denationalization, records of real estate and real estate rights, property and legal affairs related to real estate to which the Republic has the right of disposal, supervisory, normative-legal and analytical work and other activities in accordance with the law (URL4).

⁴ Department of Public Records is responsible professional, administrative and other tasks under the responsibility of the Government of Brcko District. Within the Department of Public Registry there are 5 subdivisions (home records, personal documents, cadastral books, administrative offices, Geographic Information System) and the RCMP (archive) (URL5).

Table 1: Data suppliers in B&H

Name	Classification	Typical types of data provided
The Ministry of Communications and Transport	The Council of Ministers B&H	Transport networks
Ministry of Civil Affairs	The Council of Ministers B&H	State border
Ministry of Defense	The Council of Ministers B&H	Military information
Ministry of Security	The Council of Ministers B&H	Data relevant to the security of B&H
Ministry of Foreign Trade and Economic Relations	The Council of Ministers B&H	Production and industrial facilities, Energy resources, agriculture; environmental protection, development and use of natural resources; tourism
B&H Statistics Agency	Public institution	Statistics
Communications Regulatory Agency	Public institution	Communication regulations and licensing
State Regulatory Agency for Radiation and Nuclear Safety – B&H	Public institution	Radiation and nuclear safety data
The State Electricity Regulatory Commission	Commission	Licensing and foreign trade in electricity
Agency for Animal Identification	Public institution	Registration, identification and movement control of animals
Veterinary Office	Public institution	Identification and control of animal movements
Archive of B&H	Public institution	Archive material
Mine Action Center in B&H	Public institution	Mined / de-mined areas
Directorate of Civil Aviation - BHDCA	Public institution	Civil Aviation and Flight Control
State Commission on the Border of Bosnia and Herzegovina	Commission	Marking the border of Bosnia and Herzegovina
Institute of Metrology of Bosnia and Herzegovina	Public institution	Calibration and verification of standards
Institute for Standardization	Public institution	Standards
Demining Commission of Bosnia and Herzegovina	Commission	De-mining/ mining
Concession Commission of Bosnia and Herzegovina	Commission	To assign licenses to exploit natural resources and facilities
Foreign Investment Promotion Agency of Bosnia and Herzegovina	Public institution	Investments
Commission to Preserve National Monuments	Commission	The preservation and protection of national monuments
Federal Statistical Office	Public institution	Statistics: Classification of Types of Construction

		Register of Companies Register of Territorial Units
Concession Commission of FB&H	Commission	Assigning licenses to exploit natural resources and facilities
Federal Office of Civil Aviation	Public institution	Civil Aviation and Flight Control
Ministry of Internal Affairs	Government of FB&H	Protection of human rights and civil liberties, trade and transport of explosive materials
Ministry of Energy, Mining and Industry	Government of FB&H	Energy, mining and industrial resources
The Ministry of Transport and Communications	Government of FB&H	Transportation Network
Ministry of Displaced Persons and Refugees	Government of FB&H	Reconstruction of facilities and the return of displaced persons
The Ministry of Education and Science	Government of FB&H	Information about facilities for education, staff and number of students
The Ministry of Culture and Sport	Government of FB&H	Protection and use of cultural and historical heritage
Department of Commerce	Government of FB&H	Data on service industries
The Ministry of Physical Planning	Government of FB&H	Spatial planning and development, land use, physical plan of the Federation, geology, geophysics
Ministry of Agriculture, Water and Forestry	Government of FB&H	Agriculture, veterinary medicine, water, forestry, fishing and hunting
The Ministry of Environment and Tourism	Government of FB&H	Quality standards, monitoring and protection of air, water and soil; tourism
Federal Administration for Geodetic and Real Property Affairs	Public administration	Surveying, cartography, land consolidation, land, property and legal affairs, geoportal FGA
Federal Hydrometeorological Institute	Public institution	Meteorological measurements and forecasts, astronomy, seismology
Archive of Federation of B&H	Public institution	Archival Holdings
Federal Civil Protection	Public institution	Protection and rescue of people and property from natural and other disasters; Demining
Federal Institute for Agropedology	Public institution	Soil science, land reclamation
The Federal Office for Agriculture	Public institution	Protecting plants and animals, the quality of food, soil protection
Federal Bureau of Geology	Public institution	Geology, hydrogeology, mineral resources
Federal Agro-Mediterranean Institute	Public institution	Protecting plants and animals, the quality of food, soil protection - a Mediterranean climate region
Federal Forestry Authority	Public administration	forest management, Cadastre of forests; Manufacturers and suppliers of seeds and plants

The Agency for the Sava River Basin	Public Company	manages the water area part of the Sava River Basin
Agency for Watershed of the Adriatic Sea	Public Company	manages the water area of the Adriatic Sea
Environmental Protection Fund of the Federation of Bosnia and Herzegovina	Public institution	collection and distribution of funds for environmental protection
FB&H Privatization Agency	Public administration	carries out the procedure of privatization of public enterprises and land
Federal Civil Protection	Public administration	rescuing people and material goods from natural and other disasters
Roads of FB&H	Public Company	The road network (highway)
Highways of FB&H	Public Company	The highway
Railways of FB&H	Public Company	The railway network
The Fund of Sarajevo Canton for the Protection and Maintenance of Martyrs' Fallen Soldiers Cemeteries	Public administration - Canton Sarajevo	Cemeteries (land use)
Cantonl Public Institution for the Protection of Natural Areas	Public administration - Canton Sarajevo	Protected areas
Air pollution monitoring network Sarajevo	Mjerne stanice u Sarajevu	Measurement data on air quality
Cantonl institution for Civil Protection	Public institution Unsko-sanski Canton	The protection of people and goods in emergency situations
Forestry Administration	Public institution Unsko-sanski Canton	Protection and exploitation of forests
Agricultural Bureau	Public institution Unsko-sanski Canton	Protection and exploitation of agricultural land
Department of Urban Development and Planning	Public institution Unsko-sanski Canton	Planning documents on the activities in the area
Civil Protection	Public institution Posavski Canton	The protection of people and goods in emergency situations
Forestry Administration	Public institution Posavski Canton	Protection and exploitation of forests
Cantonl institution for Civil Protection	Public institution Tuzla Canton	The protection of people and goods in emergency situations

Forestry Administration	Public institution Tuzla Canton	Protection and exploitation of forests
Agricultural Bureau	Public institution Tuzla Canton	Protection and exploitation of agricultural land
Department of Urban Development and Planning	Public institution Tuzla Canton	Planning documents on the activities in the area
Cantonl institution for Civil Protection	Public institution Zeničko-dobojski Canton	The protection of people and goods in emergency situations
Cantonl Forestry Administration	Public institution Zeničko-dobojski Canton	Protection and exploitation of forests
The Office for Development and International Projects	Public institution Zeničko-dobojski Canton	The planning and development management; collaboration on international projects
Cantonl Directorate for Roads	Public institution Zeničko-dobojski Canton	Planning the construction and maintenance of roads Cantonlnog ranking
Cantonl Institute for Urban and Regional Planning	Public institution Zeničko-dobojski Canton	Planning documents on the activities in the area
Veterinary Institute	Public institution Zeničko-dobojski Canton	Animal health monitoring
Cantonl institution for Civil Protection	Public institution Bosansko-podrinjski Canton	The protection of people and goods in emergency situations
Cantonl institution for Civil Protection	Public institution Srednjobosanski Canton	The protection of people and goods in emergency situations
Administration for Civil Protection and Fire Fighting	Public institution Hercegovačko-neretvanski Canton	The protection of people and goods in emergency situations
Administration for Geodetic and Property Affairs	Public institution Hercegovačko-neretvanski Canton	Data on parcels and tenure over them
Institute for Protection of Cultural and Historical Heritage	Public institution Hercegovačko-neretvanski Canton	Protection of cultural heritage
Administration for Civil Protection and Fire Fighting	Public institution Zapadnohercegov ački Canton	The protection of people and goods in emergency situations
Administration for Geodetic and Property Affairs	Public institution Zapadnohercegov ački Canton	Data on parcels and tenure over them

Administration for Roads	Public institution Zapadnohercegovački Canton	Planning the construction and maintenance of roads CantonInog ranking
Institute of Agriculture	Public institution Zapadnohercegovački Canton	Protection and exploitation of agricultural land
Administration for Civil Protection	Public institution Hercegbosanski Canton	The protection of people and goods in emergency situations
Administration for Geodetic and Property Affairs	Public institution Hercegbosanski Canton	Data on parcels and tenure over them
Administration for Roads	Public institution Hercegbosanski Canton	Planning the construction and maintenance of roads
Ministry of Agriculture, Forestry and Water Management	Government of RS	Agriculture, veterinary medicine, water, forestry, fishing and hunting
Ministry of Economy, Energy and Development	Government of RS	Economy, Industry, Energy
The Ministry of Transport and Communications	Government of RS	Transport and communication network
The Ministry of Trade and Tourism	Government of RS	Trade, tourism
Ministry of Public Administration and Local Self-Government	Government of RS	Administration and Local Government
Ministry of Physical Planning, Civil Engineering and Ecology	Government of RS	Planning documents on the activities in the area, construction and environmental protection
Archives of the Republic Srpska	Public institution RS	Archive material
The Committee for Environmental Protection of RS	Public administration RS	Environmental protection
Committee for Economy and Finance of RS	Public administration RS	financing economy
The Republican Directorate for Reconstruction and Construction RS	Public administration RS	Renovation and construction of buildings
Republican Directorate for Roads	Public administration RS	Road Network
RS Administration of Civil Protection	Public administration RS	The protection of people and goods in emergency situations
RS Hydro Meteorological Institute	Public administration RS	Meteorological measurements and forecasts,
Geological research of RS	Public administration RS	geology

Republican Institute for Planning of RS	Public administration RS	planning documents
The Republican Institute for Standardization and Metrology	Public administration RS	The standards and measures
Republic Statistical Office	Public administration RS	statistics
Republic Institute for Protection of Cultural and Natural Heritage	Public administration RS	Preservation and protection of monuments
Environmental Protection and Energy Efficiency Fund	Public institution	collection and distribution of funds for environmental protection
RS water	Public institution	manages the water area part of the Sava River Basin and the Adriatic Sea
Commission for concessions of RS	Commission	Granting of licenses for exploitation of natural resources and facilities
Directorate of Civil Aviation	Public institution	Civil Aviation and Flight Control
RS Statistical Office	Public institution	economic Statistics
Regulatory Commission for Energy of RS	Commission	Trade of electricity
RS Motorways	Public Company	Highways
RS Road Fund	Public Company	Road Network
Municipal Court Bihać	Federation of B&H	Justice, Registering property
Municipal Court Goražde	Federation of B&H	Justice, Registering property
Municipal Court Bugojno	Federation of B&H	Justice, Registering property
Municipal Court Livno	Federation of B&H	Justice, Registering property
Municipal Court Orašje	Federation of B&H	Justice, Registering property
Municipal Court Sarajevo	Federation of B&H	Justice, Registering property
Municipal Court Tuzla	Federation of B&H	Justice, Registering property
Municipal Court Zenica	Federation of B&H	Justice, Registering property
Basic Court Banja Luka	Republic Srpska	Justice, Registering property
Basic Court Bijeljina	Republic Srpska	Justice, Registering property
Basic Court Doboj	Republic Srpska	Justice, Registering property
Basic Court Srebrenica	Republic Srpska	Justice, Registering property

3 Policy-making organizations

Spatial data management, across the country, is not effective because of suboptimal institutional, strategic and legal frameworks. The unclear division of responsibilities between different levels of government, insufficient capacity and low level of political will and public awareness jointly hinder further progress in any respect, including in terms of spatial data management.

One of the central problems facing B&H is the lack of policy coherence between different ministries and state entities (Table 2).

The interest in spatial data collection in Bosnia and Herzegovina is not only focused in one area, or rather, there is no clearly expressed policy implemented in accordance with the Danube initiative. This document is focused on the area of environmental protection (water, air, plants, etc.), the protection of human and animal health, and to education and research relating to space and environment.

Table 2: Organizations that implement a policy (by entity):

Name	Classification	Policy areas	Completed and current projects creating data or tools to support the EU Strategy for the Danube Region
BOSNIA AND HERZEGOVINA			
The Council of Ministers of B&H			The EU Strategy for the Danube Region-priorities and contributions of Bosnia and Herzegovina in the Danube region (unofficial document, 26.08.2010), Risk Assessment of Bosnia and Herzegovina from natural or other disasters (2012), Plan of Protection and Rescue in Emergency Situations made by the institutions and authorities in Bosnia and Herzegovina (2014)
The Council of Ministers of B&H	The Council of Ministers of B&H		Action plan for flood control and river management in B&H 2014-2017 (November 2014)
The Ministry of Foreign Trade and Economic Relations	The Council of Ministers of B&H	coordinating the activities of the Entity authorities in the areas of: agriculture; energy; environmental protection, development and use of natural resources; tourism	The Framework Agreement on the Sava River Basin (B & H, Croatia, Slovenia, Serbia (Sava Commission) Water Policy in B&H
The Committee on Foreign and Trade Policy, Customs, Transportation and Communications	The Parliamentary Assembly of B&H		

Foreign Investment Promotion Agency of Bosnia and Herzegovina - FIPA	The Council of Ministers of B&H	Foreign investments	
FEDERATION OF BOSNIA AND HERZEGOVINA			
	Government of FB&H		<p>The Water Management Strategy in FB&H for the period 2010-2022 (2011)</p> <p>Federal operational plan for flood defense (2011)</p> <p>Risk assessment FB&H from natural and other emergencies (2005)</p> <p>System of protection and rescue of people and property from natural and other emergencies program for the period 2007-2011. years (expired)</p>
Ministry of Agriculture, Water and Forestry	Government of FB&H	Agriculture, water management, forestry and veterinary medicine	<p>Water Management Plan for the Sava River Basin - DRAFT - 2013.</p> <p>Technical assistance in the preparation of the Project for Flood Protection in Bosnia and Herzegovina (2013)</p>
The Agency for the Sava River Basin	Government of FB&H	Water	Water Management Plan for the Sava River Basin - DRAFT - 2013.
Institute for Water Management Sarajevo	Private company	Water	Hydrological study of surface waters of Bosnia and Herzegovina (2012)
<i>The cantonal ministries who make laws for individual cantons are not listed in this table!</i>			
REPUBLIC SRPSKA			
Ministry of Agriculture, Forestry and Water Management	Government of RS	Agriculture, forestry, water management	<p>Water Management Plan for the Sava River Basin - DRAFT - 2013.</p> <p>The Framework Plan for Water Management in Republic Srpska</p> <p>Action Plan for the implementation of the Framework Plan for Water Management for the period of 2007-2016.</p>

			Sustainable flood risk management plan for the Danube river basin applied on the Sava river basin - area of the Republic Srpska for the period of 2010-2021
Water Agency for Sava River District	Government of RS	Water	Water Management Plan for the Sava River Basin - DRAFT - 2013.
Republican Institute for Geological research	Government of RS	Geology	Water Management Plan for the Sava River Basin - DRAFT - 2013.
Institute of Agriculture RS		Agriculture	Protection of Biodiversity of the Sava River Basin floodplains (as part of the Natura 2000 Habitat Mapping Project)
DISTRICT BRČKO			
	District Government		The main operational plan of flood control. Plan on the protection of people and material goods from natural and other disasters

There are also various institutions involved in the adoption and implementation of legislation, such as the various departments and agencies, and various offices and commissions. The establishment and implementation of SDI is defined at the entity level⁵ other laws or other legislations (regulations). Contact points are independent geodetic administrations.

In addition to the formal institutions of government in B&H, there are a number of documents that were financed by the European Union, the European Commission and other European funds, which provide a good basis for a review of the legal and institutional framework on various topics (environment, NSDI etc.) as well as actual projects which resulted in spatial data within the INSPIRE directive (CORINE, ortofoto plans etc.).

Table 3: Support for the national infrastructure data in B&H

Name	legal acts responsible for relating to data	Initiatives	Funding sources
Regional projects (West Balkans Countries)			
Enlargement Department of the European Commission	National reports on the current state of the NSDI	INSPIRATION - Spatial Data Infrastructure in	EU

⁵ FB&H, RS and Brcko District. The Brcko District has not adopted any legal document that deals with SDI.

		the Western Balkans	
European Environment Agency	Collecting data on land cover	Corine Land Cover	EU
World Wildlife Fund	supports the implementation of the European Ecological Network Natura 2000 in BiH	NATURA 2000	Norwegian Ministry of Foreign Affairs, WWF's Mediterranean Programme and WWF Norway
SIDA - Swedish International Development Cooperation Agency	The procedures necessary to establish the NSDI	IMPULS	EU
EU program for flood recovery	Flood and landslide Risk Assessment for the Housing Sector in B&H (2015)	EU program for flood recovery	EU
Projects with the focus on Bosnia and Herzegovina			
Ministry of Foreign Trade and Economic Relations and UNEP Bosnia And Herzegovina	Overview of the legal and institutional framework for environmental protection in Bosnia and Herzegovina	MDG Achievement Fund	MDG Achievement Fund
Ministry of Foreign Trade and Economic Relations and UNEP Bosnia And Herzegovina	Report on the state of the environment in B&H in 2012	MDG Achievement Fund	MDG Achievement Fund
Food Safety Agency of Bosnia and Herzegovina	Ordinance on natural mineral and natural spring waters	BAS EN ISO 5667	Government of B&H
	Ordinance on the safety of drinking water	ISO standards	Government of B&H
Ministry of Civil Affairs (FGA, RGURS, Brcko District)	Supervising the preparation of Ortofoto plans 1:5000 and 1:2500	IPA Government of B&H, FB&H, RS and Brcko District	Government of B&H
FEDERATION OF BOSNIA AND HERZEGOVINA			
The Ministry of Physical Planning of the Federation of B&H	Decree on contents and carriers of the unique information system, methodology for collection and processing of data and monotype forms for record keeping	Government of FB&H	FB&H budget
	Guidelines for disposal of construction waste	Government of FB&H, Directive on waste 2006/12/EZ	FB&H budget

Ministry of Agriculture, Water and Forestry of the Federation of B&H	Decree on types and contents of plans for protection against adverse effects of water	Government of FB&H	
Administration for Geodetic and Property Affairs of FB&H (Federal geodetic agency - FGA)	Regulation on spatial data infrastructure of the Federation of Bosnia and Herzegovina	Government of FB&H	Administration for Geodetic and Property Affairs of FB&H (Federal geodetic agency - FGA)
	Topographic data model	Government of FB&H, INSPIRE specifications	FB&H budget
The Department of Geodetic and Property Affairs of the Republic Srpska (RGURS)	Law on Survey and Cadastre of the Republic Srpska (Official Gazette of the Republic Srpska, no. 6/12)	Government of RS INSPIRE recommendation	RS budget

There is no unique geo-portal, which would include all spatial data at the state level. There are no SDI geoportals at the entity level.

4 Research organizations

The following categories of research institutions are prominent in Bosnia and Herzegovina: universities, colleges, research institutes and private companies that are active in research. Higher education is done mostly under Ministry authority and is organized within universities which have faculties as their components. Each faculty is a legal subject and has its own autonomy at a certain level. There are also private universities and faculties. These private universities are more market oriented with specific aim to create professional workers ready for the job market, and they do not have emphasis on the scientific and research approach.

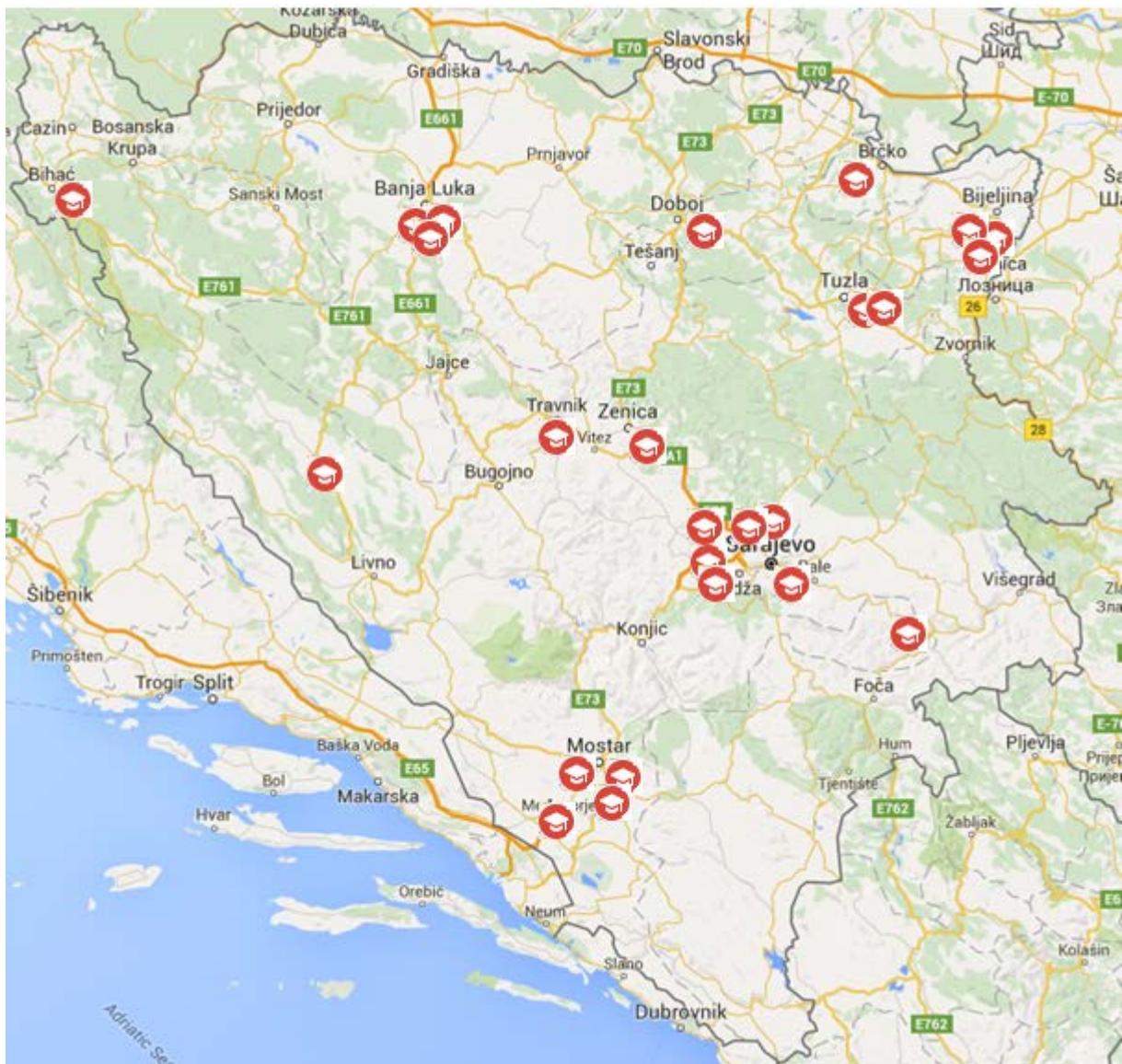


Figure 4. Geographical distribution of universities and higher education institutions in Bosnia and Herzegovina

Higher education in B&H is divided by entity principle and there is no state level institution which monitors and coordinates the universities. Within the FB&H there is the Ministry of Education, Science and Youth, but it has no jurisdiction over the educational and research programs of the universities. In FB&H, the Cantonal Ministry of Education and Science is responsible for Higher Education⁶. So there are a number of universities, colleges and research institutions⁷ (according to the Agency for

⁶ In FB&H there are 101 registered faculties.

⁷ University of Sarajevo, University of Tuzla, University "Dzemail Bijedic" Mostar, University of Mostar, University of Zenica, University of Bihac, University of Banja Luka, University of East Sarajevo, Higher Medical School, Higher School of Hotel and Tourism of Trebinje, American University in Bosnia and Herzegovina (Sarajevo, Tuzla, Banja Luka), Sarajevo School of Science and Technology, International University "Philip Noel Baker" (Sarajevo), the Faculty of Public Administration (Sarajevo), University "Vitez" Travnik, International University of Travnik, Centre for business Studies Kiseljak, University of Herzegovina, International Burch University in Sarajevo, International University of Sarajevo, University of Business Studies (Banja Luka, East Sarajevo, Bijeljina), University of Business Engineering and Management (Banja Luka), Independant University of Banja Luka, Pan-European University

Higher Education and Quality Assurance in B&H, 18 universities hold a valid accreditation, while 12 are in the accreditation process). Figure 4 shows the territorial distribution of universities and higher education institutions.

In addition to universities and higher education organizations, as well as their respective scientific research institutes, there are a number of scientific research institutes and institutes which are funded directly by the government (state, entity, cantonal), and private companies⁸.

Regardless of such a large number of research organizations, only a few of them are actively involved in the collection of spatial data. Even less are directly linked to projects related to the Danube Strategy.

List of key research organizations can be seen in Table 4.

Table 4: List of key research organizations in Bosnia and Herzegovina, whose research is either directly or indirectly associated with EUSDR

Name	Classification	Completed and current projects refer-enced to EUSDR	Direct linkage to EUSDR (Yes/No)
Hydro Engineering Institute Sarajevo	Private research institute	The framework for flood management on the Drina River in Bosnia (2012)	No
		The feasibility study for the construction of a dam on the river Bosna in Reljevo (2015)	No
		Monitoring wastewater in Thermal block 7 in Tuzla, analysis of technical solutions and the amendment to the project of Block 7 in terms of cleaning the waste water to meet the requirements of the preliminary water authorization (2015)	No
		Optimization/modification of the project for extension of the main collector and relocation of the parametric channel at the Block 7 in Tuzla (2015)	No

Apeiron Banja Luka (Banja Luka), College of Communications "Kapa FI" Banja Luka, College of Applied and Legal Studies "Prometheus" (Banja Luka), "Banja Luka College" "College of International Law "Banja Luka, University Synergy - Faculty of Safety and Protection, " College of cosmetology and aesthetics ", Slobomir University Bijeljina, University "Synergy" Bijeljina, College for health care Bijeljina, College of Business Management "Primus" Gradiska, College for business and technical School Doboje, College "Dositej" Laktaši, College of Economics and Informatics Prijedor, College of Business Assistance Sokolac (URL6).

⁸ JNU Institute for the Protection and Ecology of RS, Institute of Metrology B&H, Federal weather Institute of B&H, Institute for Standards B&H, Institute of Agriculture of RS, Institute of Agricultural Economics, Institute for Missing Persons of Bosnia and Herzegovina, Institute of History, Mining Institute, Institute of Intellectual Property, Institute of Public Health of the RS, B&H Law Institute, Institute for youth and Community Development Banja Luka, Institute for Crime research, IPSA Institute, the Institute for youth Development KULT, Institute of Hydro Engineering Sarajevo, Metallurgical Institute Kema Kapetanovic, GIT institute for construction, building materials and non-ferrous metals - Tuzla, Institute of Geodesy and Geoinformatics, Marine and Coastal insitute, Veterinary Institute of the RS, Institute of Geotechnical Engineering and Geology (URL6).

		Preparation of the study with research works on environmental flow of the river Una profile HPP Una Kostela (2014)	No
		Feasibility study for the construction project of the central device cleaner for three municipalities: Doboj Jug, Usora and Tešanj (2014)	No
		Additional tests as part of the preparation of studies on protection zones of drinking water sources and Klopče Strmešnjak (2013)	No
		Development of the hydrodynamic model and flood risk maps for floodplains in the basin of the river Una: Bihac and Bosanska Krupa (2013)	Yes
		Amendment of the Main project of sewage collection in the Bojin Vir-Raspotočje Drivuša area (2013)	No
		Sampling of water from the river Bosna (24-hour composite samples) and sludge in the river Bosna, processing the samples taken, making necessary and specified physical-chemical analyzes for determining the impact of thermal power station to the water quality of the river Bosnia, creating the necessary reports and giving suggestions and presenting findings (2012)	Yes
		Project monitoring of wastewater (2012)	No
		Preparing evaluation study of Trebevic's natural values (2012)	No
		Monitoring for continuous measurement of the amount of water abstracted and the quantity and quality of water discharged into the river Bosna (2010)	No
		Compiling a Study defining the activities, programs and funds for improving water quality of the river Miljacka, Zeljeznica, Zujevina, Kasindolski stream and a part of the river Bosna (2010)	No
		Technical control of technical documentation for system of water purification of river Sava (2010)	

		Analysis of pressures and impacts, risk assessment, for the Sava River Basin in the Federation (2009)	Yes
		Compiling a study of natural resources (2007)	No
Water Institute of Bijeljina	Private research institute	Testing water quality in the RS in 2015	No
		Official sampling of drinking water (2014)	No
Institute of Chemical Engineering – Tuzla	Research institute	Producing a study on the patterns of excess manganese in the water conduit in Odzak and proposals for its elimination (2007)	No
		Chemical and bacteriological analyzes of water conduit (2007)	No
Civil Engineering Institute - Business Center Trebinje	Private research institute	Development of the project for the protection of urban settlements Dobor from high water of the river Bosna, Municipality Modrica (2015)	No
Agriculture and Food Technology University of Mostar	Research organization	Monitoring ichthyopopulations and physico-chemical parameters of water for stocking in reservoirs at the confluence of the river Vrbas and Neretva River Basin (2015)	No
Institute for Water Management Sarajevo	Private company	Providing revision services of technical documentation Preliminary flood risk assessment in the Republic Srpska (2015)	No
		Designing the main project for the drainage of the wastewater for the settlements on the right bank of the river Vrbas-Dnoluka (2014)	No
		Hydrological study of surface water (HIS) - Bosna River Basin (2010)	No
		Making the Federal operational plan for flood defense (2009)	No
		Characterization of groundwater Sava River Basin (2009)	No
Institute for Water Management Bijeljina	Private company	Development of the project for the management of reservoirs of Vrba and Klinje (2015)	No
		Development of the general project of the sewer system of rainwater and wastewater from settlements and industry of the wider urban area of the city of Doboje and the main project of collecting rainwater areas of Usora (II catchment area and PS Usora) (2015)	No
		Development of the conceptual design and the main project of the	No

		protection from mountain and inland water of the City of Bijeljina on the stretch connecting channel Glogovac- Majevički circumferential channel (2015)	
		Preparation of technical documentation of the main project for the Protection of part of the settlement Karakaj, Tršić and Celopek in Zvornik of the great waters of the river Drina, Hoče and Sapna, including the protection of Ekonomija settlement from inland water (2015)	No
		Arranging the riverbed and making the protective embankment for the river Bosna in the wider area of the village Bare - 3 km diameter(2015)	No
		Development of conceptual design and major project planning for the river Janja from the mouth of the Drina River and upstream cca 8 kilometers, including the protection from the mountain and inland waters of Novo Naselje in Janja (2015)	No
		Development of the project for the Flood control and regulation of the river bed of Bosna of the town Doboje from the new Japanese bridge to the mouth of the Usora River (2015)	No

This table provides an overview of projects, over a period of last 7 years, which are related to water i.e. The Sava River Basin and which may be of use for the Danube Strategy. A direct connection with the Danube strategy is not present and it does not include projects with data that could be useful for the EUSDR.

Figure 5 shows the share of universities, institutes and private companies in projects related to water and the Sava River Basin.

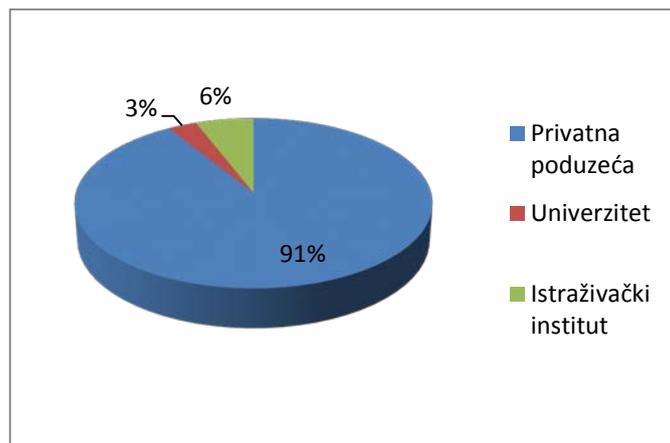


Figure 5. Percentage of participation in research projects (Privatna poduzeća=Private companies, Univerzitet=Univesities, Istraživački institute=Research Institutes)

It is clear that the projects, which are funded from the budget and public companies, are not carried out in universities and research institutes, as they are mostly done by private enterprises Institutes or Bureaus. Universities and their research organizations generally participate in programs of FP7, TEMPUS, Horizon 2020 and other programs, financed by the European Union or EU Member States.

It must be noted, that the number of universities in Bosnia and Herzegovina (and its experts) does not guarantee participation in scientific research, financed by the government budget. They are treated like any other company with additional conditions, which they are unable to meet (e.g. participation in projects from the previous year, worth more than EUR 25,000). Research projects financed from the entity or Canton budget mainly cover the costs of making theses and dissertations (printing operation).

We need to establish an adequate network of state-of-play of research institutions in Bosnia and Herzegovina, which would have a role in the implementation of the Danube Strategy. Doing so may result in adequate infrastructure of excellence that could respond to the needs of the Danube Strategy. Existing bilateral agreements should lead to multilateral coordination. Developing regions downstream can benefit from the leading - indeed world-class - innovative regions upstream. Top-performing regions in Europe can be found in the area. Others lag a long way behind. Finally we could achieve a significant regional communication between research Institutions, through the implementation of joint projects.

5 Stakeholder engagement organizations and networks

Cooperation and engagement of stakeholder organizations can be achieved through various types of organizations:

- NGOs (non-governmental organizations)
- Societies and Associations
- Chamber of Commerce

In Bosnia and Herzegovina there is no single register of non-governmental organizations, since they can be registered at different levels (municipal, cantonal, entity, state). Government institutions in Bosnia and Herzegovina have registered over 12,000 NGOs. A large number of non-governmental organizations are just on paper, but practically don't carry out any activities. On the other hand, a large

number of non-governmental organizations have been formed to abuse the funding assigned to non-governmental organizations at the local level (private companies), so some of them are registered within universities and other institutions that are financed from the budget, and even private companies.

Table 5. List of non-governmental organizations, associations and chambers of commerce

Non-governmental agencies (NGOs), Societies and Associations In Bosnia And Herzegovina		
Name of Organization	Scope of activities	Area of Interest
Center for Education and Raising Awareness of Energy Efficiency	local	Education in: renewable energy and energy efficiency
Center for Environmentally Sustainable Development	local	Environmental Protection, education on the environment
CEPRES - Center for Ecology and Natural Resources of the Faculty of Science, University of Sarajevo	local	Environmental Protection
Eko B&H	local	Environmental Protection - specialty mushrooms
Ecological Society for the protection and breeding of birds	local	Protection of and breeding of birds
Fondeko	local	Environmental Protection
Munika Hadžići	local	Environmental Protection
Ornithological Society „Naše ptice“	local	The study and protection of birds and their habitats, the popularization of ornithology and bird watching in B&H
Mountaineering Association „Bjelašnica“	local	Mountaineering (mountain huts, trails, and others. Outdoor activities)
Mountaineering Association Sarajevo	local	Mountaineering, Environmental Protection
Union of hunting organizations B&H	state	Hunting and animal protection
NGO "Society for the Study of land / soil in B&H"	state	Exploration and protection of land / soil
Association of Engineers and Technicians of Horticulture Eco Center KS	Cantonal	Studying and protection of plants
Center for the Environment	local	protection and enhancement of the environment
NERDA	state	Economic development, environmental protection and renewable energy
Farmers' Association (UP) in Bosnia and Herzegovina	state	providing education with the aim of finding solutions to benefit of all
Agricultural Information Centre	local	Providing information to farmers (laws, EU rules and the like.)
Academic Association of Eco Logic, Banja Luka	local	protection of human health, property and natural resources
Association Zeleni okoliš, Zenica	local	tourism

Association CENTER FOR THE PROTECTION AND STUDY OF NATURE AND ANIMALS	local	Protection and study of nature and wildlife
Animal Protection Society NOA Banja Luka	entity	to raise awareness about animal rights and their protection
Una's Emeralds	Canton	Environmental Protection and the Una River
The Foundation for the Protection of Cultural Heritage, Bihac	local	Protection of cultural heritage
Foundation for the development of agriculture "Grmeč eco zone"	local	The development of agriculture
The Foundation for the Protection of Bjelasnica, Igman, Treskavica and Rakitnica Canyon	local	Protection of Bjelasnica, Igman and Treskavica and the Rakitnica River Canyon
Ecological Association "Klekovača" - Drvar	local	environmental protection
Center of ecology and culture "Alza bosnjaka" - Kakanj	local	environmental protection
Environmental association "Izvor" - Kiseljak	local	environmental protection
Chamber of Commerce of all levels (state, entity, Brcko District and Cantons)	Nacional, entity, Canton	economics
Geodetic Society of Herceg-Bosna	Canton	Association of Citizens of geodetic profession, organization of conferences, scholarships for students

From Table 5 one can see that the non-governmental organizations are focused on environment protection. Therefore, these organizations do not have the capacity to participate in DRDSI, because most of these local organizations do not have their own employees, and the number of the active members in NGOs is inconclusive.

Please note that, once again, most of the regular activities carried out by members of the mentioned NGOs are not paid i.e. they are based on voluntary work, so any increased amount of work and obligations would result in quitting the tasks. However, there is a small number of NGOs, which have already collaborated on international projects and who have proved their professional attitude towards performed tasks. Thus, there is a strong likelihood that these NGOs would successfully participate in DRDSI⁹.

Chambers of commerce, associations of citizens and non-governmental organizations do not have a unified representing body, which means that each organization has to be contacted individually. This takes a lot of time and requires resourcefulness in obtaining information on the status of the organization and sometimes requires personal acquaintance for making contact. This could be a

⁹ This statement refers mainly to the NGOs that are state or at least entity supported.

difficult task for promoting DRDSI through these organizations. But it would not be recommended to ignore them because their numbers are large (12,000 NGOs, 14 chambers of commerce, numerous professional associations and non-vocational), and each of these organizations is interested in marketing their activities. So, this should be taken into account as a way of obtaining their participation in DRDSI, or even as a target for potential mutual projects.

6 Conclusion

This State of Play report provides an overview of the current situation in Bosnia and Herzegovina, which could eventually be used for the purpose of supporting the development of DRDSI. As part of this report I have covered: data providers, organizations which create policies and legislations, research organizations and other interest groups that may be interested in the engagement of their organization within DRDSI. Communications and research should be managed individually through direct contact. The willingness to participate in DRDSI is, for now mainly declarative. Therefore, you would need to popularize and raise awareness of citizens and organizations to introduce them with the benefits of cooperation in the framework of DRDSI. The implementation of pilot projects to raise awareness of citizens and organizations would be very important in order to initiate the participation of all segments of society. Of course, the establishment of NSDI (which is entity based, still not established in the Federation and Brcko district) would certainly enhance the interest of the organizations in providing support to DRDSI.

Access to public records, in general, is regulated at all administrative levels by the Law on access to information (the transposition of Directive PSDI). However, product licensing, as well as an absence of metadata is still a key issue. Certain information is often disclosed, but no other information about them is provided (the conditions for access, data accuracy, download format, etc.)

So, to develop the participation in DRDSI, it is necessary to work on raising awareness of citizens and organizations. Key stakeholders must clearly see the benefit of their participation, as well as the benefits for the entire region. Funding possibilities to further involve the networking stakeholders should also be explored.

7 Internet references

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