

WORKING DOCUMENT

ASSESSMENT
OF AGRICULTURAL SECTOR AND RURAL DEVELOPMENT
IN BOSNIA AND HERZEGOVINA

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ABBREVIATIONS AND ACRONYMS

AIMCS		BiH Animal Identification and Movement Control System
IACS		Integrated Administration and Control System
BiH		Bosnia and Herzegovina
FBiH		Federation of Bosnia and Herzegovina
RS		Republika Srpska
BD		Brčko District
GAV		Gross added value
GDP		Gross domestic products
UNDP		United Nations Development Program
ha		Hectare
FAO		Food and Agriculture Organization of the United Nations
ABP/AW		Animal Byproducts /Animal Waste
PPA		Phyto-pharmaceutical agents
FR		Farm Register
BiH MAC		BiH Mine Action Centre
RS MAFWM		Ministry of Agriculture, Forestry and Water Management of Republika Srpska
LPIS		Land Parcel Information System
VO		Veterinary Office
AAI		Agency for Animal Identification
CR		Client Register
EU		European Union
FADN		Farm Accountancy Data Network

Introduction

Bosnia and Herzegovina is characterized by a complex state structure as a result of the General Framework Agreement for Peace in BiH signed in late 1995 in Dayton. According to this Agreement BiH is a state with two Entities (BiH Federation – FBiH and Republika Srpska - RS) and BiH Brcko District (BD), with asymmetrical constitutional structure (10 cantons constitute FBiH) and different numbers of governmental levels. There are four vertical governmental levels in FBiH (municipality, city, Canton and Federation) while RS has three levels (municipality, city and Entity level). Furthermore, the Agreement established the Office of the High Representative with substantial legislative powers. The Agreement specifies the competences of administrative levels; however they have not been clearly divided to date, thus significantly slowing down socio-economic processes and reforms (especially the EU accession process) and decreasing the efficiency of executive and legislative powers.

Though Bosnia and Herzegovina is committed to European integration and approximation to the EU's Common Agricultural Policy (CAP), this process is quite slow and with no observable signs or readiness to accelerate it. Lagging behind in the EU integration process is caused by economic crisis and until recently pronounced lack of political will in the country. Finally, in 2016 BiH made the necessary progress in establishing the institutional structures (coordination mechanism) needed to use the Rural Development component of the Instrument for Pre-accession Assistance (IPARD). It remains to be seen in the forthcoming period to what extent this mechanism will be functional.

Aggravated economic and political situation in BiH is one of the main barriers to foreign capital inflow, especially foreign direct investments, without which there is no significant boost to production or creating new jobs all analysis show.

According to the World Bank Doing Business Report, BiH ranked 81 out of total 190 countries according to 2016 data and had the poorest ranking of all former Yugoslav countries (two ranks lower than in previous year 2016)¹. In the World Economic Forum's Global Competitiveness Report 2016-2017 BiH is at 107th place and has the poorest rank among the European countries². Inefficient government bureaucracy, corruption, instability of governments and political instability are estimated as the most problematic factors influencing such a ranking. Foreign currency regulations, public health and inflation have been well assessed.

BiH is a member and intensively cooperates with the World Bank and International Monetary Fund. These two institutions support reforms regarding stabilization and consolidation of budget and fiscal stability with the aim to strengthen developmental capacities of the country. BiH is also a member of the International Fund for Agricultural Development (IFAD) and to date used its favorable loan funds to finance several agricultural development projects. BiH is still not a member of the World Trade Organization (WTO) with which it has been negotiating the accession for 18 years now.

In Bosnia and Herzegovina agriculture is economically and politically important sector characterized by underused natural resources and production potentials, low productivity and poor technical and technological level of equipment of farms, underdeveloped agricultural and food value chains, poor competitiveness and substantial foreign trade dependency. If increasingly pronounced marginalization of rural areas is added to this, accompanied by further depopulation and rural poverty, it is clear that BiH agricultural policy, i.e. of its Entities and Brcko District, is faced with a number of challenges which need to be addressed efficiently.

¹ The World Bank, Doing Business Report 2017, www.doingbusiness.org (accessed on February 20, 2017)

² The World Economic Forum, The Global Competitiveness Report 2016-2017

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The information base for analysis of the state of play in agricultural sector and rural areas of Bosnia and Herzegovina, its Entities, Brcko District, cantons and municipalities is poor and unreliable. The data is often reduced to only data from statistical sources which are unrealistic and unreliable. Other databases are usually non-existent (LPIS, FADN, market information system), and those that do exist (such is, for example the register of domestic animals) are incomplete and outdated. Thus, one of the priorities to create preconditions for efficient planning and implementation of agricultural and rural policy is implementation of agricultural census in BiH³.

³ The latest full agricultural census in BiH was conducted in 1961, and all subsequent data were updated against it.

General information about Bosnia and Herzegovina

Bosnia and Herzegovina is located in the western part of the Balkan Peninsula and covers an area of 51,129 km².

BiH has borders with Serbia to the East, Montenegro to the South East, Croatia to the North and West, and 12 kilometers of coastline on the Adriatic Sea. Its landscape varies from high altitude central mountains to arable land in north and Mediterranean vineyards in the south, with most of the major towns being located in valleys. Climatically, Bosnian summers last from May to September and are warm and humid, whilst winters tend to be foggy and snowy and last from November to February. Autumn and spring are usually short.

The current administrative divisions are based on the lines drawn up as part of the 1995 Dayton Peace Agreement according to which Bosnia and Herzegovina is consisted of two Entities and BiH Brcko District. Federation of Bosnia and Herzegovina (FBiH) covers 50% and Republika Srpska 49% of the territory. Brcko District covers the remaining one percent of the total territory (BiH Agency for Statistics, 2014).

Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District have their own constitutions. According to the preliminary results of the Census in Bosnia and Herzegovina the total population is 3,791,622, out of which 2,371,603 live in FBiH, 1,326,991 in the Republika Srpska and 93,028 in Brčko District (BiH Agency for Statistics, 2014).

The Federation of Bosnia and Herzegovina is decentralized. It consists of 10 Cantons which have their own executive and legislative authorities, and 79 municipalities. The Government of the Federation of Bosnia and Herzegovina shares and delegates some of its competences with the Cantonal administrations. Both the Government and the Cantons have the right to determine policy and to adopt laws that pertain to any of their competences. Where competences are further delegated to the municipalities (the lowest administrative level), their activities are financed and supervised by the Cantons (BiH Agency for Statistics, 2014).

Republika Srpska is centralized and has no Cantons. It shares and delegates some of its competences directly with 58 municipalities and six cities.

The Brčko District (comprising the entire territory of the former Brčko municipality) is a self-governing administration under the direct jurisdiction of Bosnia and Herzegovina.

Key features of Bosnia and Herzegovina

- Total area: 51,000 km², of which 12.2 km² are water bodies
- Arable land: 19,84%
- Perennial crops: 1,92%
- Population: 3 831 555
- Capital: Sarajevo
- Major languages: Bosnian, Croatian and Serbian
- Life expectancy: 72 years (men), 78 years (women) (UN)⁴

⁴ Forest Sector Review in Bosnia and Herzegovina, FAO, 2015

1. Importance of agriculture in Bosnia and Herzegovina economy

Agriculture and food industry are important branches of economy of Bosnia and Herzegovina, its Entities and Brcko District, both in terms of their contribution to creating gross added value (GAV) and overall employment to population, and designing and stabilizing further socio-economic development. Their economic viability, ability to grow and improve export performance at the time of crisis and economic downturn, makes them the main 'stabilizer' of the BiH society and economy. The increasingly pronounced poverty is a problem that additionally complicates the social situation, especially in rural areas of both BiH Entities. This sector facilitates income generation for local population and stops negative social processes (migration, ageing of rural population, etc.) and enables preservation and protection of cultural, historical and natural heritage. However, for the time being agricultural sector failed to efficiently mobilize available natural resources and is not in a position to rationally use them. It is, therefore, very important to develop an agricultural and rural development policy that will be focused on strengthening sector performances, in particular establishing the needed structures, strengthening regulatory and institutional framework at all levels which will enable the use of available support programs, and provide for the technology transfer and enhancement of sector competitiveness.

1.1. Gross added value from agricultural sector

In Bosnia and Herzegovina gross added value of agriculture varies in absolute terms, but generally increases, while in relative terms it is decreasing due to faster growth of GAV of other, nonagricultural sectors. High share of agriculture in generating GAV is a characteristic of undeveloped and developing countries. The share of agriculture in creating GAV of 6% indicates that BiH falls under the category of developing countries.

Table 1 Gross added value of agriculture, forestry and fisheries (sector A) in BiH Entities and Brcko District in the period 2006-2015

Year	BiH Federation		Republika Srpska		Brcko District		Bosnia and Herzegovina	
	BAM (mil.)	%	BAM (mil.)	%	BAM (mil.)	BAM (mil.)	%	BAM (mil.)
2006	707	5,4	855	13,1	52	14,0	1.614	8,1
2007	765	5,2	916	12,5	55	13,0	1.736	7,7
2008	814	5,0	971	11,4	52	8,9	1.837	7,2
2009	788	4,9	917	11,1	48	8,6	1.753	7,1
2010	798	4,8	876	10,5	48	8,3	1.722	6,8
2011	837	4,9	883	10,2	51	8,5	1.771	6,8
2012	743	4,4	836	9,7	30	4,8	1.609	6,1
2013	870	5,0	916	10,4	46	7,5	1.832	6,9
2014	742	4,2	838	9,5	47	5,9	1.627	6,0

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2015	857	4,6	856	9,3	66	10,0	1.779	6,2
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Source: Annual communication of Economic Accounts of the FBiH Institute of Statistics

Source: National Accounts, Bulletin No 9, Republika Srpska Institute of Statistics, 2016

Source: Annual communication of the BiH Agency for Statistics

BiH Federation: In the period 2006-2015 BiH Federation notes a growing trend of GAV from agricultural sector which from BAM 707 million in 2006 increased to BAM 857 million in 2015⁵. However, owing to faster growth of other economic activities the relative importance of agriculture in economy of this Entity is decreasing. Total share of the sector measured in GAV went down from 5.4% (2006) to 4.6% (2015). Average annual share of agricultural sector in total BiH Federation economy in the past ten years accounts for BAM 792 million or 5% of total GDP of the Entity.

Republika Srpska: Measured by its share in creating GDP, agriculture is very important for Republika Srpska. Out of all production sectors, agriculture (together with forestry and fisheries) had the biggest share in the GDP structure until 2015 when processing industry took over. Relative share of agriculture, forestry and fisheries in RS GDP has been decreasing since then, but is still high. In absolute terms gross added value of agriculture is decreasing and was the lowest in the years with pronounced natural disasters (drought in 2012 and floods and hail in 2014). Within this joint share, the contribution of forestry is 1%-1.5% and the share of fisheries is negligible (0.1%), hence agriculture has the biggest share of GAV (7.8-11%). The average share of this sector in creating GDP in RS in the period 2006-2015 accounted for BAM 886 million or 10.8%.

Looking at agriculture GAV at the state level, a decreasing trend is noted regarding the importance of this sector for the overall economy in BiH primarily as a logical consequence of development and increase of the share of other economic and non-economic sectors. In 2006 GAV of agriculture was 8.1% and ten years later this share declined by almost 2%, constituting only 6.2% of the total GDP of the country. Considerable variances are noticed in absolute figures year after year; although, generally, a trend of moderate increase can be observed. In addition to faster growth of other economic activities, relative decrease of GAV of agriculture is also a consequence of inefficient use of available production resources, liberalization of foreign trade and influence of other adverse factors.

To make a digression, the share of agriculture, together with forestry and fisheries, in creating GDP in EU-28 was 1.7% (2015) while in BiH its share is considerably bigger and is at 6.2%. Bigger share of agriculture in creating GDP in 2015 was noted in all EU candidate countries and in two less developed EU MS, Bulgaria with 5.1% and Romania with 4.8%⁶.

1.2. Contribution of agriculture to employment

Officially employed person is a worker registered in the relevant register whose constitutions and taxes arising from and on the wage are paid. A relatively small number of workers are officially employed in business entities, which are explained in more details in Chapter 8 of this document, compared to the actual number of workers engaged in this sector. Consequently, the employment in

⁵ Sector vulnerability to climate changes was particularly manifested in 2012 (drought) and 2014 (floods) when both in absolute and relative terms the agricultural share was significantly lower than in other years during the observed period.

⁶ EUROSTAT, Statistics Explained, [http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Gross_value_added_at_basic_prices,_2005_and_2015_\(%25_share_of_total_gross_value_added\)_YB16.png](http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Gross_value_added_at_basic_prices,_2005_and_2015_(%25_share_of_total_gross_value_added)_YB16.png) (accessed on January 18, 2017)

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agriculture has to be observed separately: through a formal employment in registered legal entities and through informal employment identified by regular annual labor surveys using the recommendations and definitions of the International Labor Organization (ILO) and EUROSTAT.

Table 2 Employment in agriculture, hunting and services (Area 01) in BiH Entities in the period 2006-2015

Year	BiH Federation		Republika Srpska	
	Number of workers	%	Number of workers	%
2006	3.906	1,0	3.107	1,7
2007	3.882	0,9	2.945	1,5
2008	3.962	0,9	2.855	1,4
2009	4.102	0,9	2.917	1,4
2010	3.960	0,9	2.863	1,4
2011	3.720	0,8	2.917	1,5
2012	2.694	0,6	2.657	1,3
2013	2.607	0,6	2.634	1,3
2014	2.785	0,6	1.960	1,0
2015	2.832	0,6	1.759	0,9

Source: Labor market communications of the FBiH Institute of Statistics (2010-2015) and FBiH Statistical Yearbooks (2006-2009)

Source: Wages, employment and unemployment, statistical bulletins 2, 6 and 8, RS Institute of Statistics, 2010, 2014 and 2016

Long-term trends indicate a decrease in the number of population engaged in agriculture in Bosnia and Herzegovina; however this decrease is slow and indicates agrarian overemployment compared to the importance and share of this sector in creating social wealth. In BiH, the share of agricultural population changed over years; in 1958 it was at 70.8% while in 1981 it accounted for 21.3%⁷. The status of this indicator did not change much 35 years later, if looking at formal and informal employment together.

⁷ Vaško Ž., Mirjanić S., Basic indicators of agricultural development in Bosnia and Herzegovina – retrospective from 1950 to 2010, Agroznanje, vol. 14 (4), p. 579.

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Table 3 Employment in agriculture according to labor force surveys in BiH Entities and Brcko District in the period 2006-2015

Year	BiH Federation		Republika Srpska		Brcko District		Bosnia and Herzegovina	
	Number(000)	%	Number(000)	%	Number(000)	%	Number(000)	%
2006	72	14,3	93	31,2	2	15,6	167	20,6
2007	61	12,2	106	31,2	1	11,0	168	19,8
2008	72	13,7	110	31,3	1	10,3	183	20,6
2009	68	13,5	112	32,6	2	16,1	182	21,2
2010	61	12,2	104	31,5	1	9,2	166	19,7
2011	53	11,0	106	32,6	1	10,4	160	19,6
2012	66	13,5	99	31,7	2	17,7	167	20,5
2013	64	12,7	90	29,1	2	15,1	155	18,9
2014	44	9,0	93	30,4	2	13,8	139	17,1
2015	53	10,6	91	29,1	3	24,6	147	17,9

Source: Labor force survey

Source: RS Statistical Yearbook 2016, RS Institute of Statistics. 2016

BiH Federation: Formal employment in agricultural sector is very low and does not exceed 1% of all formally employed persons in this Entity. In the period 2009-2015 a moderate decrease trend in the overall number of employees in this sector was noted. In 2009 there were total of 4000 employees in BiH Federation constituting only 0.9% of all formal employees, after which this ratio deteriorated and in 2015 measured 2.8 thousands employees or only 0.6% of all employed. The data obtained through the labor force survey show substantial decrease in the importance of agricultural sector in the total employment of population of this BiH Entity. In 2006, there were 72 thousands employees in the sectors, constituting 14.3% of total informal employment, while ten years later the number of employees declined by 19 thousands accounting for only 53 thousands or 10.6% of total employment. Such trends are explained by the process of winding up of small-scale farms due to insufficient competitiveness and potential sale on BiH market, as well as to strengthening of other economic sectors attractive to agricultural population.

Republika Srpska: Formally, the companies whose main line of business is agriculture, hunting and accompanying services in Republika Srpska employ less than 1% of total employed, though the contribution of this sector (A) to GDP is 8%. This would mean that the sector has high productivity, only if it were not for additional almost 100 thousand of rural area population working in this sector, on full time basis or temporarily, whose self-employment is nowhere formally registered. Additional data from the labor force survey is that around 3/4 of those employed in agriculture work on full time basis while 1/4 work less than that, i.e. temporarily. These 100 thousands of self-employed in

agriculture make up one fourth of total employed in RS and generate one tenth of its GDP, indicating overemployment in agriculture and low productivity of the invested labor. On the other hand, agriculture is a social 'buffer' which provides food and minimum income to a part of population which cannot find employment in other sectors.

Importance of agriculture for the overall employment in BiH is confirmed by the UNDP Report on Human Development according to which agriculture in BiH appears to be very much a family business, outside the formal labor market⁸.

1.3. Share of agricultural and food sector in foreign trade

One of the indicators of development and importance of agriculture is its share in foreign trade. Given that goods imported in one Entity are still in trade in the other Entity and that exported goods could be produced in other Entity based on the seat of exporter, the data on foreign trade has been presented only at the level of BiH.

Table 4 Share of agricultural and food products in total foreign trade of Bosnia and Herzegovina in the period 2006-2015 (million KM)

	Total export of goods	Total import of goods	Trade balance	Export of AFP	% in total export	Import of AFP	% in total import	Trade balance of AFP	Level of import-export ratio of AFP
2006.	2.640	5.823	-3.183	270,2	5,2	1.923,5	16,9	-1.653,3	14,0
2007.	3.035	7.106	-4.071	336,1	5,7	2.210,6	15,9	-1.874,5	15,2
2008.	3.432	8.330	-4.899	424,5	6,3	2.580,8	15,8	-2.156,3	16,4
2009.	2.828	6.317	-3.489	466,0	8,4	2.365,8	19,2	-1.899,8	19,7
2010.	3.628	6.962	-3.334	563,7	7,9	2.466,7	18,1	-1.903,0	22,9
2011.	4.204	7.938	-3.734	621,2	7,6	2.745,4	17,7	-2.124,2	22,6
2012.	4.018	7.799	-3.781	620,7	7,9	2.788,9	18,3	-2.168,2	22,3
2013.	4.285	7.756	-3.471	685,4	8,2	2.725,4	18,0	-2.040,0	25,1
2014.	4.439	8.283	-3.844	661,7	7,6	2.728,9	16,8	-2.067,2	24,2
2015.	4.595	8.105	-3.510	840,1	9,4	2.862,1	18,1	-2.022,0	29,4

Note: PFP – Agricultural and food products

Source: BiH Foreign Trade Chamber Database

⁸ National Human Development Report, Rural Development in Bosnia and Herzegovina: Myth and Reality, UNDP, 2013, p.85

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BiH trade balance has been negative during all these years. This is largely contributed to by the deficit in foreign trade of agricultural and food products which has remained at BAM 2 billion over the past years. Export of agricultural and food products is increasing, with import growing at the same time, and resulting in the increase of deficit. Ten-year balance is such that import to export ratio of agricultural and food products went from initial 14% in 2006 to 29.4% in 2015. Detailed structure of foreign trade in agricultural and food products is given in Chapter 6.

2. Natural resources as the basis of agricultural production

Agricultural production, as well as any other production, requires resources. Three resource factors are necessary and important for agricultural production: climate, soil and water. Each of these resources is further elaborated below.

2.1. Climate characteristics

Bosnia and Herzegovina has the temperate continental climate type, which is represented mostly in lower northern and central parts of the country; Alpine climate of sub-mountainous and mountainous type in regions over 1000 m a.s.l. and the Adriatic (Mediterranean) and modified Adriatic climate type in coastal area of Neum and Herzegovina lowlands. The climate of Bosnia and Herzegovina therefore varies from a temperate continental climate in the northern Pannonia lowlands along the Sava River and in the foothill zone, to an alpine climate in the mountain regions, and a Mediterranean climate in the coastal and lowland areas of the Herzegovina region in the south and southeast⁹.

In the northern part of the country, air temperature generally ranges from -1 to -2°C in January and from 18 to 20°C in July. In highlands with the altitude above 1000 m, the average temperature ranges from -4 to -7°C in January and from 9 to 14°C in July. On the Adriatic coast and in the lowland regions of Herzegovina, air temperature ranges from 3 to 9°C in January to 22 to 25°C in July (for the period 1961-1990). The extreme temperature variations of 41.8°C (low) and 42.2°C (high) have been recorded.

The lowland area of northern Bosnia and Herzegovina has a mean annual temperature of between 10°C and 12°C, while in areas above 500 m the mean annual temperature is below 10°C. Mean annual air temperature in the coastal area varies between 12°C and 17°C. In the period 1981-2010, an increase in air temperature was recorded in the entire territory of Bosnia and Herzegovina. The highest increase of approximately 1°C is recorded during summer and winter period.

Annual precipitation amounts range from 800 mm in the north along the Sava River to 2000 mm in the central and southeastern mountainous regions of the country (period 1961-1990). Average annual precipitation in BiH is about 1,250 mm, which, given that the surface area of BiH is 51,209 km², amounts to 64 x 10⁹ m³ of water, or 2,030 m³/s. The outflow from the territory of BiH is 1.155 m³/s or 57% of total precipitation. However, these volumes of water are not evenly distributed, neither spatially nor temporally.¹⁰

In the continental part of BiH belonging to the Danube River catchment area, a major part of annual precipitation occurs in the warmer half of the year, reaching its maximum in June. The central and southern part of the country with numerous mountains and narrow coastal regions is characterized by a maritime pluviometric regime under the influence of the Adriatic Sea, so the monthly maximum amounts of precipitation are reached in late autumn and at the beginning of the winter, mostly in November and December. During the period 1981-2010, major parts of the Herzegovinian lowlands saw a decrease in annual precipitation, whereas the majority of mountainous meteorological stations recorded an increase in precipitation. Compared to 1961-1990, this period had a more uneven distribution of precipitation throughout, which was one of the main factors causing more frequent droughts and flooding.

The duration of sunshine decreases from the sea towards the mainland and at higher altitudes. Annual duration of sunshine in the central mountainous area is 1700-1900 hours, as a consequence of the

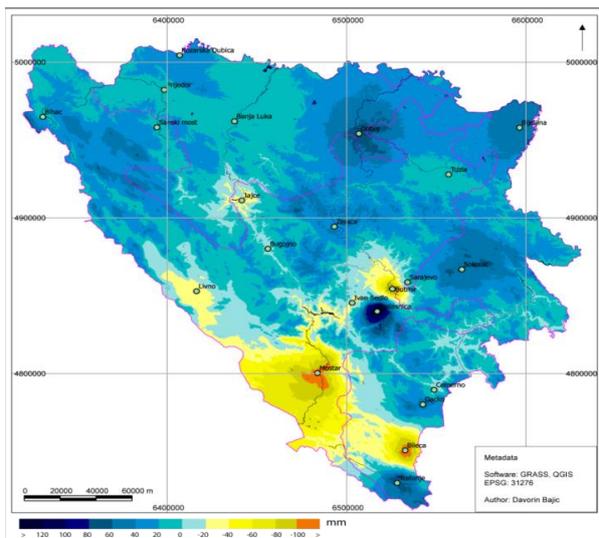
⁹ Second National Communication of BiH under UN Framework Convention on Climate Changes, UNDP, 2013

¹⁰ Second National Communication of BiH under UN Framework Convention on Climate Changes, UNDP 2013, p. 24

above average cloudiest conditions (60-70%). Due to frequent fogs during the cold part of the year, solar irradiation inland is lower than at the same altitudes in the coastal area. In southern regions, there are 1900-2300 hours of sunshine (Mostar = 2285 hours). In northern Bosnia and Herzegovina, there are 1800-2000 hours of sunshine, more in the eastern part than in the western part. Cloudiness declines from the west to the east.

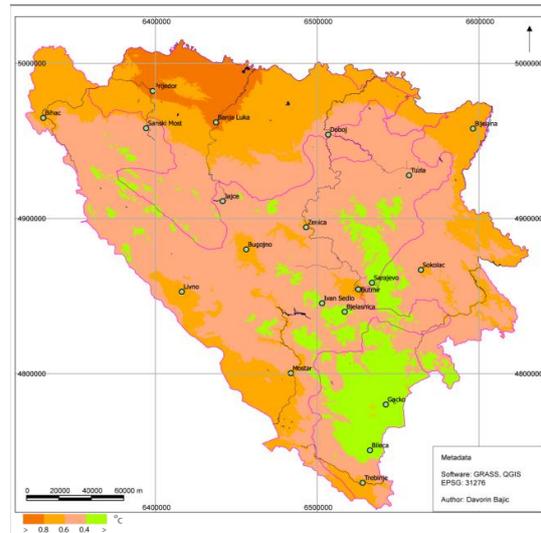
2.2. Climate changes and their consequences on agriculture

Climate changes will have a wide range of impacts on environment and its socio-economic aspect, as well as on similar sectors such as water resources, agriculture and food safety, human health, land ecosystems, biodiversity and coastal areas¹¹. In BiH climate changes are manifested through increase in average temperatures. Over the past hundred years the temperature increased by 0.8°C on average (which is in line with global trends), with accelerating tendency, and so the average decade temperature in 2000-2010 decade was the warmest in the last 120 years. This has significant impact on the balance of water in soil and underground since the quantity of water running off the surface of soil and steep mountain sides increases due to the increased intensity of rainfall and frequent episodes of sudden melting of snow. It is expected that the duration of dry periods, frequency of floods from inundation and intensity of erosion of soil will increase over the course of this century. Additionally, the frequency of hail, storms, thunders and maximum wind speed is expected to increase which can pose a threat to all forms of human activity¹².



Map 1 Changes in precipitation in BiH

Source: SNC

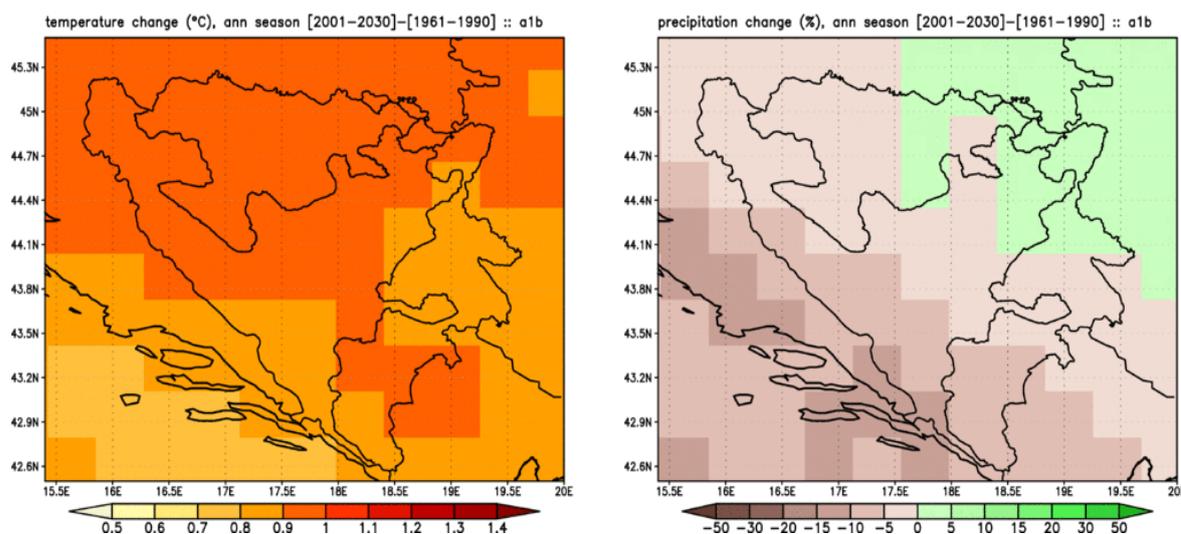


Map 2 Temperature changes in BiH

Source: SNC

¹¹ Čustović et al. (2015): Adaptation to climate changes in agriculture, Sarajevo.

¹² Source: First National Report on Climate Changes according to UNFCCC (2009); BiH Federation Vulnerability Study (2011)



Source: SNC, 2012

Figure 1 A1B scenario SINTEX-G MODEL changes in annual temperatures and precipitation in the periods 2001-2030 and 1961-1990

Different climate scenarios have been used to assess climate changes on the territory of Western Balkan countries, hence BiH as well. By using EH5OM global model, it was projected that temperature in BiH will rise from 0.7 to 1.6°C, namely between 1 and 2°C along the coast, and between 2 and 3°C in the interior part of the country. The highest increases will occur in summer and in inland areas.

When it comes to precipitation, the result will be a drier climate during the summer (June-August). A reduction by 50-100 mm (up to 10 percent) is expected. From the seasonal point of view, maximum effects are expected in the fall, where the level of precipitation will significantly decrease – up to 25%. Changes in precipitation regime will also be reflected in the timing, frequency and intensity of extreme phenomena - floods and droughts. This means an increased evapotranspiration and more pronounced extreme minimums in the watercourses regime. On the other hand, the increasingly frequent precipitation of extremely high intensity will cause rapid outflow, often in the form of flooding. All of this will lead to an even more pronounced unevenness in water outflow in BiH. On one hand, the availability of water resources during the vegetation season, when the requirements are the largest, will generally decrease, while, on the other hand, the risk of flooding will become higher¹³.

Bosnia and Herzegovina is highly vulnerable to climate changes given that it is extremely sensitive to such threats and will be considerably exposed due to economic role of climate sensitive sectors, in particular agriculture and forestry¹⁴.

The effects of climate changes will be felt both regarding plant and animal production. Decrease and changes in the precipitation regime, as well as increased evapotranspiration, will lead primarily to reduction of crop yields. Warmer and drier climate will have positive effects on the decrease of some phytopathogenic fungi that prefer frequent rainfall and relatively high humidity, which will facilitate control of some plant diseases. However, more intensive irrigation will increase the frequency of some other phytopathogenic bacteria. In addition to this, milder winters will lead to expansion of pests both horizontally and vertically and also new tropical diseases which have not been characteristic for BiH thus far. Many weeds, pests and plant pathogens thrive in higher temperatures, more humid climate

¹³ Čustović et al: Adaptation to climate changes in agriculture, Sarajevo, 2015

¹⁴ Čustović et al: Adaptation to climate changes in agriculture, Sarajevo, 2015

and increased level of CO₂. There is a possibility that due to climate changes weed and pests will expand to northern areas where farmers have not seen them so far, which will increase the production costs.

Possible effects of climate changes on food production are not limited to plant production only. Climate changes have far-reaching consequences on production of milk, meat and other animal products, primarily by impacting production of feed, health and reproduction of domestic animals. Climate changes which include temperature rise and change of spatial (geographical) and time pattern of precipitation lead to increased spread of various diseases and occurrence and spread of new tropical diseases. This is primarily related to communicable, i.e. vector-borne diseases – viruses, bacteria and parasites¹⁵.

Presently there are number of short-term, mid-term and long-term measures which may help agriculture to adapt to climate changes. Principally it is necessary to improve the system of irrigation and include agriculture in water management programs (including development of channels and reservoirs). Additionally, changes are needed in tillage practice focusing on various types of conservation tillage, introduction of crop rotation, changes in sowing dates, mixing less productive drought-tolerant crops with high productivity drought-sensitive species, cultivation of green manure crops, composting, mulching, introduction of the system of two harvests per year and introducing new drought-tolerant varieties. Improvement of hail protection and implementation of measures to prevent erosion should be addressed. It is necessary to implement agro-climate reionization and develop monitoring and early warning systems. Equally important is to raise awareness and train farmers on climate changes and their impact on agriculture. The program of protection from potential damages to agricultural production should be the important policy measure in climate change adaptation¹⁶.

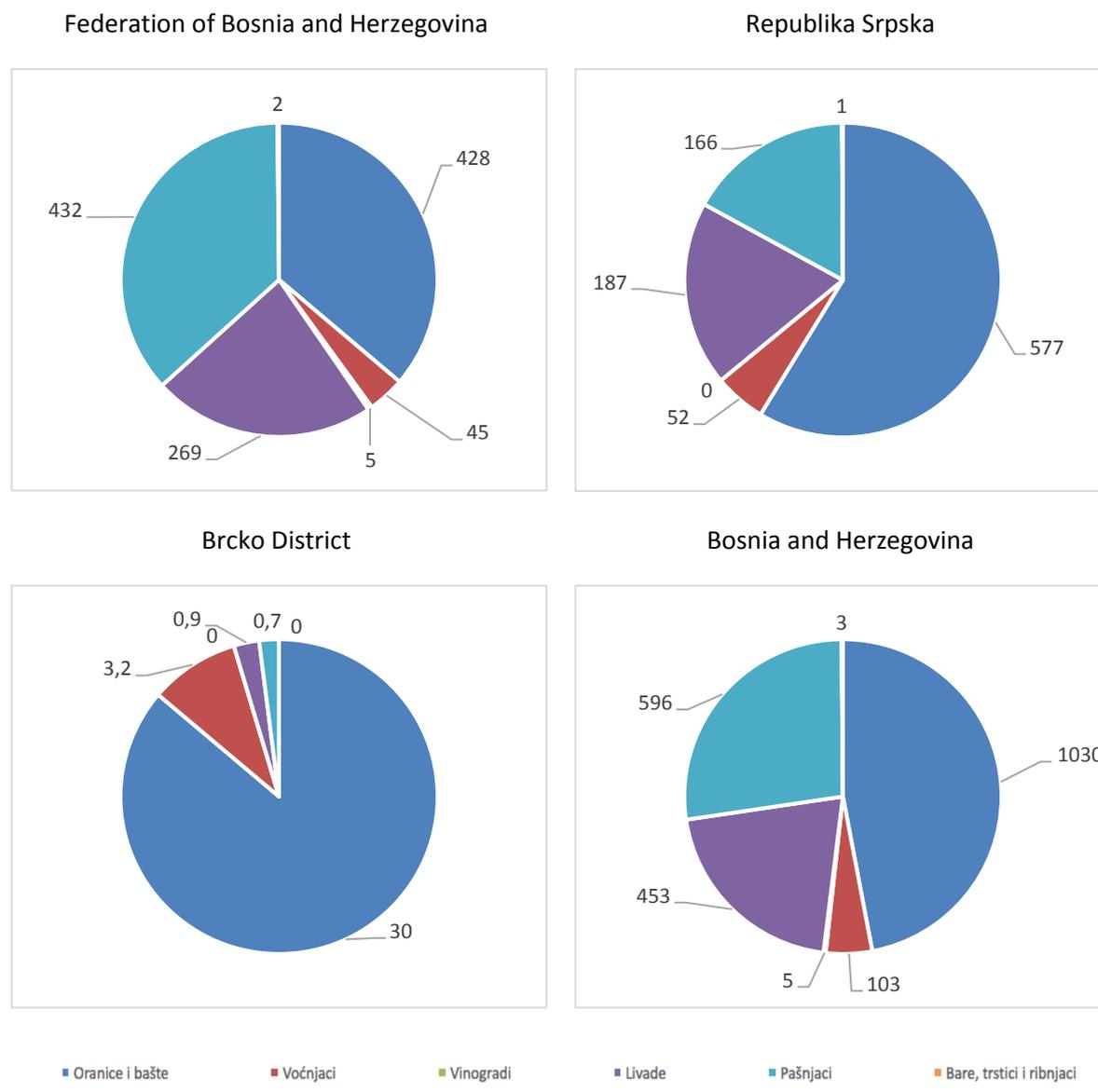
Measures which might help reduce the vulnerability of agricultural sector to climate changes primarily relate to the increase of soil capacity to intake and store water, development of organic matter of soil and support to those types of agricultural production which contribute to this, especially organic agriculture. When it comes to climate change mitigation, BiH priority is to strengthen institutional and expert capacities in development and implementation of climate policy, monitoring of greenhouse gas emissions, and planning, implementation, supervision, reporting and verification of mitigation actions.

2.3. Agricultural land

The primary natural resource that conditions the scope and structure of agricultural production is agricultural land, its size, topographic characteristic and quality. One of the most important reasons of insufficient production of the basic agricultural products is that the existing agricultural production capacities have not been used more intensively over the past period. Agricultural land has not been used in accordance with the general public interest for some time now and increasingly large areas of arable land remain abandoned and uncultivated (see Appendix, Table P-2). Further agricultural development requires orientation towards rational use of land, land regulation with agro- and hydro-meliorations, commasation and arondation, etc. Natural characteristics of land define it as an extremely vulnerable resource which needs to be taken care of and used in a planned way.

¹⁵ Čustović et al (2015): Adaptation to climate changes in agriculture, Sarajevo

¹⁶ For more details about climate change adaptation measures see Climate Change Integration Plan, FARMA II, June 3, 2016



Source: Plant Production Bulletin of FBiH Institute of Statistics

Source: Communications of RS Institute of Statistics

Source: Communications of BiH Agency for Statistics

Chart 1 Structure of agricultural land according to categories of use in BiH Entities and Brcko District in 2015 (in 000 ha)

BiH Federation: According to 2015 statistical data¹⁷, the structure of agricultural land is as follows: out of total 1.181.000 ha arable land accounts for 747,000 ha or 63.2% (plowed fields - tilled fields and gardens 428.000 ha, orchards 45.000 ha, vineyards 5.000 ha, meadows 267.000 ha) while uncultivated land accounts for 435,000 ha or 36.8% (pastures 432.000 ha and reeds and wetlands 2.000 ha). Looking at the overall agricultural land in the period 2006-2015 (see Appendix) it is evident that the

¹⁷ FBiH Institute of Statistics

size of land changes year after year. Arable land records an increase: in 2006 the arable land in BiH Federation covered 719.000 ha while in 2015 arable land accounted for 747.000 ha, which constitutes an increase of 28,000 ha (2.93%). Variations in the size of plowland have also been noted ranging from 390,000 ha in 2011 to 428,000 ha in 2015.

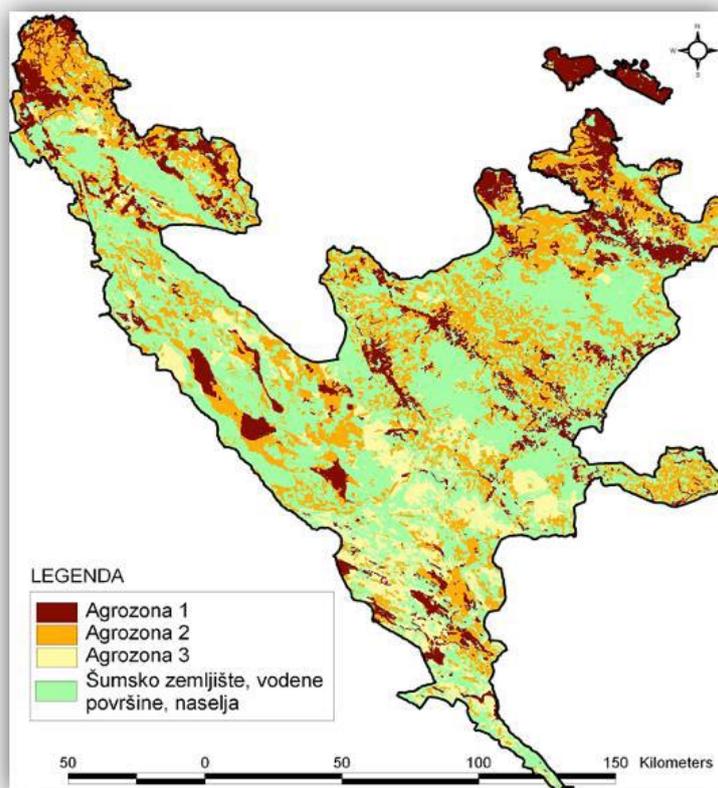
Based on the data of FBIH Institute for Development Programming¹⁸ the share of agricultural land in the total size of canton is as follows: 74.53% in Posavina, 43.90% in Una-Sana, 35.05% in West-Herzegovina, 37.89% in Herzegovina-Neretva, 37.28% in Bosnia-Podrinje, 46.51% in Tuzla, 64.26% in Canton 10, 33.06% in Zenica-Doboj, 35.63% in Central Bosnia and 35.98% in Sarajevo Canton.

When it comes to the manner of land use (according to CORINE 2006 database) high share of pastures and meadows indicates extensive manner of land use, i.e. the possibility to increase agricultural production by means of its intensification. In addition to this, the possibilities for better use of land are found in unfavorable proportion of arable and uncultivated land. The critical ceiling of agricultural land needed for production of sufficient quantities of quality food and inputs needed for population survival, i.e. sustainable development of humankind is 0.40 ha per head of population and 0.17 ha of arable land, indicating the current relatively good situation in this BiH Entity (0.53 ha of agricultural and 0.34 ha of arable land).

According to BH MAC 2013 data, there are around 938.90 km² of mine suspected areas in FBIH. Only several thousands of hectares of land have been cleared of mines so far. Areas under mines consist of different land categories (construction, agricultural and forest land) but regardless of the category this land does not exercise its economic function. Such land is also a potential point for development of plant diseases and insects. In addition, the existence of land under mines limits the freedom of movement and quality of life of rural population.

Agricultural land in FBIH is classified in eight classes of land production capability (capability categories) where class I includes the best lands (best physical, chemical and biological features) while class VIII includes extremely limited lands. Production capability of land is a basis for grouping agricultural land capability classes into areas called 'agro-zones'. According to data of FBIH Institute for Agropedology, out of total agricultural land in FBIH the largest portion falls under agro-zone 2 (agricultural land of V and VI class of production capability) – 52.10%, followed by agro-zone 1 (arable agricultural land of I-IV class of production capability) – 25.03%, and finally agro-zone 3 (land falling into VII and VIII class of production capability) – 22.85%. With the exception of Posavina Canton, the issue of low share of quality agricultural land is noted in all other cantons.

¹⁸ FBIH Institute for Planning and Development (2016): Socioeconomic indicators by municipalities in BiH Federation in 2015



Source: FBiH Agricultural Land Management Strategy, 2011

Map 3 Spatial distribution of agro-zones in BiH Federation

The latest population census from 2013 determined the total number of farms in BiH, i.e. its Entities and Brcko District. According to the census, Bosnia and Herzegovina has total of 363.394 households engaged in agriculture out of which BiH Federation accounts for 217.061 of which 30.089 households are engaged in agriculture and sell their products on the market. Total number of farms in BiH is significantly smaller than the number determined by the 1991 census (570,000). Unfortunately, BiH did not have agricultural census which, according to the EU standards, is common practice implemented 6-12 months after the population census. Consequently, Bosnia and Herzegovina still does not have the structure of farms with all the relevant features such is division of farms by their type in relation to the used agricultural land, i.e. determining the size of farms according to the agricultural land used.

According to data¹⁹ from March 2017, total of 69.542 farms have been registered in Farm Register out of which 2.986 are registered as legal entities while the remaining 66.556 are registered as family farms. The registered farms in FBiH use total of 106.014 ha agricultural land and the average size of farm, according to the agricultural land used, is 1.52 ha. In the structure of registered farms 45.982 or two thirds (66.1%) are of size of 1 ha, while 16.228 or 23.3% are farms size from 1 to 3 ha. The average size of holding of registered farms of 1.52 ha is far below the EU 27 average of 14.3 ha²⁰. Most countries that acceded to the EU in 2004 and 2006 also have unfavorable structure of agricultural holdings and are taking actions to improve this. In addition that most of these countries have the

¹⁹ Source: Database of the Farm Register and Client Register of the BiH Federation Ministry of Agriculture, Water Management and Forestry

²⁰ Eurostat, Statistics explained, Agricultural holdings 2000-2010.

established land fund managed by a competent institution for the purpose of consolidation of agricultural land, most also use a combination of other measures (development of young farmers (?), early retirement of farmers and farm workers, improvement of infrastructure related to development and adaptation of agriculture, commasation, etc.).

Republika Srpska: In terms of available agricultural land in Republika Srpska, there are different data available. According to available statistical data RS has 983.000 ha of agricultural land, accounting for 39.5% of the RS territory. According to the analysis of data from CORINE database on land cover²¹ (developed in 2008), Republika Srpska has 1.044.689 ha of agricultural land accounting for 42.3% of its territory. This means that data available in CORINE database and those published by the official statistics differ: according to the manner of use of arable land (cultivated and neglected plowed fields and meadows) this number is smaller by 100 thousand ha (720 thousand ha) and bigger for pastures by 160 thousands ha (325 thousand ha) in CORINE database. The data on less plowed fields and more meadows and pastures indicates the neglecting of arable agricultural land and its extensive manner of use. Huge reserves are indicated by the data that RS has 52 thousands ha under orchards while discrepancies stem from interpretation of what is meant under orchard: only intensive plantations or all areas under fruits, regardless of the level of production intensity.

Using the data of the RS Institute of Statistics on agricultural land and plowland and number of population, in 2013 RS had 0.84 ha of agricultural land and 0.50 ha of plowed land and gardens per head of population.

35.093 farms were registered with the Farm Register as at December 31, 2016. The total holding of farms registered with the FR accounts for 160.528 ha of agricultural land (4.67 ha per farm on average) out of which 140.490 ha is arable, but farms reported using around half of the registered land.

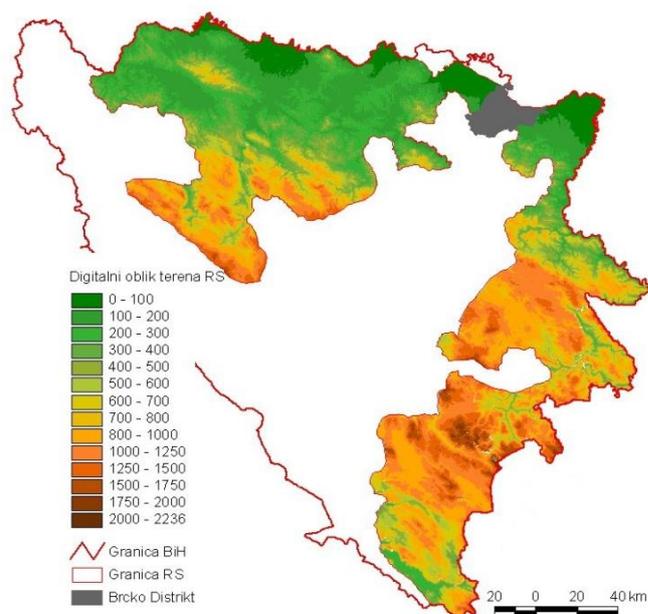
The territory of RS stretches at the altitude between 80 and 2.368 meters above sea level. The distribution of its territory according to altitude zones is shown in the following table and map.

Table 5 Hypsometric characteristics of RS relief²²

	Elevation (hypsometric) zones	Size km ²	Size %
1.	0 – 200	5.298,8	21,1
2.	200 – 500	6.572,0	26,2
3.	500 – 1.000	8.144,3	32,5
4.	1.000 – 1.500	4.602,4	18,4
5.	1.500 – 2.000	464,1	1,77
6.	2.000 – 2.370	8,4	0,03

²¹ Predić Tihomir, Nikić-Nauht Petra, Lukić Rade, Cvijanović Tatjana (2012), Manner of use of agricultural land of RS, AGROSYM 2012, Compendium

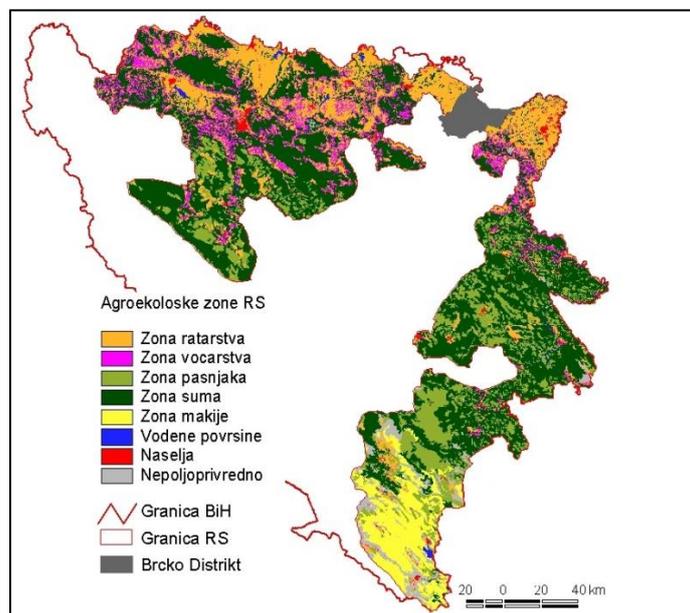
²² Basics of regulation, protection and use of land of RS, RS Agricultural Institute, Institute for Agrochemistry and Agroecology, RS MAFWM, 2009, pp.-14



Map 4: Digital share of RS terrain

The largest part of land in RS (71.79%) has the slope of 0-10° and is suitable for cultivation, i.e. for arable crop production.

By combining data on land, climate and requirements of specific plants and using GIS methodology, RS Institute of Agriculture modeled agro-environmental zones from the point of optimal use of RS territory for specific types of agricultural production.



Map 5: Agro-environmental zones in Republika Srpska²³

²³ Basics of Regulation, Protection and Use of Land of RS, RS Agricultural Institute, Institute for Agrochemistry and Agroecology, RS MAFWM, 2009, p. 57

WORKING DOCUMENT

According to this model 19.8% of areas have predisposition and advantage if used for arable crop production, 8.1% for fruit production, 14.6% as pastures and 57.5% as forests.

According to data of BH MAC for 2014, there were 267 km² of mine suspected areas in Republika Srpska, accounting for 1.07% of total agricultural area.²⁴

Land capability and its suitability or unsuitability for specific types of agricultural production are just one of the problems agricultural production in RS faces. Another issue is farm fragmentation, i.e. the size of agricultural land owned by a farm and further fragmentation of agricultural land (larger number of smaller plots). The effect of economy of scale should be one of the main motives for consolidation of land property; however this is (though there are no exact data on this) done rather slowly. Increase of land property by purchasing additional agricultural land from other farms does not happen often despite low prices of agricultural land; however virtual consolidation is observable as more and more land in rural areas could be obtained for cultivation without any or with minimum compensation (lease).

The manner of use and protection of agricultural land in Republika Srpska is regulated in detail by the planning document 'Basics of Use, Regulation and Protection of Land of Republika Srpska'²⁵.

According to the data of RS MAFWM, as at 2016 the total size of state-owned agricultural land in RS which was under concession was 14,964 ha (56 concessionaires) and of land under lease was 3,112 ha (307 lessee).

Bosnia and Herzegovina: As previously mentioned, the land is classified in 8 classes according to its capability (agricultural production capability) where the first 4 classes are suitable for cultivation while the last 4 classes are suitable for meadows, pastures and forests. The most valuable land, in agricultural terms, (class I and class II) in BiH is scarce as it is shown in the table below.

Table 6 Capability classes of land in BiH

Capability class	Size (ha)	% of total territory
I	134.550	2,67
II	160.260	2,94
III	430.300	8,42
IV	860.703	16,83
V	853.960	6,68
VI	1.618.211	32,47
VII	383.499	7,00
VIII	669.515	12,99

²⁴ According to: Vaško et al. (2015), Agriculture and Rural development in RS until 2020, Banja Luka University, Faculty of Agriculture

²⁵ Basics of Regulation, Protection and Use of Land of RS, RS Agricultural Institute, Institute for Agrochemistry and Agroecology, RS MAFWM, 2009

WORKING DOCUMENT

Total:	5.110.000	100,0
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Source: Resulović Husnija, Bukalo Esad, Kraišnik Vesna, Manner of land use – contradictions and opportunities for harmonization for sustainable development, Agrosym, 2010, p. 107.

According to BH MAC data for 2016, the total mine suspected area in BiH covers 1.1.45 km² or 2.3% compared to the entire area of BiH or 9.018 suspected locations²⁶. The largest area falls within the category of agricultural land.

In the former system around 29% of agricultural areas in BiH were state-owned of which plowed land accounted for only 5.9% while the remaining portion were mostly pastures²⁷. Part of the social, today state-own agricultural land has been privatized together with the legal successors of the land, thus state-owned agricultural land is surely smaller today. In this regard BiH has no significant issues regarding restitution of this land as was the case with other countries in transition. However, privately owned agricultural land is dispersed to tens of thousands of owners (farms) and further fragmented to hundreds of thousands of parcels. Fragmentation of agricultural land reduces the productivity and increases the costs of agricultural production and this limitation is difficult, i.e. almost impossible to eliminate in short-term. Also, domination of private agricultural land complicates implementation of regulation measures.

It is to be expected that updated data on the number and structure of farms will be published soon based on the results of 2013 BiH population census; and in the meantime we have to rely on data on the share of the number of farms according to the size of agricultural land property in BiH from 1981. According to this data, BiH had 291 thousands farms with holdings of less than 2 ha with only 16 thousand farms with holdings of over 10 ha. It could be said that the situation with ownership of agricultural land did not change much; however there is a growing trend of farms which temporarily lease and cultivate agricultural land from neglected farms and those held by elderly population.

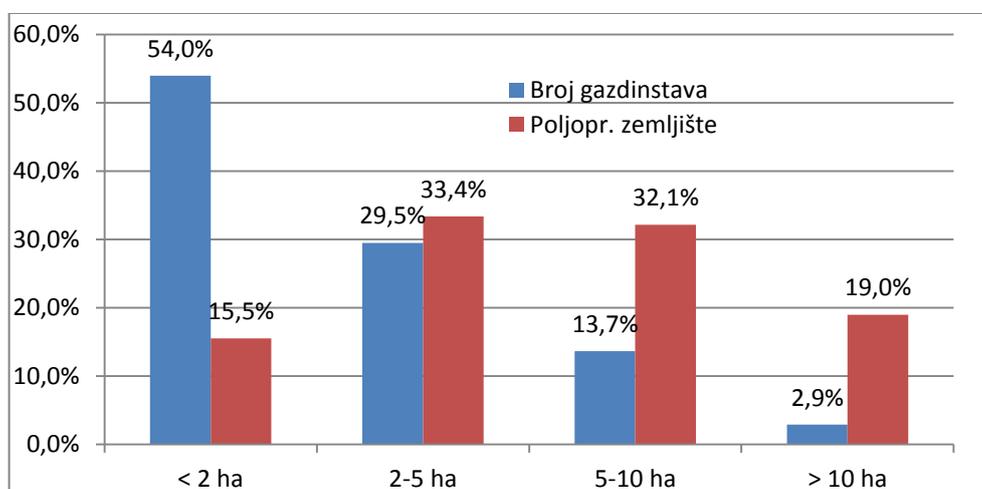


Chart 2 Ratio of the number of farms and agricultural land in Bosnia and Herzegovina (1981)²⁸

²⁶ BiH Mine Action Centre, available at http://www.bhmac.org/?page_id=629&lang=bs (accessed on January 27, 2017)

²⁷ Calculation based on the data from Long-term Program of Agricultural Development in Bosnia and Herzegovina 1986-2000, Sarajevo, 1986, pp. 119

²⁸ Calculation of data done by the BiH Institute of Statistics, Statistical Bulletin 101, 1983 (according to: Agricultural Land Management Strategy, Faculty of Agronomy and Food Technology, Mostar University, 2011, p. 23)

The key legislation regulating the system of land administration in BiH include the effective laws on ownership and property rights. Thus, FBiH does not have a common position regarding the concept of registration of real estate. One of the problems is decentralization of land survey, i.e. discrepancy regarding the competences of different governmental levels (federal, cantonal and municipal). Four types of cadasters are being officially used – Austro-Hungarian and census cadaster are both completely outdated. The land cadaster and real estate cadaster are a good basis for registering real estate rights and further development of the land administration system. Land registers are largely based on data from the outdated Austro-Hungarian survey, except for a smaller portion which is based on the new aerophotogrametric survey. Considerably more efforts have to be invested in future to harmonize cadaster and land register data which requires coordination and cooperation of authorities in charge of these records; hence this analysis is a good opportunity to once again point out the issue of outdated and non-harmonized data.

Agricultural land in FBiH is state owned in legal dealings and cannot be sold (except in cases when FBiH Parliament determines its sale is of general interest). It can be sold, given for a short or longer period lease or given under concession for the sole purpose of consolidation of agricultural land. The total size of agricultural land under lease or concession in FBiH in 2012 was 6.925,47 ha, where 227.31 ha changed its purpose. The disposal of agricultural land is characterized by long and complicated procedures and legal uncertainty along with a number of impediments including: disorderly state of land register and cadaster, lack of expert personnel to implement disposal in local self-governance units, lack of a common database on the disposal of state-owned agricultural land, lack of coordinating body in charge of agricultural land, etc.

The restitution regulations have not been passed and for now there is no possibility to reconstitute the seized agricultural land to owners or their legal successors. Comprehensive privatization of state-owned land is not foreseen as it could result in further fragmentation and even worse structure of holdings.

The impediments to development of efficient market of private agricultural land include, among others: large fragmentation of agricultural land, disorderly state of land register and cadaster, lack of organized and systematic data on the supply and demand, insufficient interest for purchase of agricultural land in some parts of FBiH, lack of tax policy to systematically address the issue of neglected agricultural land, conversion of agricultural land into construction land, lack of favorable loans for purchase of agricultural land, etc.

The trade in agricultural land among local natural persons is at a low level, though there are no formal or legal restrictions to this. An earlier survey confirmed that 1 ha of agricultural land in BiH is cheaper than in Croatia, Serbia, Macedonia and Albania, but more expensive than in Bulgaria, Hungary and Poland²⁹. Regardless of the large share of uncultivated land, successors are indifferent towards this resource, they often do not use it though legislation stipulates the obligation of the owner, i.e. users of agricultural land to cultivate it or use it in another way.

In the context of better insight into the manner of use of agricultural land and support to disbursement of area-based subsidies it is necessary to establish the Land Parcel Information System. The Land-parcel identification system (LPIS) is a component of a wider Integrated Administration and Control System and represents a spatial register of agricultural parcels with information on their position, size and unique identifier for each parcel. One of the main functionalities of LPIS register is to prevent disbursement of subsidies to farmers for those areas which are not eligible for subsidy and to avoid

²⁹ Lampietti J. A., Lugg D. G., Van der Celen P., Branczik A., *The Changing Face of Rural Space, Agricultural and Rural Development in the Western Balkans*, The World Bank, 2009, pp. 22.

double payment of subsidies for the same areas. LPIS is also a tool for efficient management of agricultural areas used by a number of different users and not only the state administration.

In new EU Member States all registers are found with the ministry of agriculture and payment agency uses them for payments and control of subsidies. In the context of EU accession and for the purpose of control of local budgetary incentives, both Entities should establish LPIS based on actual use of areas using the geographic information system (GIS). Though a priority, establishment of LPIS is a long and demanding process which requires significant technical and financial support. LPIS brings many advantages for the sector, including: direct payments and governmental subsidies; land commasation projects through land banks or other funds; improvement of credit financing according to the land ownership and assessment of land value; development of stable land market, etc.

2.3.1 Water resources

Hydrological map of Bosnia and Herzegovina is composed of rivers and natural and artificial lakes. With average precipitation of 1.250 mm BiH is one of the water abundant areas of Europe, in particular South Europe. Total volume of rainfall is around $64 \times 10^9 \text{ m}^3$. The total outflow from the territory of BiH is around $2.030 \text{ m}^3/\text{sec}$ while the average outflow from BiH territory is around $1.155 \text{ m}^3/\text{sec}$. Average coefficient of outflow from BiH territory is 0.57.

BiH Federation: The total volume of rainfall in BiH Federation is $33 \times 10^9 \text{ m}^3$. The total outflow from the FBiH territory is around $1.050 \text{ m}^3/\text{sec}$ while the average outflow from FBiH territory is around $670 \text{ m}^3/\text{sec}$. Average coefficient of outflow from FBiH territory is 0.64.

Spatial distribution of water in FBiH is rather uneven. This unevenness is even more pronounced if we consider the main sub-basins where the disproportion of available water quantities relative to the dynamics of needs is more pronounced. Hence the most pronounced needs for water are in Posavina region which has substantial agricultural potential and is at the same time the poorest part of FBiH in terms of own water.

Periods of less precipitation in areas of the main sub-basins in FBiH last relatively long, in the period from June to September. This is also the period when the needs and demand for water, especially of agricultural sector, are the biggest. According to literature criteria, in terms of water abundance FBiH falls among the medium abundant countries whose availability of water per capita is around $9.100 \text{ m}^3/\text{inhabitant}$ (the literature criteria for assessing water abundance for medium abundant countries ranges from 5.000 to $10.000 \text{ m}^3/\text{inhabitant}$).

However, the situation regarding water quality in FBiH is unsatisfactory. The most critical situation is in the most populated sub-basins of larger rivers: Bosna and Vrbas. The most populated areas are also the most pronounced water polluters while the level of development of water quality protection systems is very low, resulting in restrictions in water use for downstream users.

In the existing spatial and time redistribution of water in FBiH it will be difficult to find room for the abstraction of water for intensive irrigation. When the needs and demand for water are the biggest, the water in watercourses is most deficient, both in quantitative and qualitative terms (period June-September). The exception could be Drina river; however there are no substantial agricultural resources along this river in BiH Federation. Provision of water for irrigation needs will have to be tackled within the construction of multipurpose reservoirs and by means of redistribution of water within the existing reservoir areas.

Republika Srpska: The territory of Republika Srpska is divided into two regional river basins: Sava river basin region and Trebisnjica river basin region. RS shares water resources of other substantial watercourses with BiH Federation.

Water distribution in Republika Srpska is such that there is a lack of water where it is most needed, and these are the Northern parts where most fertile land is located. Four main hydrological regions

could be observed on the territory of RS: North Bosnia, Banja Luka-Kladanj-Visegrad, Central Bosnia, and Herzegovina and Southwest Bosnia region³⁰.

Average annual precipitation in Northern parts of Republika Srpska is relatively low and amounts to 750-850 mm/annually on average. On the other hand, average daily precipitation in South and mountainous parts of RS are around 1.800 mm/annually³¹. The largest portion of water runs off in short floods, which are followed by periods of small outflow when it is not possible to abstract water from watercourses without regulating the water level by means of reservoir. The other extremity is the situation of high waters (torrents and flood waves).

Due to insufficient and unevenly distributed precipitation during the year, it is necessary to provide additional moisture for optimal growth and development of plants cultivated as part of agricultural production, which is achieved by irrigation. Irrigation increases the level of intensity of use of agricultural land. According to the Integrated Water Management Strategy³², 158,000 ha could be covered by irrigation in Republika Srpska. The earlier data indicating 7.262 ha under irrigation systems in RS, out of which only 1.700 ha is in function³³, has been improved in the meantime. Owing to the World Bank project and loan, new irrigation systems were constructed covering the area of 824 ha (Bijeljina and Pelagicevo), while irrigation systems for additional 876 ha are under construction (Bratunac, Ljubinje and Laktasi). In addition to this, a growing number of farms address irrigation on their own, if they have conditions for this. In the period 2009-2015, in RS the agricultural budget subsidized irrigation investments on 14.357 ha³⁴. Even if some areas have been duplicated (producers develop the irrigation system partially over a number of years or after certain period repeat the investment on the same area), this increased the irrigated area by at least 5,000 ha. RS Government adopted the Strategic Plan for Development of Agriculture and Rural Areas in RS for the period 2016-2020 which provides for subsidies for investments into irrigation systems (joint and individual) with the aim to increase the irrigated areas by 10,000 ha by 2020. Within this deadline, construction of Vrbas-Osorna channel in Lijevice Polje is expected which would be used to irrigate 14,000 ha; thus the set strategic goal seems realistic. However, a substantial part of arable areas in RS will still be deprived of the possibility of irrigation and it is therefore necessary to continue investing in this type of infrastructure.

It is estimated that in future the impact of climate changes through increase of average temperatures and decrease of average precipitation will have even more adverse effect on agricultural production³⁵; consequently irrigation will become a necessity.

Water surplus could be an issue as well as water scarcity. In addition to investments in irrigation, at the same time it is necessary to invest in drainage and protection against high waters (external and

³⁰ Spatial plan of Republika Srpska by 2025, amendments (draft), Ministry for Spatial Planning, Civil Engineering and Ecology, 2013, p. 89-90

³¹ Integrated Water Management Strategy of Republika Srpska 2015-2024, RS Government, 2015

³² RS Integrated Water Management Strategy 2015-2024, RS Ministry of Agriculture, Forestry and Water Management, 2015, p. 66

³³ Basics of Regulation, Protection and Use of Land of RS, RS Agricultural Institute, Institute for Agrochemistry and Agroecology, RS MAFWM, 2009, p. 52

³⁴ Šajjić Tomislav, Effect of Subsidizing Irrigation Investments in Republika Srpska, master's dissertation, Faculty of Agriculture, Banja Luka, 2016, p. 66

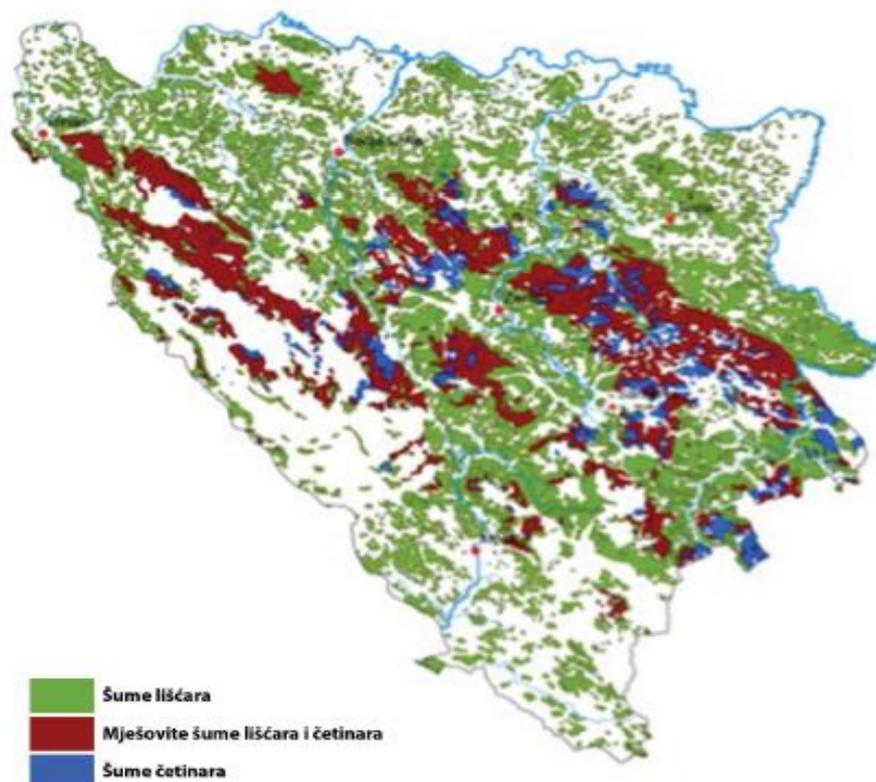
³⁵ Joint assessment of the RS Ministry of Agriculture, Forestry and Water Management and RS Agricultural Institute shows that drought decreased yield and income in agriculture in RS by around BAM 200 million (which is 1/4 of total GDP of RS agriculture), Information and consequences of damages and storms in agricultural production in 2015

internal) by constructing drainage, drainage channels, embankment and pump stations. The extreme floods that hit the region in 2014 caused huge damages to agriculture. The EC Report estimated the damages from 2014 floods in BiH to EUR 104 million, and losses to EUR 83 million (total of EUR 187 million)³⁶.

According to UNDP Human Development Report for BiH³⁷ farmers are one of the vulnerable groups since the results of their work and income are directly dependent on the nature and climate changes. Due to this it is necessary to introduce new practices in agricultural production which will be used to act preventively to reduce adverse effects and negative consequences of climate changes.

2.3.2. Forest resources

According to the official data on forest abundance, BiH is classified under European countries with significant forest cover whose landscape is characterized by natural forest ecosystems which leave significant mark on economic development of the country and standard of its citizens, from the economic, environmental and sociological point of view. This primarily relates to the provision of jobs and participation in energy balance of the country. In general, the role of forests is immense in increasing the standard of people by being able to spend time in nature, providing and regularly supplying drinking water and mitigating climate extremes, as well as preventing occurrence of high waters and protecting human lives from any other disasters.



Source: Possibilities of using biomass from forestry and wood industry in Bosnia and Herzegovina, UNDP, Sarajevo, 2014

Map 6: Distribution of forests on the territory of BiH

³⁶ EC Report, BiH Recovery Needs Assessment, summary, 2014

³⁷ Human Development Index Report 2016, Risk-Proofing the Western Balkans: Empowering People to Prevent Disasters, UNDP.

Forests are one of the most important natural resources in the country. Due to their natural and diverse structure, as well as significant natural regeneration, they are the key resource for further development of Bosnia and Herzegovina. The country itself is geographically extremely well positioned in terms of different climate impacts (Mediterranean, sub-Mediterranean and moderate continental climate zones) and has over a hundred species of trees. The main species of trees are fir, spruce, black and Scots pine, beech, various species of oak, while deciduous species such as maple, elm, ash and fruit trees (cherry, apple and pear) are represented in fewer numbers.

According to the latest data, forests and forest land in Bosnia and Herzegovina cover the area of 3,231,500 ha and account for 63% of its total size, one of the highest values in Europe. As regards forest ownership, around 80% of forests are state-owned and 20% are in private ownership³⁸. However, according to statistical data (see Appendix) forests and forest land in BiH account for 2,804,700 ha or 54.8% of its total size (5,122,612 ha).

Professional development and management in forest sector are based on traditional systems and have been recently subject to changed requirements in terms of higher contribution to protection and improvement of all important forest functions, starting from economic justifiability to social accountability and environmental viability. Generally, from the end of war forest sector has been facing substantial structural changes and strong need for modernization to become competitive in global market.

As regards development of rural areas, forestry is a very important economic branch in Bosnia and Herzegovina. Predominant forest areas are those scarcely populated areas of municipalities and rural areas as a whole. Due to this forestry needs to be equally included in the planning of rural development in BiH. Rural forest areas in BiH are important resources for overall material and social development, for living and working as well as for economic strengthening of rural population. Forests provide conditions for living in rural areas (employment), offer significant economic security to private owners, provide for meeting the needs for firewood and construction material, timber and non-wood products, and opportunities for recreation and tourism, and create conditions for entrepreneurship and new jobs in accordance with the local needs. With better infrastructural connections rural forest areas become areas which are able to relatively quickly adapt to economic, social, technological, cultural, environmental and other changes, including mastering the principles of market economy.

BiH Federation: The total area covered by forests in FBiH accounts for 1.465.600 ha or 56.2% of the entire FBiH territory. Out of this figure the total area of available production forests accounts for 1.028.700 ha or around 39.4% of the entire FBiH territory. Due to larger areas of coppice and shrubs and bare areas, the share of forests and forest land in total size of FBiH is somewhat larger and accounts for 64.9%.

In BiH the traditional forestry is dedicated to wood production and its hunting and production function, while collection of non-wood forest products has always been an integral part of population economy, primarily of rural population. Non-wood forest products in BiH traditionally include resin, juices, tannin, oils, berries, seeds, fibers, mushrooms, wood greens, etc.

According to BiH Foreign Trade Chamber data for 2016 the export of mushrooms, herbs, forest fruits, spices and essential oils amounted to BAM 32.3 million (2.703 tones) where mushrooms accounted for the largest portion (50%). This is an increase of 14% compared to the previous year when the total export of these products was at BAM 28.4 million. Between 250 and 300 small and medium-sized companies are engaged in activities regarding medicinal plants and non-wood forest products.

³⁸ Forest Sector Review in Bosnia and Herzegovina, FAO, 2015

Number of families³⁹ in BiH which are traditionally engaged in this activity is estimated at around 100.000.

The analysis of sector of medicinal, edible and aromatic products in BiH indicates, among other things, the following: poor legislative regulations, poor application of the existing legislation in practice, lack of official 'Red Book of Flora' of BiH or Entities, undefined inter-entity relations (lack of harmonization of legislation), lack of engagement of production and processing organizations in developing sector policies, lack of a database on collection of these plants (by species, quantities, quality), absence of clear management plans which regulate the non-wood forest products sector in details, absence of guidelines for managing this resource, lack of adequate space for storage of collected materials, poor awareness of company management on the importance and possibilities of the sectors, etc. It is necessary as soon as possible to work on addressing ownership rights and rights of users, development of new products, eco brands, development of marketing and market, etc.

Seen from today's perspective and management position, permanent rational management and optimal use of this resource cannot be considered without the knowledge on the actual quantities (supplies) of medicinal, edible and aromatic herbs, their distribution and vulnerability, knowledge of international regulations on trade and sale, international standards and manner of certification. International standards and EU legislation regarding this issue should be introduced into FBiH legislation and inventory of these products should be conducted as a basis for sustainable management of this resource.

In terms of potential EU assistance in forestry in Bosnia and Herzegovina, FAO conducted a review of forest sector in BiH in 2015⁴⁰. The priority actions in this area are based on the findings of forest sectoral study including comments of the stakeholders and are grouped in accordance with the main elements of IPARD program, i.e. three IPARD axis and their categories of measures, as well as new measures for forestry under IPARD 2013–2020⁴¹. The IPA II/IPARD 2014-2020 program of the European Commission defined measures in forestry⁴². This program foresees the three main pillars of:

- (i) afforestation and agroforestry,
- (ii) fire prevention and restoration after fire, and
- (iii) improving the resilience and environmental value of forest ecosystems.

The aim of all these measures is to contribute to expanding and improving forest resources, restoring forests damaged in fires and preventing forest fires. Moreover, these measures provide the opportunity to increase the balance of commodities (food, feed, fuel, fibers, etc.) and non-commercial outputs such as environmental protection, and protection of cultural and landscape resources.

However, projects eligible for funding under this measure need to be in accordance with the state forestry program, strategy or other equivalent document, and the afforestation program. As regards afforestation, preference is given to attaining protection goals (e.g. protection of soil or water) and private land owners. However, if there is a limited interest of private owners, the assistance could be

³⁹ FARMA, 2010.

⁴⁰ Project "Preparation of forest and fisheries sector reviews in Bosnia and Herzegovina", funded by the EU

⁴¹ Forest review in BiH is available at: <http://www.fao.org/3/a-au015o.pdf> and http://europa.ba/wp-content/uploads/2015/05/delegacijaEU_2015020309283833bos.pdf

⁴² EC, 2014: ESTABLISHMENT AND PROTECTION OF FORESTS: Draft measure fiche for IPA rural development programmes 2013-2020

directed towards administrators of state-owned land⁴³. Forestry is an integral part of rural development and support to sustainable and climate favorable use of land should include development of forest areas and sustainable forest management. In order to adopt the program of measures, it is primarily necessary to set the strategic goals for FBiH forestry sector: adoption of new legislation in forestry (FBiH draft Law on Forests was finalized in May 2016, **adopted in December 2016 and awaits for finalization of public debate to be passed**), development of mechanisms to achieve sustainability of forest management (which is attained by development and consistent application of optimal systems of forest management), provision of resources for natural regeneration (natural forest regeneration should be given preference over artificial regeneration where the key basis for this is training of relevant personnel), provision of resources for artificial forest regeneration and afforestation of bare lands (the priority is the use of indigenous propagating material), provision of resources for modernization of nursery production, planned production of seedling material, establishment (restoration) of monitoring of the state of forests using the common methodology of ICP Forests (it is necessary to provide for political and expert agreement of the Entities as regards BiH accession to the ICP Forest program), increase of areas under forests and optimization of the use of productive and other important functions of forests, increase in the scope of silvicultural activities in forests, rehabilitation of degraded high forests, rehabilitation of coppice forests, rehabilitation of bare lands.

Republika Srpska: Forests and forest land are one of the most important natural resources of RS. Forest cover of Republika Srpska is 51.7% of its total territory with 0.70 ha of land covered with forests per inhabitant. According to the Forests and Forest Land Cadaster data total size of forests and forest land in RS is 1.282.412 ha. Based on CORINA data, it is assumed that the forest cover of RS is even larger reaching up to 300,000 ha due to spontaneous spread of forests. 982,893 ha or 77% of forest areas are **state**-owned, and 281,965 ha or 22% are privately owned forests without forest land while 17,554 ha or 1% of areas is usurped. The category of high forests has the largest share in the total RS growing stock and accounts for 644,511 ha or 50.2 % while the category of coppice forests accounts for 353,454 ha or 27.6%. The forests owned by the RS include forest and forest land of two national parks (20,744 ha), and industrial plantations (7,383 ha).

Environmental potentials are reflected in a large diversity of habitat conditions. The largest portion of forests (around 60% of total RS growing stock) is located in mountainous zone (1000 – 1500 m a.s.l.), somewhat fewer areas (around 36% of total RS growing stock) are located in hilly zone (500 – 1000 m a.s.l.) and the least (around 4%) are located in lowland zone (below 500 m a.s.l.).

The Cadastre of Private Forests has not been regulated and update of changes is not done in timely manner. Total timber stock of RS forests is 227.391.300 m³. When it comes to the use of forests, it is necessary to note that around 2.94 million m³ of total (gross) timber stock is harvested annually in Republika Srpska and is used to produce around 2.09 million m³ of different timber products. Forests owned by Republika Srpska on average have greater volume increment than privately owned forests.

The forest production potential does not consist of timber only but also of hunting and other (non-wood) forest products which, according to the Rulebook in place, include:

- products of plant origin: fruits and seeds, medicinal and edible herbs, industrial plants, forest litter, peat, resin, reed, phloem, cones, horticultural shrubs, mushrooms, tree-juices (from birch maple trees), various parts of plants (root, bark, leaves, fruits, etc.) used in leather industry (tannin), woodland pastures, grass from meadows, etc.;

⁴³ See Sectoral Agreement. European Commission adopted a model of Sectoral Agreement for IPARD assistance. See EC decision No 1662 of March 18, 2015

- products of animal origin: bees and their products, snails, leeches, worms, products from hunting and fishing, snakes (poison, skin, meat) etc.;
- inorganic nature products, primarily from water and land: rock, gravel, sand, limestone, (for plaster), clay and loam (for bricks and roof tiles), coal, black soil, humus, healing waters and mud, etc.

It is estimated that over 400 species of medicinal and aromatic plants (RS Strategy for Development of Agriculture until 2015) grow in RS. Wild medicinal plants are collected by a large number of people. It is estimated that several thousand people are in different ways dealing with medicinal plants in RS. In 2004 around 800 ha were used for cultivating medicinal plants in plantation system in RS while 4 to 5 years ago plantation production was almost non-existent. With the introduction of incentives this production developed faster. Nowadays, there is a growing global need for medicinal plants which are used in different way: as teas, pharmaceutical inputs, raw material for production of drugs, essential oils, for cosmetics industry, etc. The demand is focused on certified and organic products.

One of the problems of this sector is rocky areas which are only partially afforested with vegetation spontaneously developing in the remaining areas. These and other forest areas are often threatened by forest fires. Another issue is forest areas under mines which account for as much as 10% according to some assessments. In the context of rural development, forests have a multifold economic and social function. Most of rural households own a certain area of forest land which is used as a source of fire wood for their needs and also as a source of additional income by selling industrial and fire wood. Forest pastures are suitable areas for extensive cattle breeding while observing the rules of sustainable use of such areas. Forestry and wood processing are a source of permanent or temporary employment for rural population. Collection and sale of forest berries, wild herbs and mushrooms is also one of the sources of additional income, especially for poorer rural population. Forests offer possibilities for hunting, fishing, mountaineering and recreational activities which are a motive for tourist arrivals in rural areas and use of certain services from rural population (rural tourism). Though forest potential in RS is not sufficiently used, care should be taken that this is done sustainably in future, taking care of environmental protection and conservation of biodiversity⁴⁴.

In 2012 Republika Srpska adopted the Forest Development Strategy 2011-2021. This Strategy, and in particular the long-term planning need to be more based on typological, i.e. environmental and production basis and potentials. The forest classification according to forest purpose has not been finalized in RS; however it has been intensified over the past several years, especially after the introduction of Forest Stewardship Council (FSC) standard for forest management. Environmental potentials of RS forests considerably exceed the level of current exploitation and use of these potentials.

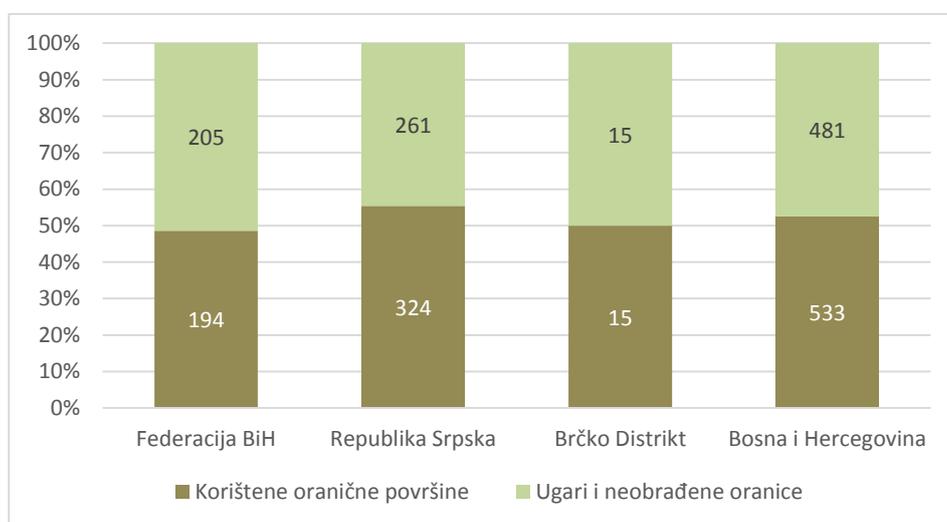
⁴⁴ According to: RS Forestry Development Strategy 2011-2021, RS Ministry of Agriculture, Forestry and Water Management, 2012

3. Agricultural production

Plant production in Bosnia and Herzegovina is related to the use of available agricultural land, in particular plowland. European Commission IPARD program foresaw the measure of *investments into physical assets*. Under the Regulation (EC) No 1305/2013 of the European Parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development this measure covers tangible and/or intangible investments which: (i) improve the overall performance and sustainability of agricultural holding; (ii) concern the processing, marketing and/or development of agricultural products; (iii) concern infrastructure related to the development, modernization or adaptation of agriculture and forestry, including access to farm and forest land, land consolidation and improvement, and the supply and saving of energy and water; or (iv) are non-productive investments linked to the achievement of agri-environment-climate objectives as pursued under the Regulation, including biodiversity conservation status of species and habitat as well as enhancing the public amenity value of a Natura 2000 area or other high nature value systems to be defined in the rural development program.

3.1. Plowland

One of the biggest problems faced by BiH plant production is insufficient use of the best quality land areas – plowed fields. Chart 3 shows that in the period 2006-2015 in BiH Federation average of 194.000 ha was sown or 48.6% of total plowland, while more than a half (250,000 ha) remained as fallow or uncultivated land. The situation is somewhat better in RS but still rather unfavorable when it comes to the use of plowland resources. Over the 2006-2015 period 324,000 ha or 55.4% of plowed fields was used for sowing certain crops, while 44.6% or 261.000 remained unused.



Source: Plan Production Bulletins of FBiH Institute of Statistics

Source: Communications of RS Institute of Statistics

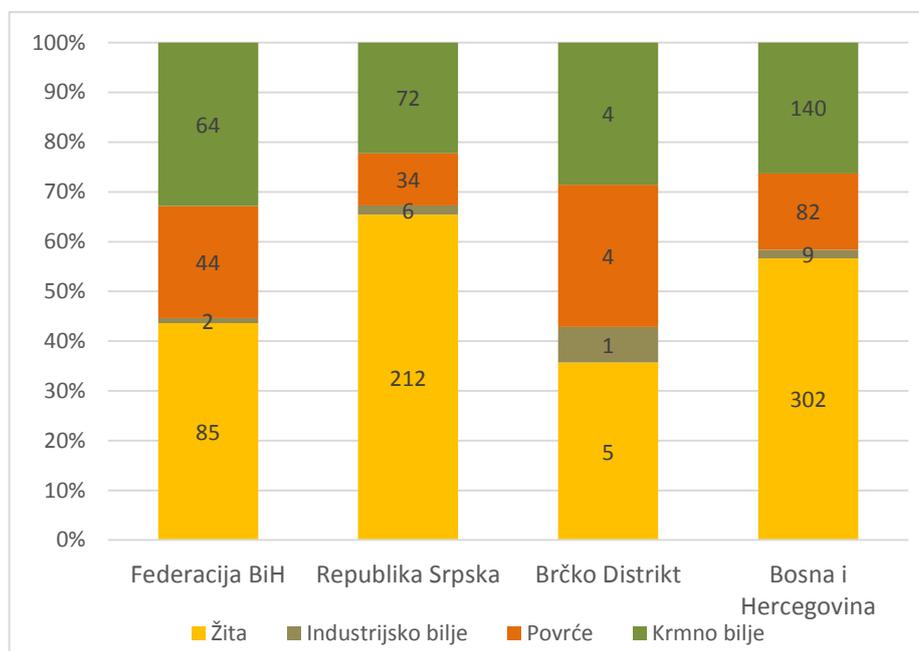
Source: Communications of BiH Agency for Statistics

Chart 3 Structure of use of plowland in Bosnia and Herzegovina, BiH Federation and Republika Srpska and Brcko District (2006-2015 Average) (in 000 ha)

Plowland in Bosnia and Herzegovina is used for production of cereals, industrial crops, vegetables and fodder crops.

BiH Federation: At the level of 10-year average for the period 2006-2015, cereals have the largest share in the structure of sown plowland which with 85 thousand hectares account for 43.6% of total

sown areas. The second group of arable crops by importance is fodder crops which with 64 thousand hectares account for one third (32.8%) of sown plowland, while vegetable crops in this BiH Entity are on average sown on 44 thousand hectares or 22.6% of sown plowed fields. In relation to other groups, industrial crops are of minor importance in production of arable crops (1%) and relate to the production of soya and tobacco.



Source: Plan Production Bulletins of FBiH Institute of Statistics

Source: Communications of RS Institute of Statistics

Source: Communications of BiH Agency for Statistics

Chart 4 Structure of sown plowland in Bosnia and Herzegovina, BiH Federation, Republika Srpska and Brčko District (2006-2015 Average) (in 000 ha)

Republika Srpska: At the level of 10-year average for the period 2006-2015, cereals dominate the structure of use of plowland in RS which cover two thirds (65.4%) of cultivated plowed fields. Industrial crops are sown on around 1.9% of plowed fields, vegetables on 10.5% and fodder crops on 22.2%. The data on cultivated areas are more reliable than the data on uncultivated areas which statistics identify by subtracting the cultivated areas from the total area of plowed fields and gardens. As said earlier, according to the statistics, on average 261 thousand ha are uncultivated in RS which is (given the reserve stated in terms of total area of agricultural and arable land) less, however it is difficult to determine how much less.

For the purpose of better overview of the analysis of the state of play in plant production, the calculated 10-year averages (period 2006-2015) of areas, volume of production and average yield in production of the most important agricultural crops will be given in the text below while trends of the observed characteristics over the entire analyzed period could be found in the Appendix to this document.

3.2. Plant production

3.2.1. Arable crop production

Given that modern production is inconceivable without the change of crop rotation and its expansion; cereals production cannot be considered separately from other arable crops or without other aspects (cattle production, processing industry, engagement of human and land resources, decrease of

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imports, etc.). Most widely sown cereals in both Entities are maize, wheat, barley, oat and rye which account for around 95% of areas under cereals. Triticale and buckwheat are being increasingly introduced into production over the past ten years.

Table 6 Size, volume of production and average cereals yield in Bosnia and Herzegovina, BiH Federation, Republika Srpska and Brcko District (2006-2015 Average)

Description	Maize	Wheat	Barley	Oat	Rye
Size (in ha)					
BiH Federation	47.890	18.949	8.442	3.169	1.651
Republika Srpska	138.702	41.671	11.876	8.572	1.865
Brcko District	5.514	3.416	377	245	31
Bosnia and Herzegovina	192.106	64.036	20.695	11.986	3.547
Volume of production (in tons)					
BiH Federation	201.563	67.900	23.381	8.257	5.396
Republika Srpska	582.903	141.995	39.483	21.287	4.848
Brcko District	30.943	11.567	1.346	550	80
Bosnia and Herzegovina	815.409	221.462	64.210	30.094	10.324
Average yield (in t/ha)					
BiH Federation	4,2	3,6	2,8	2,6	3,3
Republika Srpska	4,2	3,4	3,3	2,5	2,6
Brcko District	5,6	3,4	3,6	2,2	2,6
Bosnia and Herzegovina	4,2	3,5	3,1	2,5	2,9

Source: Plant Production Bulletins of FBiH Institute of Statistics

Source: Communications of RS Institute of Statistics

Source: Communications of BiH Agency for Statistics

BiH Federation. Maize is the most important arable crop in FBiH. Production of mercantile maize in FBiH is mostly maintained at the same level (around 48 thousand ha) with pronounced trend of increase of areas under silage maize at the expense of areas under maize grain (see Appendix). Average yield of grain of 4.2 t/ha is very low. In years of extreme droughts, such as 2012, the yields are extremely low due to so-called 'dry farming'. The largest annual production does not exceed 240,000 tons and is characterized by pronounced variability. The trend of decrease in total production has been pronounced over the past years. As the most important and most widely spread wheat bread in FBiH, wheat covers around 19.000 ha; its production is characterized by oscillations in areas, yields and total production (see Appendix). The volume of production of mercantile wheat ranges from

50,000 to around 700,000 tons in the period 2006-2015, which accounts for 14%-20% of FBiH needs. Despite this, FBiH Žitozajednica states that mills in FBiH purchase only 10%-15% of local production of mercantile wheat. The areas under small grains have been decreasing over the past years. Negative trend is particularly pronounced regarding wheat, with areas under wheat decreasing from 10,015 ha (2006) to 18,251 ha (2014) or by almost 10%. On the other hand, areas under triticale and buckwheat have been increasing, which may indicate the activation of land areas of poorer quality in hilly and mountainous region. Barley realistically has no chances for larger expansion in FBiH and substantial part of areas suitable for this culture are already used by other plant species. In terms of its representation, barley comes after maize and wheat. It is sown on 8,842 ha on average and produces 23.4 thousand tons. Rye production should be balanced based on the needs of milling industry, which should be included in the organization of production, and use the advantages of hilly and mountainous areas and land of somewhat poorer quality. Rye is on average sown on less than 2,000 ha (average of 1,651 ha) in FBiH with varying yield. In FBiH triticale is of bigger interest for farms with cattle as it is well used as concentrated fodder and provides abundance of straw. Particularly encouraging are the yields in hilly and mountainous area, on somewhat poorer quality and more acid soil which is not suitable for barley cultivation. Oat production falls within the extremely extensive production group though agro-environmental conditions provide for substantially bigger yields than the current ones. The fact that oat, alone or combined with a legume, may provide high yield of quality fodder is neglected. Oat is sown on area covering around 30,000 ha and average annual yields vary from 2.2 to 2.9 t/ha. Buckwheat production should be also mentioned which in FBiH covers the area of around 500 ha, mostly in hilly and mountainous cantons. The demand of local milling industry for buckwheat grain is small (50-100 t per year). Though some buckwheat products could be sold on international markets, it is realistic to expect that this crop is represented on areas of around 1,000 ha.

Republika Srpska. Maize is the main arable crop in Republika Srpska since over 40% of sown area is under maize each year. It is followed by wheat, barley, oat and rye. While coefficients of variation of sown areas are relatively low, variation in the volume of production and average yield is higher (details in Appendix) and confirm that arable crop production is under the influence of weather conditions. Annual maize production, on an almost steady area of around 140 thousand ha, varies from 379 (2012) to 743 (2008) thousand tons while average yield ranges from 2.7 to 5.2 t/ha (ten-year average of 4.2 t/ha). Wheat is sown on 10 thousand hectares less than 10 years ago. Total wheat production ranged from 85 to 180 thousand tons with maximum average yield being 4 t/ha (2013). Other cereals are sown on the area of between 25 and 30 thousand ha, mostly in hilly and mountainous areas of RS. Barley is sown on 10-13 thousand ha, yield is low, 3.3 t/ha on average. The area sown with oat fell from 14 to 6 thousand ha and average yield never exceeded 3 t/ha. Areas under rye have also been decreasing while areas under triticale have been increasing. Following the maximum size of area and production volume in 2009, the area sown with triticale steadied to 7-8 thousand ha with bigger variations of yields. Cereal yields are generally low and are analyzed in Chapter 5 in the context of EU average. Only wheat production is subject to subsidies (on two grounds); however, despite this, its production is decreasing (both in terms of area and quantity).

Cereals cover the biggest part of arable areas in BiH. These are plant species which absorb substantial areas and produce products of low added value. Agricultural produces engage material and human resources to sow them but generate modest income. Average yields are low because, among other things, producers sow farm-saved and uncertified seed. Production technology is extensive or semi-intensive, often lacking irrigation, using inadequate mechanization and involving limited use of mineral fertilizers and protection agents. Produced wheat is often of poorer quality and is used as animal feed while local millers import quality and cheaper wheat to produce flour (mostly from Serbia and Hungary). Despite this, 2012 assessment shows that the use of capacities of local mills in BiH is

only 26%⁴⁵. Maize is sown on the largest area and its average yield lags the least behind the average yield of other cereals in the EU. Large number of farms produce cereals, on even larger number of land parcels, due to which the effect of the economy of scale is absent and the unit price is higher than that of competition.

Crop seed production

In the Federation of Bosnia and Herzegovina, there is, actually, no production of elite seeds of cereals, but rather reproduction of seeds (varietal reproduction I and II). The reason for this should be sought in the unclear legislation⁴⁶, insufficient budgetary support for this kind of production, and the lack of interest on the part of local producers. It is estimated that the annual maize seed reproduction in the BiH Federation is organized on an area covering 50-70 ha, while the total production ranges between 100-150 tons.

In Republika Srpska, the seed production is fully regulated by the Law on Agricultural Plant Seeds. Based on the Law the Ministry of Agriculture, Forestry and Water Management maintains a Register of Producers, Processing Plants, Traders and Importers of agricultural seeds. This Register contains: 28 seed producers, 14 processing plants, around 420 traders and 75 importers of agricultural plant seeds.

Furthermore, upon Minister's decision, which is based on the same Law, a Committee for Recognition of Agricultural Plant Varieties of RS was established and tasked with registration of agricultural plant varieties and their entry into the variety list. To date around 550 varieties/hybrids of maize, wheat, small grains, fodder and industrial plants, vegetables and potato have been entered into the RS Variety List. In 2016, the production of seed maize and seed wheat was reported to be organized on 143 ha and 129 ha, respectively.⁴⁷

3.2.2. Production of industrial crops

Production of industrial crops takes place on rather small areas that are, at the BiH level, even smaller now than they used to be thirty years ago.⁴⁸ The reasons for this include reduced demand by the manufacturing industry and its orientation towards the import of raw materials, the lower purchase prices and the limited cash incentives for this type of production.

⁴⁵ The Cereals Sector in Bosnia and Herzegovina, Preparation of IPARD sectoral analysis in Bosnia and Herzegovina, 2012, FAO;

⁴⁶ The regulations governing the domestic seed certification is incompliant with the OECD scheme, and therefore, the seed cannot be subject to international trade. BiH is not a member of the international "seed" organizations; there are no BiH laboratories registered in the international association ISTA, which means that the quality of seed is not determined in compliance with ISTA standards.

⁴⁷ According to the RS Ministry MAFWM (upon inquiry)

⁴⁸ In 1989, 20.000 ha of land was under industrial crops in BiH.

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Table 7 Size, volume of production and average yields of industrial plants in Bosnia and Herzegovina, the Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District
(2006-2015 Average)

Description	Soybeans	Tobacco	Oilseed rape	Sunflower
Size (ha)				
Federation of Bosnia and Herzegovina	1.125	664	838	296
Republika Srpska	3.328	1.028	722	235
Brcko District	345	103	169	51
Bosnia and Herzegovina	4.903	1.758	869	276
Volume of Production (tons)				
Federation of Bosnia and Herzegovina	2.143	650	1.877	276
Republika Srpska	5.721	1.589	1.647	204
Brcko District	621	134	372	46
Bosnia and Herzegovina	8.648	2.363	1.927	249
Average Yield (T / ha)				
Federation of Bosnia and Herzegovina	1,9	1,0	2,2	0,9
Republika Srpska	1,7	1,5	2,2	0,9
Brcko District	1,8	1,3	2,3	0,9
Bosnia and Herzegovina	1,8	1,3	2,2	0,9

Source: Plant Production Bulletins of the Federal Institute of Statistics

Source: Communication of the Republika Srpska Institute of Statistics

Source: Communication of the Agency for Statistics of Bosnia and Herzegovina

BiH Federation. In the Federation of Bosnia and Herzegovina, industrial crop production is rather small and it accounts for only 1% of the sown arable land. Two major agricultural crops are soybeans and tobacco. Since 2011 and 2013, the sunflower and oilseed rape production, respectively, have become negligible and therefore, not included in the statistical bulletins. In recent years, soybean crops cover slightly more than 1.000 ha, showing a growing trend over the past decade (from 874 ha in 2006 to 2.000 ha in 2015 (see Appendix). Given the need for raw materials of the only oil producer in BiH (Bimal d.o.o., Brčko), the production of oil crops, primarily soybeans, could and should be significantly higher. BiH is a signatory of the *Danube Soya* declaration, which promotes Genetically Modified

Organism-free (*GMO-free*) soya production in the countries of the Danube region, which both provides for opportunities and imposes an obligation upon the signatory countries to increase their production and establish a quality management system. Due to the proximity of the factory in Brcko, the soybean production is particularly on the rise in Posavina Canton and it is characterized by the use of modern production technologies, high yields and highly motivated producers. Average yields in this Canton are above FBiH average yields ranging between 2.5 and 3.0 t/ha (FBiH – 1.9 t/ha). Production of *Virginia- and Burley-type* tobacco in the BiH Federation is mainly located in Posavina Canton and in the area of Gradačac Municipality, which have a long-standing tradition in the production of this commercially important crop and apply modern production technologies (soilless seedling, drying, dressing), while the tobacco production in Herzegovina, where this crop is traditionally cultivated, is negligible. The sown areas and yields are varying, which is most commonly the result of inconsistent agricultural policies, and consequently, the production halved in recent years, in spite of the fact that tobacco, in addition to soybeans, is the most important crop in the Posavina Canton with the guaranteed sale of products.

Republika Srpska. In Republika Srpska, industrial crops cover only 1% of arable land. Mostly represented are soybeans, tobacco, oilseed rape and sunflower. Sugar beet is currently not sown, because there is no purchaser available for this type of crop. Areas sown under industrial crops show a slightly decreasing trend, while the volume of production and average yields vary considerably from one year to another (see Appendix, Table P-4). The soybeans production is decreasing, both in terms of arable land and in terms of quantities. Due to unfavorable weather conditions, the tobacco yields are low in recent years. The production of tobacco is still maintained at the level of approximately 1,000 ha of land (mainly in Semberija, Posavina and in the Ljubinje region). Oil crops, oilseed rape and sunflower are sown (altogether) on around 1,000 ha of land.

The production of industrial crops depends on the needs and requirements of the manufacturing industries, given that the produces are almost exclusively raw materials for industrial processing. The needs of the domestic manufacturing industry are the upper limit of the domestic production of industrial crops, and in some cases, the manufacturing industry satisfies its needs by importing raw materials.

3.2.3. Production of fodder crops

Around one fourth of arable land sown in Bosnia and Herzegovina is used to produce fodder crops which serve the livestock production.

Table 9 Size, volume of production and average yield of fodder crops in Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District (2006-2015 average)

Description	Clover	Alfalfa	Maize (silage)
Size (ha)			
Federation of Bosnia and Herzegovina	12.412	12.602	17.731
Republika Srpska	30.384	18.663	6.118
Brcko District	406	205	136
Bosnia and Herzegovina	43.202	31.470	23.985
Volume of production (tons)			

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Federation of Bosnia and Herzegovina	46.241	51.346	320.362
Republika Srpska	86.277	69.169	115.997
Brcko District	1.259	800	2.530
Bosnia and Herzegovina	133.777	121.315	438.889
Average yield (T / ha)			
Federation of Bosnia and Herzegovina	3,7	4,1	18,1
Republika Srpska	2,8	3,4	19,0
Brcko District	3,0	3,8	18,6
Bosnia and Herzegovina	3,1	3,9	18,3

Source: Plant Production Bulletins of the Federal Institute of Statistics

Source: Communication of the Republika Srpska Institute of Statistics

Source: Communication of the Agency for Statistics of Bosnia and Herzegovina

BiH Federation. In the BiH Federation, arable fodder crops accounted for 31.5% to 34% of the total sown areas. The period from 2006 to 2015 was characterized by relatively stable total sown areas ranging between 63 and 66 thousand ha, while the major fodder crops showed a tendency of decrease in terms of the sown area. Accordingly, the areas under clover decreased from 14.2 thousand ha (2006) to 11.5 thousand ha (2015); the areas under alfalfa decreased from 14.6 thousand ha (2006) to 11.3 thousand ha (2015), and the areas sown with maize for silage decreased from 18.1 thousand ha (2006) to 16.6 thousand ha (2015). Yields of all fodder crops have remained very low and well below the genetic potential. The quality of the produced forage should be improved, because the majority of perennial fodder plants are harvested late in the season. Although these are high quality legumes and their mixtures, due to the late harvest, and particularly if they are to be stored as hay, they are characterized by a small percentage of proteins and a large percentage of cellulose. Such forage cannot ensure high production of milk and meat, without adding significant quantities of concentrated feedstuffs. The deficiency of statistical data regarding the resulting yields of perennial forage crops can be linked to the inadequate recording of data on yields, given that the yields in the year of sowing were two or more times lower than in the years of full utilization. Considering that in the BiH Federation there are sizable uncultivated areas, the forage production on arable land could be increased both in terms of the size of sown areas and in terms of the overall yield.

Republika Srpska. The areas under clover and alfalfa are reducing in size, but on the other hand, the areas under silage maize are increasing. The yields of fodder crops are relatively low and dependent on the weather conditions (the lowest yields were recorded in the dry 2012). The largest variations were recorded in the total quantities and average yields of fodder crops. Significant quantities of hay are produced in the traditional way, which reduces both the yield and the quality. Grass-clover silage mix is still poorly used, and there is an increasing number of producers storing hay in round bales.

The need for fodder crops production depends on the number of farm animals falling under the category of ruminants and their diet. Forage is cheaper than concentrated feed and the principle of economy requires that it to be used as much as possible in the diet balancing. Forage is still prepared

in the traditional way (hay), causing a lot of nutrients to be lost, and a common reason for this is the lack of knowledge and specialized agricultural machinery for the preparation of haylage and silage. Better use of forage crops would indirectly increase the cost-effectiveness of livestock production, mainly in cattle production.

3.2.4. Vegetable production

Vegetable production is a labor-intensive agricultural activity requiring a lot of manpower and generating high added value per unit area. In view of the substantial unemployment in BiH, this production activity may seem attractive, particularly for holdings disposing of small areas of agricultural land. The best example of this is the production of gherkins, which recorded a steady growth in production and exports in the international markets.

Below is the analysis of the volume of production of those vegetables that are grown on the largest area, occupying three-fourths of the total area under vegetables. In addition to potatoes⁴⁹, beans, cabbage, kale, peppers and tomatoes, BiH also produces cucumber, garlic, onions, carrots, peas and some other vegetables.

Table 8 Size, volume of production and average yield of vegetables in Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District (2006-2015 Average)

Description	Potatoes	Beans	Cabbage/ kale	Peppers	Tomatoes
Size (ha)					
Federation of Bosnia and Herzegovina	22.258	4.606	3.359	1.417	1.769
Republika Srpska	14.789	3.987	2.310	2.151	1.871
Brcko District	392	190	64	24	26
Bosnia and Herzegovina	37.439	8.783	5.733	3.592	3.666
Volume of Production (tons)					
Federation of Bosnia and Herzegovina	212.042	6.105	43.210	13.058	20.282
Republika Srpska	159.372	5.477	31.621	24.378	20.551
Brcko District	3.992	321	864	82	583
Bosnia and Herzegovina	375.406	11.903	75.695	37.518	41.416
Average Yield (T / ha)					

⁴⁹ Potato production is part of the vegetable production scheme, because it is treated as such by the Statistical Institutes in the BiH Federation and Republika Srpska. Only the production of early potatoes is included in the vegetable production scheme and treated as such by EUROSTAT, while mercantile potatoes are treated separately.

WORKING DOCUMENT

Federation of Bosnia and Herzegovina	9,5	1,3	12,9	9,2	11,5
Republika Srpska	10,7	1,4	13,7	11,4	11,0
Brcko District	10,2	1,7	13,5	3,4	22,4
Bosnia and Herzegovina	10,0	1,4	13,2	10,4	11,3

Source: Plant Production Bulletins of the Federal Institute of Statistics

Source: Communication of the Republika Srpska Institute of Statistics

Source: Communication of the Agency for Statistics of Bosnia and Herzegovina

BiH Federation. Production of vegetables in the BiH Federation has a long-standing tradition and fairly good natural conditions for further development. The bulk of this production in the BiH Federation takes place on farms with mixed production, where it is a supplementary source of income. Most of the produced vegetables are intended for the local markets, especially those cultivated in open ground. Vegetables are grown on around 44,000 ha of arable land in the BiH Federation. In the production structure, the most represented crops are potatoes, followed by beans, cabbage, onions, peppers and tomatoes. Potatoes, with average of 22,258 hectares harvested, are one of the three most widespread crops in the BiH Federation. However, average yields ranging from 8.0 to 11.1 t/ha are among the lowest potato yields in Europe. Given that cost-effective production requires yields of 25-30 t/ha, the potato yields in the BiH Federation are way below any cost-effectiveness, mainly because of low-quality seeds and poor production technology (lack of proper topdressing, protection against diseases, insects and weeds and irrigation systems). Due to poor financial results, lack of competitiveness and the lack of processing capacities, farmers are relatively unmotivated for this type of production activity in spite of its great importance and unmet domestic demand that is covered from imports. Five Cantons dispose of the largest area under vegetables: Tuzla, Una-Sana, Central Bosnia, Zenica-Doboj and Herzegovina-Neretva Canton. Overall production and yields of vegetables have been variable. The vegetable species yield varied, most often depending on weather conditions, and the overall production often mismatched the variations in the total area sown (see Appendix). Yields of vegetables in the FBiH are low compared with developed agricultural countries. The reasons for low yields, among other things include the low level of new technologies deployment, low-productivity varieties, extensive type of production system, poor quality seeds, etc.

Republika Srpska. The seeded/planted areas are decreasing in all types of vegetables (see Appendix, Table P-7), which is the result of rural areas depopulation and reduced number of rural holdings that traditionally grow vegetables for their own needs. The average yields of vegetables are also low, although there are commercial vegetable growers, whose average yields are several times higher than the overall average. Potatoes cover nearly half the total area under vegetables. Its average yield is very low, around 10 tons per hectare, which came as a result of low-quality seeds (often from the farmer's own reproduction), lack of irrigation systems, and inadequate agro-technical methods. Beans cover the second largest area of arable land under vegetables. In the production of vegetables there are two distinct groups of producers: those producing vegetables for their own needs, and those producing vegetables for the market/processing industry. Cucumbers, peppers, beets, carrots and some other vegetables are produced for the needs of food industry. In recent years, the market production of vegetables has been "pushed forward" by the German company "Kühne" that contracts and guarantees the purchase of vegetables, primarily gherkins, in the municipalities in the northwest of Republika Srpska. In addition to this company, the frontrunners in the organized vegetable production and processing are the companies "Vitaminska" from Banja Luka and "Sava" from Bijeljina. Increasingly larger number of produces opts for the indoor vegetable production.

The largest portion of vegetables produced in BiH is produced on farms. Almost all farms produce vegetables for their own needs, with a small number of them also producing for the market. Subsistence farms prefer lowering their costs as much as possible, while minimizing the use of inputs, which results in low vegetable yields. In the past, agricultural holdings used to sell their seasonal surplus vegetables in green markets, while nowadays this practice increasingly diminishes. A study conducted in Republika Srpska in 2012 has confirmed that mainly fruits and vegetables are sold on the green markets (further details provided in the box below).⁵⁰

GREEN MARKETS AS A FORM OF SALES OF AGRICULTURAL PRODUCTS AND FOODSTUFFS

In 2012, a study of the role and significance of the direct sales of agricultural products on green and livestock markets was conducted in Republika Srpska. It was found that in two-thirds of the municipalities there was one or more markets selling agricultural products on one or more days a week.

Fruits and vegetables are most commonly sold on the green markets. More than half of the products sold on the green markets are 'first-hand' products, i.e. products produced by agricultural producers. The seller structure is dominated by the elderly with lower levels of education, more women than men.

Customers on the green markets usually buy fresh (seasonal) fruits and vegetables once a week. Motivating factors for shopping at the green market include the desire to buy domestic products, affordable prices and better quality products, while demotivating factors include poor hygienic conditions, distance to markets and swindling in the weight. The study confirmed that a significant number of customers replaced green market shopping by supermarkets, especially in larger cities; however, there is a significant number of those who have not changed their habits of going to the green market. Most green market customers had a positive attitude about the products offered, while giving greater attention to product quality than to buying regularly from the same producer. Most of the surveyed consumers assessed the range of products on the green markets in Republika Srpska as satisfactory emphasizing their desire to buy genuine domestic products on the green markets.

Sellers on green markets usually sell their own products (62%). Most commonly, they sell fruits, vegetables, dairy products and eggs. The main reasons for selling their products on the green markets include: the lack of alternative ways to sell, finding a buyer easier and the possibility of selling small quantities. The largest number of producers agrees that the green market sale is declining, and three-fourths of them assessed the conditions for sale on the green markets as bad. According to them, the limiting factors for higher sales in the green markets include low purchasing power of consumers, high costs of sales and poor organization on the markets. They wish for lower booth/stand rental fees and better infrastructural conditions (stalls, awnings, sewage, etc.).

In terms of shopping for vegetables, consumers get increasingly more oriented towards super- and hypermarkets, which are mainly supplied from imports. Since recently, there are some positive examples of organizing vegetable production on family farms and consolidating the quantities to be either exported or processed in BiH. This type of cooperation takes place substantially between the producers of fruits and vegetables and dealers or processors, while the cases of intermediation by cooperatives are increasingly less frequent. Purchasers often partially finance producers in the form

⁵⁰ Mirjanić S., Ostojić A., Vaško Ž., Drinić Lj., Rokvić G., Mrdalj V., Figurek A. (2013), Green markets as a form of sales of agricultural products and foodstuffs, Banja Luka University, Faculty of Agriculture,

of necessary raw materials (seeds, fertilizers, pesticides) and also provide them with technical assistance during production.

Production of vegetables in protected area (greenhouse/glasshouse production)

In addition to the production of vegetables in the open, indoor vegetable production or vegetable production in greenhouses is becoming increasingly more common. These producers sell their products easier at higher prices during the periods when there is no supply of vegetables produced in the open. The limitations for expanding the greenhouse vegetable production include: fairly high initial investments, higher production costs and risky sale of products.

Production of vegetables in greenhouses is one of the most intensive forms of agricultural production that can be made profitable even in small holdings. It is estimated that nowadays, BiH disposes of around 800 ha of greenhouse and 15 ha of glasshouse areas, two-thirds of which are located in the BiH Federation and one-third in Republika Srpska. Although there are no official statistics on the greenhouse production, the areas under vegetables are constantly expanding. Given that this is a labor-intensive and economically most profitable production for small holdings (being the kind of holdings that make majority in BiH), many producers opt for this type of production. The size of greenhouses usually ranges from 100 to 1.000 m². Different types of environmentally protected areas are used in the production, such as low tunnels (also known as quick hoops), high tunnels (also known as hoop houses), glass- and greenhouses. In most of the environmentally protected facilities in Herzegovina, there are three crops alternating, and in a small number of them four different types of crops are grown in a calendar year. In the continental parts of BiH, in most of the cases there are two types of crops alternating in the greenhouses during the year, while the cultivation of two types is rare. The structure of production in environmentally protected facilities is dominated by tomatoes, cucumbers, peppers in spring/summer season, and salad, spinach and onions in autumn/winter season. Even though the greenhouse production of vegetables is expanding, the yields remain low. The biggest problem is the cultivation of highly productive species in the narrow crop rotation system. For this reason, the accumulation of salts is increasingly present in the environmentally protected facilities, as well as the emergence of plant pests in the soil. All this reduces the yields and quality of crops, while increasing the costs because of the increased use of pesticides. Successful indoor production requires good knowledge of the needs of each cultivated crop as well as climate conditions required for the relevant production. Unlike production in open fields where the impact of producers on conditions of production is considerably reduced since this production is directly dependent on weather impacts, in indoor production producers use different technological solutions to reduce the environmental impacts on plants. As a result, the production can be organized throughout the year, producers are able to provide optimum conditions for cultivation of different crops and production is not limited to weather conditions outside the enclosed area.

Production of seed potatoes and vegetable seedlings

BiH Federation. Although there are relatively favorable soil and climate conditions for the production of seed potatoes in the BiH Federation, the number of registered and active producers keeps declining from year to year. At present, out of 14 registered producers, only four of them is actively engaged in the production. The production of seed potatoes in the FBiH is closely associated with high investment, lack of equipment, training and organization of producers, lack of dedicated storage and processing capacities, relatively high cost of laboratory analysis, etc. All these issues clearly indicate the need for major reorganization in this area.

Most vegetable crops are grown from seedlings. Intensive vegetable production is based on the supply of seedlings ready for transplanting. The seedlings are mainly procured from specialized companies, while a small number of producers grow their own seedlings. The production of vegetable seedlings has recorded a progressive growth and in the period between 2006 and 2015, the highest growth rate was recorded in 2014 (15.6 million units).

The structure of production (2010-2015) in the FBiH is dominated by fruity vegetables, such as tomatoes, peppers, eggplants and cucumbers. The increase in the share of tomato and pepper seedlings from 35.4% of the total 2010 production to 59.5% in 2015 demonstrates the producers' commitment to the most profitable crops. Currently, in the FBiH, vegetable seedlings production takes place in seven registered nurseries. Yet only small portion of the seedlings is subject to expert health supervision by authorized institutions. This often leads to the sale of seedlings of questionable quality. The sale of "untraceable" planting material marketed by unregistered producers is also a problem.

In Republika Srpska, the production of seed potatoes was reported to be organized on 105 ha in 2016. There were 23 producers with the status of legal entities registered for the production of seedlings.

In Republika Srpska the production of seedlings is regulated by the Law on Agricultural Plant Seeds. The Law stipulates that the nursery facility could be run by legal entities and entrepreneurs, as well as physical persons. 23 legal entities have been registered with the Register of Seedling Producers, as well as several entrepreneurs (the number will be increasing over the next period since this possibility is made available by the amendments to the law). This mostly relates to production of seedling material for vegetables and flowers. In Republika Srpska tomato, peppers, aubergine, cabbage and water melon account for the majority of production of vegetable seedling material.

3.2.5. Production of fruits

The agricultural statistics in Bosnia and Herzegovina is still tracking the production in orchards and vineyards (with the exception of strawberry and raspberry production) based on the number of trees and grapevines, and therefore the data on the overall production of fruits and grapes by individual fruit species are available only by the number of trees and grapevines. This, as well as the fact that the data do not differentiate between intensive and extensive production, makes it difficult to analyze the available information and make valid conclusions.

Two-thirds of consumers in BiH consume fruit at least once a day.⁵¹ Significant quantities of fruits still end up in *rakija* (spirit), but in recent years, the exports of fresh and frozen fruits are increasing as well.

Table 10 Size, volume of production and average yield of fruits in Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District (2006-2015 Average)

Description	Plum	Apple	Pear	Grapes
Number of fruit-bearing trees / grapevines ('000)				
Federation of Bosnia and Herzegovina	5.441	2.499	1.101	11.095
Republika Srpska	5.833	2.616	1.066	1.301
Brcko District	410	86	54	-
Bosnia and Herzegovina	11.684	5.201	2.221	12.396
Volume of Production (tons)				
Federation of Bosnia and Herzegovina	47.725	25.237	8.682	22.986

⁵¹ The Fruit and Vegetable Sector in Bosnia and Herzegovina, The Preparation of IPARD sector analysis in Bosnia and Herzegovina, FAO, 2012;

WORKING DOCUMENT

Republika Srpska	82.027	41.290	14.269	2.504
Brcko District	10.054	937	1.026	-
Bosnia and Herzegovina	139.806	67.464	23.977	25.490
Average yield (kg/tree/grapevine)				
Federation of Bosnia and Herzegovina	8,8	10,1	7,9	2,1
Republika Srpska	14,1	16,5	13,9	2,0
Brcko District	24,5	10,9	19,0	-
Bosnia and Herzegovina	12,0	13,0	10,8	2,1

Source: Plant Production Bulletins of the Federal Institute of Statistics

Source: Communication of the Republika Srpska Institute of Statistics

Source: Communication of the Agency for Statistics of Bosnia and Herzegovina

BiH Federation. The development of fruit growing in the BiH Federation based on intensive and modern fruit production, rather than on the revitalization of the pre-war orchards, has proved successful. In the area of tree fruits growing (apple, pear, plum, cherry, etc.), the following standards have been set for the intensive production systems: adequate substrate and modern varieties, high density planting, tall spindle planting system, 'drop-by-drop' irrigation system, and adequate support. This approach resulted in fruit-growing pools in the Gradačac-Tuzla region, which can compete with developed countries' orchards in fruit growing. In the area of soft fruits, the application of the intensive production scheme has played a crucial role. Specifically, the strawberry production technology, together with the variety and planting material, has been taken from Italy. Today, there are standardized technologies for growing tree fruits, strawberries and biennial raspberries in the open field, while considerable diversity in the cultivation systems is recorded in case of other types of fruit trees. In the BiH Federation, the most important fruit crop is plum, with 5.4 million of fruit-bearing trees, followed by apple with 2.5 million of fruit-bearing trees and pear with 1.2 million of fruit trees. In the overall fruit production, plums, on average, account for 47.725 tons; apples for 25.237 tons; and pears for 8.682 tons of fruit. Average yields per fruit-bearing tree vary from year to year, depending primarily on the climate conditions in the area where such crops are grown (see Appendix).

According to the traditional scheme in the FBiH, fruit production used to be organized on the basis of the regions where it took place. The key criteria for identifying the region where a particular fruit species could be cultivated were primarily: climate conditions, and the time of maturation, i.e. being ready for market sale. However, in recent years there is a significant change in the approach, and the primary objectives, nowadays, comprise the overall economic development, increased employment and ensuring new sources of revenue.

In the BiH Federation, a large number of fruit species growable in temperate climate is cultivated, including pome fruits, stone fruits and berries. Nut fruits are mainly collected from the naturally growing populations of trees. The group of pome fruits in the BiH Federation is dominated by apple and pear trees, both domestic and domesticated genotypes, and cultivated varieties, where it is possible to differentiate traditional and modern varieties. The largest quantities of produced apples and pears in the BiH Federation end up being sold fresh for consumption. Fruits that do not meet the standard of table fruit are processed, mainly for the production of juices and alcoholic beverages.

Within the group of stone fruits in the wider area of the BiH Federation, the following fruit trees are cultivated: plum, peach, cherry, sour cherry and apricot, while nectarines are represented mainly in its southern part. All groups of stone fruits are dominated by cultivated varieties, except for plums and cherries, where production of domestic and domesticated varieties is practiced to a large extent, particularly in specific regions. Plum, as a crop from this group, is massively cultivated in the BiH Federation. Given that the biggest problem in the production of plum is a viral disease known as *sharka* or plum pox, there is an increasing number of varieties which are introduced into production with the recommendation of resistance or tolerance to it. The majority of stone fruits produced in the BiH Federation is sold fresh on the local markets or, after an appropriate cooling process, exported to foreign markets. Large quantities of plums produced in the BiH Federation are processed, primarily for the production of *rakija*, which in certain regions, is one of the main products, or dried.

Republika Srpska. Fruit growing is one of the most promising branches of agriculture in Republika Srpska. In the structure of fruit plantations, the relative share of plum (calculated based on the number of trees) has been decreasing over the last decade, while the share of apples and pears has been increasing, which is a result of the production orientation when establishing new plantations. All other fruit species together account for 5% of the total number of fruit trees. Average annual production of apples is 41 thousand and pears 14 thousand tons. Fruit growing is characterized by the duality of production, where on one side, there are family farms with old plantations of heterogeneous varieties, using traditional technology, which usually process fruits to make *rakija*, and on the other side, there are entrepreneurs with young plantations of uniform varieties, which are, however, often mismatching the market demand, using modern production technology, and producing fruits exclusively for the market. Irrigation and hail nets have become a prerequisite for effective fruit production. All new commercial plantations of large fruits, mainly in the north of RS, are built on modern principles, and a growing number of producers voluntarily apply the Global GAP and Integrated Fruit Production standards. Large manufacturers have their own storage and cooling facilities and small producers are still facing the issue of delayed sale. There are both positive and negative examples of fruit producers' associations and cooperatives. The problem is linking production to trade, as large retail chains often import fruits that are also produced in BiH. Basically, vertical market chains in the case of fruit are still weak and unstable. Some positive impetus was provided by the opening of the Russian market for fruits from the RS (after the introduction of the embargo by the EU), but it came to a halt due to administrative impediments and a mismatch of phytosanitary procedures. After the halt of exports in 2016, fruit export to Russian Federation started again towards the end of the same year. One of the problems of fruit production is inadequate cultivars, especially when it comes to apples and pears.

In all analyzed fruit species, number of trees is not the largest in the last year of the analyzed period, which means that the clearing of the old plantations has intensified since raising the new ones. Plum is the most represented in RS, however, it is mainly cultivated for personal needs, i.e. for the production of *rakija*. Smaller quantities of plums are used for industrial processing and drying. In recent years, the number of fruit-bearing plum trees is stagnating, and the average yield indicates the predominance of extensive production. The number of fruit-bearing apple trees has increased by 1.5 million, while the number of fruit-bearing pear trees increased by 0.5 million over the last ten years. Annual production of apples and pears varies, and the ten-year average yield of apples per tree was 16.5 kg, while in the case of pears, the average yields were lower last year compared to the previous period. The number of grapevines has doubled, mainly in the Trebinje region (where the area under vineyards reached 551 ha from the initial 288 ha).

When it comes to the fruit production, one should make a distinction between extensive and intensive farming system. It is estimated that in Republika Srpska, the area of around 14,000 ha under large fruits is in the intensive farming system. The rest are family and hobby orchards on small plots. Large producers sell their fruits to traders or processors who market it further to domestic or foreign

markets. In addition to adequate cultivars and application of modern technologies in the production, one of the prerequisites for the survival of the large fruit producers is the availability of cooling capacities allowing storage of fruit in optimal conditions pending its sale to end consumers. Such capacities may be owned by the producers (either individually or as a group) or traders. Investment in irrigation, hail nets and refrigerated trucks has become an integral part of any serious new investment in fruit growing.

Although the production of continental fruits is expanding, there are still a lot of challenges facing this agricultural sub-sector in BiH. This primarily refers to the unbalanced structure of farms and its clearly featured duality. The structure of producers is such that there is a large number of small farms (below 1 ha in size) and only a few large corporate farms that organize their production on the area of several hundred hectares. Medium-sized farms (3-10 ha), which are basically the most common ones, and which are the driving force of the overall production in the European countries, have low participation or practically do not exist in BiH. This structure constitutes a disadvantage for the development of supply chain for many reasons, the most important ones being:

- limited capacity of small producers and their inability to meet the requirements of a modern supply chain (volume and continuity);
- a small number of large manufactures, while the sector policy is mainly focused on this group of producers, whose impact is limited and
- a small number of medium-sized market-oriented producers lessen the need for establishing producers associations – production of large farms is currently sufficient to cover the needs of a large retail sector, without any need to develop a joint marketing approach.

The growth in the production of continental fruits, especially pome fruits, comes mostly as an after-effect of (i) positive pricing trends that followed by an increase of demand for pome fruits especially in the Russian Federation market and some countries of the Third World, (ii) increase of consumption in the country and the region, (iii) the incentives provided by both BiH Entities for growing new plantations (especially until 2011), and (iv) the absence of any significant number of other investment options and opportunities for small farmers and businessmen. According to the FAO Analysis of the Fruit and Vegetable Sector for the IPARD Sector Analyses in Bosnia and Herzegovina (2012), the apple sub-sector is very diverse in terms of producer types that are represented in the market, which can, in essence, be grouped as follows:

- Small producers with 1-3 ha, who mostly produce for green markets or are selling on-farm where they have very basic storage capacities. They are either experienced in extensive production or are beginners. The varieties and technology they use are not suitable for foreign markets.
- Producers who have from a few to 20 ha, who have years of experience in production and are familiar with advanced technology and market demand, but usually do not have modern storage capacities. This limits their marketing options. These producers do not have enough funds and courage to invest heavily, for instance, in anti-hail nets or modern storage capacities. This group of producers, which is usually the driving force of the production in the EU and the region, is small and professionally unorganized.
- Companies with large plantations, acquired through privatization and thanks to capital accumulated in other sectors. Most of them have quality Ultra Low Oxygen (ULO) storages or are planning to build them. Their production is completely based on new technologies

Production of berries in Bosnia and Herzegovina has seen a strong expansion in recent years. It is particularly intensive amongst the returnee and rural population generally, as it requires a relatively low initial investment and a small land holding. It is a labor-intensive production requiring high labor force participation, where the production is relatively well-organized in all management aspects, providing what is most important for farmers – secured sales. This is a production activity that has

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been greatly supported by international governmental and non-governmental organizations, such as USAID, SIDA, CARITAS, UNDP and the ČRA, which have significantly promoted the cultivation of this crop through their projects and provided grants to help covering the start-up costs for many producers. The most important crops in this fruit group include raspberries and strawberries, and since recently, blackberries. Raspberry production is, currently, better organized in BiH than the production of strawberries, which, more or less, depends on individual farmers and their independent appearance on the market. According to the data of BiH Agency for Statistics, in 2015 the total of 1.682 ha was used for production of raspberries, average yield was at 8.1 t/ha, total output was 13,631 tons of raspberries, and the trend of production growth continued in 2016 with 22,160 tons of raspberries produced on 2,647 ha and with the average yield of 8.4 t/ha.

Table 11 Size, volume of production and average yield of strawberries and raspberries in Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District (2006-2015 Average)

Description	Strawberry	Raspberry
Size (ha)		
Federation of Bosnia and Herzegovina	694	460
Republika Srpska	510	694
Brcko District	72	20
Bosnia and Herzegovina	1.276	1.174
Volume of Production (tons)		
Federation of Bosnia and Herzegovina	6.292	3.521
Republika Srpska	2.455	5.188
Brcko District	465	128
Bosnia and Herzegovina	9.212	8.837
Average Yield (T / ha)		
Federation of Bosnia and Herzegovina	9,1	7,7
Republika Srpska	4,9	7,5
Brcko District	6,5	6,4
Bosnia and Herzegovina	7,2	7,5

Source: Plant Production Bulletins of the Federal Institute of Statistics

Source: Communication of the Republika Srpska Institute of Statistics

Source: Communication of the Agency for Statistics of Bosnia and Herzegovina

BiH Federation. Production of berries in the BiH Federation has seen a strong expansion. The current traditional cultivation technology was most easily transferred from the neighboring countries and the fastest implemented on the ground through an approach transferring method. Owing to the implementation of a number of international projects, which have introduced contemporary trends in the production of berries modeled after those applied in the EU countries, this production is experiencing a real boom. Growth in the production of strawberries and raspberries has led to realignment of the development goals in some of the regions in the BiH Federation, to such an extent that some industrial activities were replaced by agricultural ones.

Within the group of berries grown in the BiH Federation, the largest portion accounts for the species traditionally cultivated in this region, but also those the production of which is rather recent in the BiH Federation. The most represented traditionally cultivated species of berries in the commercial production in the BiH Federation include: strawberries, raspberries, blackberries, currants and blueberries. In recent years, fruits and planting material of different kinds of berries have appeared on market and their production is organized in close proximity to the locations where they grow in natural populations, as well as some other fruit species that have not been traditionally produced in the BiH Federation. The most common among them are: blueberries, cornel, pomegranate, Goji berries, elderberry, blackthorn (also known as: sloe), Aronia, Siberian kiwi, lingonberry, honeyberry, "Kamchatka" or "Siberian blueberry", sea buckthorn and Saskatoon serviceberry. Berries have fairly good prospects in the BiH Federation due to the following advantages: quick return on investment, high demand in the domestic and foreign markets and the possibility of production in low-season period, and income generation throughout the growing season. The disadvantage in the production of berries is the need for recruiting a workforce that is relatively expensive. This does not mean that the FBiH should cease the production of apples, pears and plums, but rather that it needs to complement their production with the proven value added production activities. Berries in the BiH Federation are grown in open ground, as well as in containers and different types of semi-protected areas (such as high and low tunnels, and greenhouses) where they are planted directly into the soil or without it, combining different types of substrates. Growing season of only one species of fruits, for instance raspberries and strawberries, combined with different species and cultivars in the BiH Federation along with application of adequate production technologies may be organized from early May to mid-October (when early frost starts).

Republika Srpska: The interest in the production of strawberries in RS is decreasing. The largest area planted was in 2006, while the smallest was recorded in 2015 (almost half the 2006 area). In the same period, the interest in the production of raspberries increased, largely induced by the supply of seedlings to the returnees and other vulnerable categories of population free of charge. The production of raspberries in RS reached its peak in 2011 (772 ha) and since then, the area of around 700 ha under raspberries has been maintained. The average yield is relatively stable and could be increased (owing to, *inter alia*, artificial irrigation and use of quality fertilizers) ranging between 6 and 9 tons per hectare. Due to the expansion of production and lack of local quality self-produced planting material, raspberry seedlings were imported. During this period, there were also the cases of importing infected planting material, which slowed down the expansion of the areas under raspberries and their production. The most represented raspberry varieties are *Willamette* and *Meeker*, although recently, there has been cases of planting some other varieties (such as *Polka*), which proved to be inferior from the marketability point of view (difficult to sell and lower price and are predominately for table use, i.e. sale while fresh). The region where raspberry is dominating is the region around Bratunac, Srebrenica and Milići, although it has also spread in the Podrinje, Posavina and Krajina regions with a certain time delay. The key to the expansion of raspberry and other berries is the availability of cooling capacities the owners of which are at the same time the major purchasers. Almost all quantities of raspberries produced are exported, and hence, the earnings of purchasers and producers depend on its global market price. Given the good market price, raspberry has become the most profitable form of agricultural production. It requires a lot of work, which is not physically

demanding and can be performed by both women and children, and a relatively small investment. In addition to strawberry and raspberry, smaller areas in RS are used for cultivating blackberries, blueberries and some other berries, as well.

3.2.6. Wine growing and grape production

BiH Federation. Wine growing in the BiH Federation suffered multiple damages during the 1992-1995 war that are estimated at around 2 million vines of wine grape varieties and 1.5 million vines of table grape varieties. This is the main reason for the reduced production of both wine and table grape varieties compared to the pre-war period. Intensive restoration in viticulture began around 2000 with growing new plantations of both wine grape and table grape varieties. According to the data of the Federal Agro-Mediterranean Institute Mostar (FAMI)⁵², the official statistics on the areas under vines, and the production and yields significantly deviate from the actual situation.

The BiH Atlas of Viticulture and Enology points to the mismatch between the statistical data and expert assessments according to which the statistical figures on the areas under vines are overestimated.

Within the project 'BiH Vineyard Cadaster', the FAMI collected the first realistic set of data on the area planted with vines in Herzegovina. According to this source, the total area under vineyards (in the FBiH part of Herzegovina) is 3.250 ha. Taking into account the part of Herzegovina belonging to RS, the total area of vineyards is broken up into more than 14,200 parcels, each of which is on average 0.25 ha, which fits into the general fragmentation of the agricultural production in the BiH Federation. Over the past two decades, the first set of major vineyards have been planted with high-quality varieties on re-ionized wine-growing areas in the in the Northern Bosnia. Currently, the total size of these vineyards does not exceed a few dozen of hectares.

The varietal structure of vineyards producing wine grape varieties is dominated by white wine varieties (71%). Among them, the most represented one is *Žilavka* with around 55% share. Among the red wine varieties, the most represented ones are: *Vranac* and *Blatina*, with some areas under *Cabernet Sauvignon*, *Merlot* and *Trnjak*. Estimates show that BiH produces 10.2 million kg of red wine grapes and 12.4 million of white wine grapes⁵³. Out of the total estimated area under vineyards, registered producers own 1,583.50 ha or 45.24 %, including 260 hectares under table grapes. The remaining 1,916.50 ha (54.76 %) account for non-registered producers selling on the grey market or producing wine for self-consumption. This division into non-registered and registered production of grapes and wine reflects the dual structure of the wine sector in BiH, where, on one hand, 40% of the sector is under professional organization and management, while 60% of it is organized as permanent or semi-permanent production for self-consumption and sale on the local market. Further development of the sector must take account of this structure.

Republika Srpska. Grape and wine production in Republika Srpska has shown a trend of growth over the past twenty years. The areas under vineyards in Republika Srpska expanded from 288 (in 2006) to 551 ha (in 2015), i.e. from 756 thousand of fruit-bearing vines (in 2006) to 1.5 million (in 2015). The grape production was between 1,500 and 3,500 tons per year. The average annual wine production was 440,000 liters. In Republika Srpska, the major wine-growing region is the Eastern Herzegovina, where around twenty small and large wineries has been registered so far. The main wine-growing area in RS is the Trebinje area, where viticulture is still most developed. In the north of RS, there are around 60 ha under vineyards, and the important thing is that the tradition of wine production is also reinstating in this area. The BiH Atlas of Viticulture and Enology identifies Kozara, Ukrin and Majejica

⁵² Analysis of the Federal Agro-Mediterranean Institute, Mostar was conducted for the purpose of developing the Wine Cadaster and it represents the most reliable source of information on the current state of viticulture and winemaking, which is currently available.

⁵³ FAMI - Assessment relating to the year of 2011

wine districts.⁵⁴ The comparative climate data confirm that there are possibilities of growing vines in this area as well, provided that appropriate varieties, rootstocks and technology is applied; however, the Herzegovina region would still remain the main wine-growing region. The RS Wine Law (2015) provided for a transitional period of 5 years for producing wine from imported grapes, after which period the wineries will be allowed to produce wine exclusively from locally grown grapes.

There are major differences between the two major wine-growing regions in BiH – Herzegovina and the Northern Bosnia, in terms of soil, climate and other specificities. The domestic wine market is evolving, but the production and consumption of wine is still lagging behind compared to countries in the region and Europe. The BiH Wine Sector Strategy has set a target of 10.000 ha in 2021.⁵⁵ According to the current pace of increasing areas under vineyards, this target seems unattainable. Some of the other development targets in the wine-growing and wine-making sectors include: adoption of the Wine Law at the State level, development of vineyard cadaster, adoption of the wine-growing development program, identifying wine-growing regions, determining the long-term needs for vine planting material, creating a gene bank of native varieties, harmonizing national legislation and establishing an accreditation system in line with EU rules.

3.2.7. Meadows and pastures

Natural grasslands, meadows and pastures are very important natural resource, as an indispensable source of forage, but also as a source of overall biodiversity (plant and animal). Given that there has been a spread of meadows and pastures at the expense of arable land and a simultaneous decrease in the number of cattle and share of fodder in its diet, increasing area of natural meadows and pastures is not used productively. Natural meadows and pastures are not used optimally for livestock production, and from one extreme, i.e. that they could be overloaded with too frequent harvesting and grazing, we have reached another, i.e. that more and more of these areas are neglected, causing changes in the dominant vegetation in these areas.

BiH Federation. In the period between 2006 and 2015, there were no significant fluctuations in the areas under pastures and meadows. As stated earlier, the statistics here might differ significantly from the actual situation, because a large portion of arable land has been turned into pastures, while a portion of grasslands has been turned into scrub and forest areas. In the period between 2006 and 2015, in the BiH Federation, statistically average area under natural meadows were 269 thousand ha, while pastures increased significantly and accounted for 432 thousand ha. The yields of dry matter obtained from meadows are low (1.5–1.8 t/ha of hay), because, generally, no agro-technical measures are applied. The low yields are followed by poor quality fodder because of because of bad floristic composition, late harvest and poor methods of plant mass preservation. The yields obtained from the natural pastures are even lower, only up to 0.6 t/ha, because the pastures are largely degraded areas (erosion by water, wind or excessive use, rocky surfaces and the like.). Large areas of pastures are practically not used. Botanical composition of these areas is very inconsistent and of very limited quality when it comes to feeding livestock.

Republika Srpska has significant resources in its hilly and mountainous areas in terms of meadows and pastures intended for cattle breeding, especially for extensive cattle production in a cow-calf operation system, and for sheep and goat farming (as grazing can provide them with up to 70% of their needs for nutrients). Officially, Republika Srpska disposes of 187.000 ha of natural meadows and 166.000 ha of pastures, and in reality, these figures are likely to be higher. Natural meadows are

⁵⁴ According to the BiH Atlas of Viticulture and Enology, in the region of northern Bosnia there are at least 50,000 hectares of land available for grapes growing (Atlas of Viticulture and Enology of Bosnia and Herzegovina, Mostar University, 2014)

⁵⁵ The Wine sector in Bosnia and Herzegovina, FAO, 2012

generally not fertilized, and due to the uneven distribution of rainfall, the yields per unit area are low, and therefore, these meadows are harvested only once a year. Poor quality hay is the result of the poor composition of grasses and late harvest. Given that the number of cattle is decreasing, a significant portion of grazing land remains unused. Extensification in the use of natural meadows and pastures leads to their further degradation. Particularly idle are the meadows and pastures in less favorable areas that are exposed to intensive depopulation. Particular attention should be paid to the preservation of indigenous breeds of domestic animals and indigenous varieties of cultivated plants, the breeding and cultivation of which are intended to be supported by the Ministry through an additional incentive.

In order to understand the benefit of using natural meadows and pastures, they (and the arable land under forage crops) should be put in relation to the number of livestock units feed on forage (grazing, silage or hay/haylage).

Table 12 Relation between the livestock standard units⁵⁶ and the available grassland areas and total acreage for the production of forage in Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and i Brcko District (2015)

Description	BiH Federation	Republika Srpska	Brcko District	Bosnia and Herzegovina
Area under fodder crops (000 ha)	63	66	4	133
Natural meadows (000 ha)	269	187	1	457
Pastures (000 ha)	432	166	1	599
Total (000 ha)	764	419	6	1.189
Number of livestock units (000)	245	263	8	516
Ha/livestock units	3,12	1,59	0,75	2,30

Source: Plant Production Bulletins of the Federal Institute of Statistics

Source: Communication of the Republika Srpska Institute of Statistics

Source: Communication of the Agency for Statistics of Bosnia and Herzegovina

Medium intense average feeding norm per livestock unit is 1 ha, which means that the surplus of land available for the production of forage in BiH could feed at least twice the current number of cattle, i.e. another 700 thousands of livestock units (ruminants). Assuming that there are more meadows and pastures than calculated, the room for increasing the number of livestock is even bigger.

3.3. Livestock production

Taking into account the availability of natural resources and the number of residents engaged in cattle breeding, this production is of great importance for BiH agriculture, especially in the FBiH. The dominant portion of meadows and pastures in the BiH Federation (60.6%, 2006-2015 average), and

⁵⁶ Number of livestock standard units is calculated using FADN SO coefficients for individual types and categories of livestock.

the significant RS share (35.1%, 2006-2015 average) in the agricultural areas is a resource which makes a solid basis for its further development. When analyzing the production of livestock products, the starting point is the number of livestock by type and category.

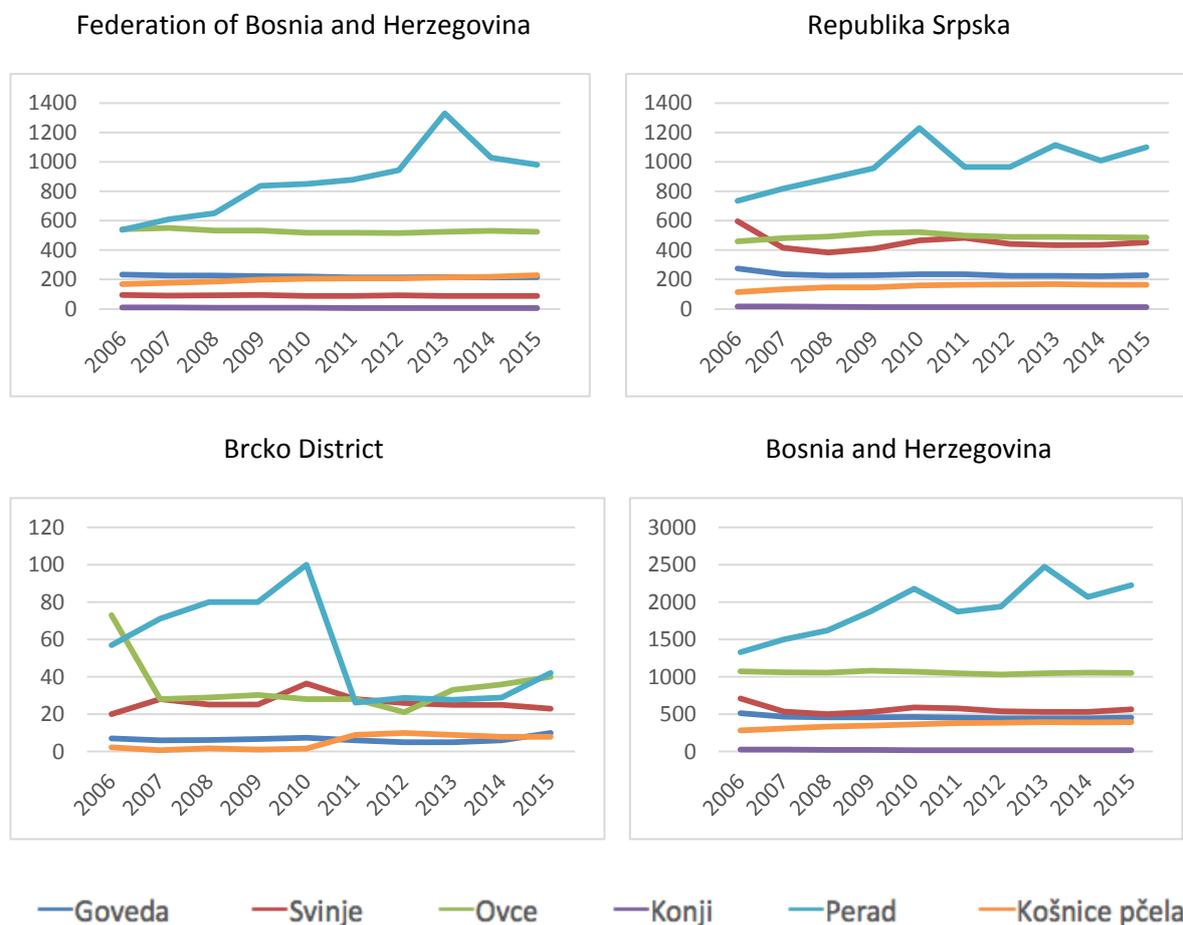


Chart 5 Trends in the number of livestock by type in Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District (2006-2015 Average) (in 000; poultry in 0000)

Improvement of livestock production is possible when the number of animal units, gender, age, breed composition and production purpose are known, and this information could be obtained based on the established animal identification and movement control system. Creating conditions to export livestock and products of animal origin to the EU MS markets is possible only if this system is implemented as in this way the EU consumers are protected given that when importing livestock or animal products the EU MS require to know that they are healthy and safe for use or consumption. Currently, this system is not fully applicable. Agency for Animal Identification does not have competences over the other system stakeholders; it only provides for functioning of the animal identification and movement control system in BiH and provides technical support to the activities of Data Entry Offices (DEO) (there are total of 3 Offices, in Banja Luka, Brcko and Mostar) and veterinary organizations.

BiH Federation: The number of almost all types of domestic animals in the FBiH during the analyzed period (2006-2015) varied. Cattle, sheep and goat breeding recorded a mild decline in livestock numbers, while the decline in the number of horses was dramatic. The number of pigs was relatively stable, while the number of poultry has been showing a significant growing trend since 2006 until 2013

when it increased by 2.5 times. Statistical data on the number of, and production by types and major categories of domestic animals are provided in the Appendix.

Republika Srpska: The number of cattle, particularly dairy cows had a decreasing trend, which was stopped in 2012. Although the number of dairy cows kept decreasing, milk production remained at the same level, owing to the increased milk production per cow. The number of pigs fell by a quarter, while the number of sows and gilts was almost halved. The number of sheep in RS has slightly increased, and the number of horses declined. The number of livestock increased by nearly 4 million, mainly due to its increase in the number of large commercial farms. The highest growth was recorded in beekeeping, because the number of hives increased by 50,000 in ten years.

3.3.1. Milk production

Milk production was and still is one of the most important branches of agriculture in BiH, which is respected when defining the measures of agricultural policy and allocating the incentive funds from the agricultural budgets⁵⁷. Nevertheless, in recent years the number of dairy cows has been reduced, and the quantities of milk produced have been stagnating. For the purpose of reprocessing, seventeen market-relevant dairy processors purchased about 1/3 of total milk produced in Bosnia and Herzegovina (233 million liters) in 2015⁵⁸. The following five dairies have significant market share in the BiH milk processing: Mlijekoprodukt from Kozarska Dubica (30.4%), Meggle from Bihac (19.1%), Immer of Gradacac (15.6%), Milkos from Sarajevo (8.2%) and MI99 Gradacac (8.2%), which together process more than 80% of raw milk.

Table 14 Number of dairy livestock units, volume of milk production and average yield per dairy livestock unit in Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and Brcko District (2006-2015 Average)

Description	Milk		
	Cow	Sheep	Goat
Number of Dairy Livestock Units (000)			
Federation of Bosnia and Herzegovina	144	226	27
Republika Srpska	127	66	13
Brcko District	3	n/a	n/a
Bosnia and Herzegovina	274	n/a	n/a
Volume of production (in million liters)			
Federation of Bosnia and Herzegovina	325	11,5	5
Republika Srpska	355	6	3

⁵⁷ The 2016-2020 Agriculture and Rural Development Strategic Plan of Republika Srpska identifies two strategic products: milk and wheat, which will continue to be supported through direct payments in significant amounts.

⁵⁸ Dairy production in Bosnia and Herzegovina in 2015, Milkprocessing, Sarajevo, 2016.

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Brcko District	8	-	-
Bosnia and Herzegovina	688	17,5	8
Average milkability (lit/livestock unit)			
Federation of Bosnia and Herzegovina	2.261	51	182
Republika Srpska	2.814	88	215
Brcko District	2.667	n/a	n/a
Bosnia and Herzegovina	2.511	n/a	n/a

Source: Animal Production Bulletins of the Federal Institute of Statistics

Source: Communication of the RS Institute of Statistics and additional information upon request

Source: Communication of the Agency for Statistics of Bosnia and Herzegovina

BiH Federation: In 2015, milk production in the BiH Federation amounted to 352 million liters, which accounted for 52% of total production in BiH and was higher by approximately 13% compared to 2006. In contrast to the period until 2006, when the total milk production was developing in line with the development of the permanent herd of cows, since 2007, the development has slowed (down to the 1.2% rate) and started relying primarily on the development of milk production per cow, owing to the improved breed composition. Out of 352 million liters of total milk production in 2015, 44.9% or 158 million liters were purchased by dairies. The remaining production output ended up in farms. Namely, F BiH has been recording a steady growth of milk purchase. In 2006 total of 88 million liters were purchased and ten years later this purchase almost doubled, i.e. increased by 79.5%⁵⁹. Unfortunately, there is no reliable and accurate data on the cattle breed structure in the BiH Federation, however it is certain that the continuous increase in the average cow milkability came as a result of the improved breed composition and the improvement of technical and technological level of production, primarily in terms of animal nutrition. The average cow milkability in the BiH Federation in 2015 was 2,588 liters, which is 31% more than in 2006, when the average milk production per cow was 1,975 liters. Although it has a constant growth rate of around 3.1% a year since 2006, the average milk production per cow is still extremely low and it requires further investment in this sector (not only direct payments to producers), in order to increase average milkability and the competitiveness of this agricultural product. One of the main reasons for low milk production and average milkability of cows rests with the structure of the farms engaged in this production. The assumptions regarding the prevailing share of farms holding 1-2 livestock units have been confirmed by the inventory results published in 2013. In the BiH Federation, out of total 98,581 farms holding dairy cows, 62,024 or 62.9% of them accounts for those holding only one cow, and 21,390 or 21.7% for those holding two cows.

In the BiH Federation, the average annual production of sheep and goat milk is 11.5 million and 5 million liters, respectively. Both production activities have been relatively stable, especially since 2008. The relatively low yields per unit should be also noted when it comes to sheep and goat milk production (sheep: 51 liter; goat: 182 liters). This is also the area that should be improved in the future period.

There are numerous challenges facing the sub-sector of milk production in the BiH Federation. Some

⁵⁹ Source: F BiH Institute of Statistics

of the more important ones are as follows:

- Extremely disadvantageous farm structure and profound dualism in this sub-sector's production;⁶⁰
- Disadvantageous structure of the breed composition: Simmental breed, which is typically bred for meat and milk production, is predominant, while Holstein-Friesian breed, which is a distinct dairy breed, accounts for only 8.5% (FBiH MAWMF, 2014);
- Inadequate training of farmers, and in this context, their lack of knowledge about contemporary hygiene standards in milk production and their inability to produce sufficient quantities of fodder on their own fields;
- Low feed conversion ratio;
- Low average yield per cow in spite of the positive trends in the past decade (2.261 liters on average is still low compared to 6,552 liters⁶¹ required by the EU-27);
- High costs of quality (control);
- Issues associated with the adoption of the (EU) standards that have direct implications on the exports to the EU;
- Low technical and technological level of the average FBiH farms, constituting inadequate stables, milking facilities, storage and milk handling practices.

Republika Srpska: Cattle production is the most important branch of livestock production in Republika Srpska. Combined dairy-beef or beef-dairy cattle are well represented, and the predominant breed is Simmental. In farms specialized for milk production, there are also Holstein-Friesians. The cow milk production reached its peak in 2008, which was followed by a decline, and in recent years it has been stagnating at 320-330 million liters. Although the statistical figures on average milk production per dairy cow are lower (2,935 kg), following the productivity verification exercise that covered about 12% of dairy cows, it has been established that the average milk yield per cow is 5,689 kg p.a. (Simmental), and 6,632 kg p.a. (Holstein). The production of sheep and goat milk is declining. Although the number of dairy cows is declining, milk production is stagnating, because the yield is increasing. However, the average milk production per dairy cow is still low, resulting in its high production costs (unfortunately, in RS/BiH, there are no reliable and systematic records of production costs of milk or any other agricultural product) which make it difficult for the domestic producers to fit into the purchase price, which is under downward pressure after the dairy prices fell in Europe and throughout the world. The reasons for low milk yields should be sought in the weak genetic potential, poor nutrition and inadequate conditions for breeding dairy cows or insufficiently successful management of these farms by the farmers. The number of 100,000 dairy cows is distributed across large number of farms, which almost exclusively rely on their own production workforce, thus ensuring self-employment. Small farms with several dairy cows produce milk for their own needs and the occasional sale, while often facing interruptions and limitations in the purchase of milk in case of reduced processing needs. However, these small farms are more vibrant as they easily survive any market turbulences and, ultimately, valorize land resources which can thus retain their beneficial function. However, large dairies, provided that they have enough raw materials available, avoid small farms due to complicated and expensive purchase arrangements, and the only solution is to have cooperatives or other intermediaries purchase milk from small farmers, and then sell the collected milk to large dairies. Some of the small farms process milk to produce cheese and cream which are then sold directly to

⁶⁰ According to the IFC Study (2014), the experts estimated that 68% of the total production comes from the farms with one dairy cow; 18% of production from the farms with 2-5 dairy cows; 7.2% of production from the farms with 6-20 dairy cows and the remaining 6% of the total production accounts for large farms. When it comes to the structure of producers selling the milk, in 2013, 77% of them held up to 5 dairy cows, and 23% of producers held 5+ cows, only few of which were large modern farms.

⁶¹ Sources: <http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/themes>

consumers; however, in this way, modest quantities of dairy products are marketed. Such indigenous products should to some extent be standardized and branded in order to facilitate their sale and comply with sanitary and hygienic standards. Large farms are steady suppliers of dairy raw materials and their profitability depends heavily on the purchase price of milk and the incentives granted for that type of production. Due to the fall of milk prices on the global market, the local dairy plants reduced the purchase price of milk, which, despite the high incentives (premium per liter of milk), resulted in the withdrawal of some milk produces. Large dairy farms will remain the backbone of the domestic dairy industry and their further modernization and increased economic efficiency are the imperatives to which the agricultural policy measures should be adapted. When increasing the number of livestock, these farms are faced with the lack of agricultural land for the production of their own fodder, which is one of the prerequisites for lowering the cost of milk production. Part of the existing dairy farms have facilities that will not be able to meet EU standards and will have to be adapted and expanded, while a good portion of them will have to be completely replaced by new buildings. When expanding permanent herd and modernizing their facilities, the existing and new farms need loans that are another limiting factor given the requirements that must be fulfilled and the loan price (interest rates). Investment grants are rather small. In the previous period, a lot has been done in the area of improving the quality of milk, so that most of the purchased milk meets the minimum quality standards required. The hygiene and physiological characteristics of milk largely depend on the milk handling practices, starting from milking to processing, and therefore, the conditions of storing milk at farms and its transportation to the dairies must continue to improve and equalize. Given the fact that Bosnia and Herzegovina has reached self-sufficiency in milk production, any increase in purchase and processing of milk depends on the exports of dairy products, while the local dairy plants are facing export barriers (meeting the standards of quality and origin) and strong competition. In Republika Srpska, the leader in the dairy sector is the dairy plant "Mlijekoprodukt" from Kozarska Dubica that alone processes 30% of milk purchased throughout BiH. The BiH market is highly liberalized, and the local dairy plants are facing strong competition also on the domestic market from the imported products which are, openly or covertly, more subsidized (starting from the production of raw materials, through its processing to export of finished products) and owing to this, they can be sold at lower prices. BiH primarily imports cheeses, butter and dairy spreads, and the local dairies successfully compete with the imports of UHT milk and fermented products, partly exporting their own.⁶² Local consumers do not show special loyalty to products of domestic origin, and their choice often primarily depends on the product price.

The value chains of the sheep and goat milk producers are less complex: they process milk to make cheese by themselves, sell it directly to the consumers or known purchasers or processors that fill a market niche by selling the sheep and goat cheese. Given that the volumes are still rather small (most sheep farmers are not milking sheep, but breed them solely for meat production), there are no major problems with the marketability of these products.

3.3.2. Meat production

Total meat production in BiH is difficult to determine reliably due to a lack of accurate data, especially in the long run, given the fact that it cannot be identified by the number of slaughtered animals as adjusted by the difference in the number of imported and exported live animals.

The data on the number of slaughtered animals could be a framework indicator and also indication of the volume of production of red meat, however, it should be noted that some of the livestock slaughtered in BiH is not included in the statistics (slaughtering for non-commercial needs and slaughtering in the slaughterhouses which do not report to the statistical authorities).

⁶² Dairy production in Bosnia and Herzegovina – 2015, Milkprocessing doo, Sarajevo, 2016.

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According to the official statistical data (BiH Agency for Statistics) total net production of beef in 2015 was 22,848 tons which constitutes an increase by 100% relative to the net beef production in previous year, i.e. it increased by the quantity of total 2014 production. Larger production of net meat was influenced by the increase in the number of slaughtered cattle by as much as 37%, in particular of yearlings by as many as 25,715 livestock units or 118%. The increased number of slaughtered yearlings and larger beef production are a result of trade arrangement between BiH and Turkey, i.e. tax-free export of beef to Turkish market.

The net production of mutton was at 1,366 tons in 2015 and decreased by 8% or 118 tons compared to mutton production in the previous year. The decreased mutton production is a result of smaller number of slaughtered sheep in slaughterhouses which decreased by 9% relative to the number of slaughtered sheep in the previous year which was at 97,957 units. This is also the result of traditional mode of sheep breeding and meeting the individual needs of producers and local population for mutton.

Negative trends in pork production were recorded in 2015 given that net production of pork was only 8,532 tons which constitutes a decrease by 1,131 tons or 12% compared to the overall production in the previous year. Reduced production of pork is a result of a smaller number of slaughtered pigs, which dropped by 9,185 units or 7%.

Table 15 Slaughtered livestock and poultry in slaughterhouses (2006-2015 average)

Description	Cattle	Pigs	Sheep	Poultry
Number of slaughtered animals (000)				
Federation of Bosnia and Herzegovina	100	60	97	19.268
Republika Srpska	27	98	12	6.355
Brcko District	1	5	1	201
Bosnia and Herzegovina	128	163	110	25.824
Net Weight (ton)				
Federation of Bosnia and Herzegovina	16.530	4.110	1.572	26.978
Republika Srpska	4.714	6.826	200	9.545
Brcko District	141	353	18	292
Bosnia and Herzegovina	21.385	11.289	1.790	36.815

Source: Plant Production Bulletins of the Federal Institute of Statistics

Source: Communication of the Republika Srpska Institute of Statistics

Source: Communication of the Agency for Statistics of Bosnia and Herzegovina

BiH Federation: The number of slaughtered cattle, as well as the net weight of produced beef in the BiH Federation recorded a strong decline over the past ten years. In the period between 2006 and

2014, the number of slaughtered cattle and net weight of produced beef almost halved (109 thousand slaughtered cattle and 16.1 thousand net tons of produced meat in 2006 relative to 56 thousand slaughtered cattle and 8.2 thousand net tons of produced meat in 2014)⁶³.

Floods that hit Bosnia and Herzegovina in 2014 drastically impacted the reduced number of livestock numbers. However, in 2015 the livestock numbers were restored mostly due to the export arrangement for beef with Turkey.

Generally speaking, the volume of beef production in the Federation of FBiH does not meet the needs of domestic population and food industry, and is supplemented by imports. This production takes place mainly on the small farms of an average size below 2 hectares of agricultural land.

Sheep farming is a very important activity in BiH Federation, in particular in rural areas since it is an important source of income for rural population. Sheep farming includes production of milk, indigenous cheeses, meat and wool, and thus the owners of sheep flocks have the opportunity to focus their production preferences towards meat or milk. It is important to mention that a growing number of producers decide to engage in production of local indigenous cheeses, which creates new value and increases profit of this type of production. In spite of the fact that sheep farming revival has begun in the BiH Federation back in 1996, the volume of this production still does not meet the domestic needs and the imports of live lambs for slaughter continues to be high. In the sheep population in the BiH Federation, the prevailing breed is indigenous *Pramenka* sheep, as well as various crossbreeds of *Pramenka* sheep with other thoroughbred breeds of sheep bred for meat production. Herd size ranges from 20 to 1000 animals. Methods of farming and breeding differ (extensive sheep breeding vs. intensive sheep farming on modern farms). Extensive sheep breeding is still present on the mountain pastures.

The ban on transhumance has led to a drastic reduction in the size of the herds. The number of large herds is declining due to the inability to provide sufficient feed to grazing animals, resulting in the emergence of small farms with complete or partial restriction of movement of animals.

The total quantity of mutton and the number of slaughtered sheep in FBiH recorded a significant increase in the period between 2006 and 2011, only to experience a sudden fall in the past four years.

The total production of mutton fell from 2 thousand tons in 2011 to only 1.2 thousand tons in 2015. Similar tendencies are present in the number of slaughtered animals. Average yield of mutton in the period between 2006 and 2015 was 16.2 kg/unit, while the average share of slaughtered lambs was 65.7% in the total mutton produced.

The current state of pig farming in BiH Federation is not at the satisfactory level and does not provide sufficient production of pork to meet the local needs. According to the production value, pig farming is – with the share of only 5-6%, - in last place among the livestock productions in the Federation of FBiH. The reasons for this state of play could be brought down to the following factors: fully liberalized meat market in BiH, lack of systematic support to the sector, fragmented holdings (little arable land), small number of breeding and fattening livestock units per holding, inadequate housing conditions, poor breed composition, lack of breeding and selection activities in the sector, inaccessibility of favorable loan facilities, poor level of training of pork producers, etc. Also, because of the confessional structure, pork is consumed only by a small part of the population in the Federation of FBiH.

⁶³ In 2015, compared to the previous period, there was a sudden increase in the slaughtering of the total number of cattle (84 thousand) and total net production of beef (20 thousand tons) as a result of increased imports of live animals (mainly from the Republic of Serbia), in order to take advantage of favorable trade arrangements with Turkey, when beef could be marketed at affordable prices and without customs duties.

In areas in which pigs are bred only the final phase of production cycle is implemented, i.e. piglets are imported and fattened in order to partially meet the needs for pork in local market. Local inputs in meat processing industry account for very small percentage since inputs are mainly imported. The largest part of pig farming is organized in Posavina Canton.

Raw material-based pig breeding takes place in other Cantons as well in line with the local demand, however, the local production meets only about a quarter of the total needs. Productivity, with only about 260 kg of live weight per breeding sow, indicates that the majority of production is based on an extensive breeding system and slaughtering of young categories of livestock. Pig breeding in the BiH Federation is characterized by cyclical fluctuations without extreme trends. Breed composition is relatively modest, and commonly includes crossbreeds of *Landrace* and *Large White*, while *Duroc* and *Pietro* breed pigs are significantly less represented. Lack of breeding and selection program is an obstacle to the production planning and the implementation of breeding and selection activities aimed at the production of quality breeding and fattening material. There is no planned crossbreeding and hybridization, which is the reason for achieving rather poor results in terms of the number of bred piglets per sow and the level of growth.

Pork production in the BiH Federation shows a disturbing trend. In the period between 2006 and 2015, this production decreased by 2.6 times falling from 4.5 thousand tons as it was in 2006 to only 1.7 thousand tons in 2015. Similar trends apply to the number of slaughtered pigs. In 2006, there was 72 thousand of slaughtered pigs, while in 2015, this number came down to only 26 thousand. The reasons for such trends should be sought in the uncontrolled imports, low competitiveness and poor support of the current government.

Republika Srpska: Number of slaughtered cattle in RS recorded a constant decline, which corresponded with a decrease in the total number of cattle. Over the past decade, the number of slaughtered cattle and the net weight of beef have halved, while the number of slaughtered sheep doubled. The number of slaughtered pigs and the net weight of pork increased significantly as well. Slaughtering poultry in slaughterhouses recorded the largest increase.

The first meat production estimates were provided by the Republika Srpska statistical authorities for the year of 2015 (with comparative figures for the preceding year of 2014). The starting point for this estimate were the livestock balance data provided in the annual livestock survey and the data on imports and exports of live animals. The comparison of the estimated quantities of meat with the slaughtered livestock in 2015 showed significant discrepancies. The estimated net weight of produced poultry meat was twice the net weight of poultry meat produced in slaughterhouses. In pigs, this difference was five times higher, in cattle – eight times, and in sheep, as much as thirty times. Because of the still present slaughtering of livestock outside registered slaughterhouses, it is difficult to generate a realistic balance of production and consumption of meat, i.e. an estimate of self-sufficiency, however, it is undeniable that RS does not produce enough meat to cover the needs of its population. The created opportunities for export of certain types of meat in the EU and other countries outside the EU (particularly Turkey, in recent years) are a good motivation for increasing domestic production.

In Bosnia and Herzegovina, agricultural statistics tracks only registered slaughtering of livestock in slaughterhouses, but not meat production on farms. This analysis is the first publication showing the estimates of total meat production for major livestock types (cattle, sheep, pigs, goats, poultry) in Bosnia & Herzegovina, prepared according to the methodology of the Agricultural Institute of Slovenia.

This methodology for determining the number of animals for meat production combines the data on the number of cattle from the official statistics, estimates the offspring birthrate, as well as mortality rates and takes into account the number of imported and exported livestock. For the purpose of determining the total domestic meat production, the calculated number of slaughtered livestock is

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multiplied by the average mass per unit (this value is taken from the official statistics bulletin), which number is then added to the total mass of livestock exported, while the number of total mass of livestock imported is subtracted. Applying this methodology, the Table below shows the estimated production of meat in Bosnia and Herzegovina in the period between 2010 and 2015.

Table 16 Estimated production of meat (live weight) in Bosnia and Herzegovina in the period between 2010 and 2015 (in tons)

Description	2010.	2011.	2012.	2013.	2014.	2015.
Cattle	72.647	91.276	85.977	69.552	72.215	67.306
Pigs	69.174	85.531	84.321	67.643	54.220	67.946
Sheep	31.417	32.106	29.823	26.855	23.703	24.347
Goats	3.760	3.321	3.255	3.208	2.904	2.874
Poultry	41.157	50.707	59.476	46.370	48.977	54.777

Note: Production of poultry meat is provided in net weight

Looking at the data shown in Table 16, one can see different trends in the production of different types of meat. Starting from 2011, beef production has recorded a slight decrease, and the same trend has been seen in the production of mutton. In the pork production, a sharp decline has begun in 2013, while poultry meat production was the only one that recorded a steady growth in the analyzed period. Insufficient budgetary support and low (price) competitiveness in relation to the imports are the main reasons for such trends in the production of the major types of meat in Bosnia and Herzegovina.

In accordance with the need to increase cattle farming, RS MAWMF adopted the RS Cattle Breeding Program in 2016 the aim of which is to use planned cattle breeding to stimulate the increase of efficiency of cattle production and breeding, increase of cost-effectiveness of production, improvement of quality of cattle products and maintenance of cattle genetic diversity.

The distinct characteristic of cattle production is the share of combined productivity breeds, beef-dairy and/or dairy-beef, with Simmental breed being most represented in RS while east Herzegovina is dominated by Gatacko cattle as the indigenous cattle strain. By breeding specialized dairy breeds such as Holstein-Frisian cattle, farms focused on milk production are being increasingly developed in the lowlands.

Owing to natural preconditions for development of beef production, the breeding in the cow-calf system has been intensified. The aim of developing this type of cattle breeding is to increase the utilization of pastures in hilly and mountainous areas of Republika Srpska, and beef production.

Owing to favorable natural resources RS has excellent conditions for development of cattle production. One of the most important is the agricultural land per inhabitant (0.93 ha). The limiting factors for more intensive cattle production are fragmented holdings and small number of units per farm.

According to the data from RS Cattle Breeding Program, annual beef consumption per capita was 8.38 kg in RS in 2015. Also, according to this data, the beef production in RS is deficient. Beef production does not meet the needs of local population. According to the data of RS Institute of Statistics, production of all categories of beef was around 6,500 tons in 2015. This includes several categories of beef products:

- Beef and veal, fresh or cooled, as a whole, in half or quarter with bones,

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- Beef and veal, fresh or cooled, in parts,
- Raw cattle skin, and
- Cattle fats.

The mentioned quantities include beef production in registered slaughterhouses, i.e. processing industry. Surely, it is to be expected that this production is somewhat bigger due to unregistered slaughter on holdings.

According to its natural characteristics and realistic development opportunities, pig production is high up in the structure of meat production in RS. Relative share of pork in total meat production in RS in 2014 was 49.8%. Over the past ten years this production dropped significantly so that the share of pork meat in 2015 was down to 31% of the total meat production in RS. It is necessary to undertake substantial measures to improve pork production through improving animal breed structure, providing for bigger number of pigging per sow annually, establishing reproductive centers for pig breeding which would, in addition to quality genetic fund for the main four breeds, also have the seed of Swedish Landrace, Duroc, Hampshire boars and the needed female breed parent, fully supporting the relevant concept of pig production strategy by economic development policy measures, etc.

Sheep production, which has been reduced as well as other livestock productions, is a specific characteristic of livestock farming in Republika Srpska. Looking at sheep numbers regionally, it is showing some nominal recovery. The tradition of sheep exploitation has a pronounced regional character. In regions around Sana, Una and Vrbas rivers sheep is primarily dairy cattle, in Posavina, Ozren, Semberija and Romanija sheep are used for meat production and partially for milk production, while Herzegovina region is more focused on sheep milk production. In the past, sheep was primarily used to provide wool as the main input for most cloths, in particular of rural population. In developed parts of Europe, the existing biological and production characteristics of sheep could not endure the competition of more productive animal species, due to which sheep 'emigrated' to south hemisphere. Today, however, sheep numbers in European countries are sustained with strong economic protectionisms because there are substantial areas which could be used only by sheep in the so-called 'nutritive self-service' – grazing. On the other hand, in addition to non-domesticated animal products, RS producers may enter the EU market with lamb meat, equids, partially with quality baby beef and mostly with different types of non-domesticated animal products (NAP). In addition to indigenous sheep products, organic food production could be extensively developed in hilly and mountainous areas of RS as a basis for **conjuncture** rural tourism. The level of devastation of areas under pastures, especially in Herzegovina region, leaves room for keeping, mainly, sheep and goats. In this region economically very attractive type of sheep breeding has been developed, in particular in South Herzegovina where sheep are in domicile pastures during winter and spring while during summer they are in precisely marked Herzegovinian and Bosnian mountains (Treskavica, wider region of Zelengora, Somina, Morina, etc.). Before the last war, Ljubinje municipality with only 5,000 inhabitants had more sheep than the entire Republic of Slovenia (25,000 livestock units). Sheep and in particular goat manure is in direct correlation with tobacco quality which is another strong reason to, conditionally speaking, protect sheep farming with the relevant economic measures. Transhumance is still a big problem, especially in Vrbas region.

The status of horse farming undoubtedly shows that economic and utilization valorization of some domesticated animal species is pronouncedly variable. Moreover, in our conditions in which agricultural machines are observably deficient, horse numbers show pronounced declining trend, which is not justifiable for a number of reasons. Not one species of domestic animals in RS shows such a declining trend as is the case of horses. In 1991 RS had 38,578 units of all categories of horses; in 1997 this number was 26,494 and in 2002 only 13,500 units which constitutes 51% of the number of horses five years ago. RS has almost ideal natural pastures (by size, location and quality) for successful

breeding of these herbivores. The first steps in revitalization of horse farming should aim to save horse population from almost biological minimum of continuation of species.

3.4. Poultry farming

Poultry sector, primarily the chicken meat and table eggs production sector, is the fastest growing sector and together with dairy sector and fruit and vegetable production is the most competitive agricultural sector in BiH. Poultry farming, as a branch of livestock farming, has an important place in agricultural production, which arises from the fact that modern poultry farming is the most intensive form of livestock farming and has the characteristics of industrial production. The importance of poultry farming is reflected primarily in the production of chicken meat and eggs, which is one of the most efficient and fastest ways to produce high quality animal products for human consumption.

Production of turkey meat in BiH is not at a high level. According to the official register, BiH has no officially registered slaughterhouse for turkey meat. Smaller quantities of turkey meat are produced individually on small-scale holdings. In BiH there is no trend of turkey meat consumption; however, due to its high nutrition quality, turkey meat has been increasingly consumed recently in households in larger BiH cities.

Production of poultry meat is one of the leading meat productions. According to data for the two observed years, the slaughtered poultry numbers increased from 28,218 thousand poultry units, which were slaughtered in 2014, to 32,140 thousand units slaughtered in 2015, which is an increase of 14%. The increased number of slaughtered poultry also impacted the production of net poultry meat which increased from 43,431 tons produced in 2014 to 48,704 tons in 2015, which is a 12% increase. Around 98% of poultry slaughtered in slaughterhouses are fattened chickens/broilers and the remaining 2% includes all other poultry. This percentage primarily relates to slaughtering of laying hens after their declined productivity and parent flocks of heavy and light production lines.

Poultry farming at the BiH level is divided into two significant production lines, the so-called heavy production line which is focused on production of chicken meat, and light production line which is focused on production of table eggs. Poultry farming in FBiH has been recording largely positive trends over the past 15 years through expansion of broiler production, increase in the production of table eggs and developing slaughter and processing facilities.

The key issue for poultry industry is the need for importing inputs for feed production as well as entire fodder mixtures for the needs of this sector. Bosnia and Herzegovina does not have sufficient capacities of arable crop production to meet the needs of feed production for poultry sector. Given the share of food costs, these costs in the production process account for as much as 70% of total costs.

3.4.1. Meat production

According to 2009 data, consumption of chicken meat in BiH is growing and in 2009 it was at 11.5 kg/person annually, and is ranked next to the last position compared to the chicken meat consumption in other European countries. For the sake of digression, consumption of chicken meat in Luxemburg in 2009 was 39.9 kg/person annually.

More than 90% of farmers who breed fattening broilers are organized through the system of cooperation with poultry slaughterhouses. The cooperation is organized in a way that farmers receive the needed inputs for this type of production: day-old chicks and feed, and after fattening farmers send the fattened broilers to the organizer of fattening.

The production line of fattening of broilers and production of chicken meat includes production cycle consisted of a number of production segments: breeding of heavy parent flocks, keeping heavy flocks for production of hatching eggs, incubation stations and production of day-old broiler chicks, fattening

of broilers organized through the system of fattening broiler farms, broiler slaughterhouses and production of chicken meat, processing and production of chicken meat produces.

BiH Federation: Production of poultry meat in BiH Federation is mostly based on production of chicken meat. Chicken meat (broilers) production is largely represented in BiH Federation and is more competitive than other poultry productions. Expansion of broiler production was particularly pronounced in Zenica-Dobroj Canton where two large poultry leaders organized production and processing which resulted in establishment of a larger number of broiler farms and increase of capacities of the existing farms. In 2006-2015 poultry meat production increased from 11.3 thousand tons to 37.3 thousand tons and the number of slaughtered poultry increased from 8.4 million to 25.1 million. According to the unofficial data, there are 180 broiler farms registered in FBiH with their capacities ranging from 2000 to as many as 350,000 broilers in a cycle. Integrated cycles of poultry production which led to a profitable and desirable coupling of primary livestock production and finalization of poultry products contributed to development of poultry farming in FBiH. Lack of subsidies over the past years at the FBiH level largely impacted meat production and reduced the competitiveness of local producers. Decrease in the growth and expansion of this production was caused by the Croatia's entry into the EU, which was significant export market, and BiH failure to obtain approval for further meat export due to lack of alignment of legislation at BiH level.

Republika Srpska: In RS production of broiler meat is closely related to organizers of fattening of chickens located in FBiH. This production goes beyond Entity borders.

According to unofficial data, there are around 176 farms in RS engaged in broiler fattening with their capacity ranging from 2000 to 100,000 broilers. The largest concentration of broiler farms is in the Srbac region given that a slaughterhouse owned by Perutnina Ptuj is located in this area.

Domestic poultry includes several animal species; however only foreign selections of chickens for egg production and, separately, heavy lines for meat production are used in RS for now. This structure also includes organization of production of other four species of which one is domesticated (turkey) and three fall under the group of non-domesticated animal products NAP (pheasant, quail, ostrich).

Judging by the meat and egg production per capita, Vrbas region is top ranked with annual output of 143 eggs and 6.17 kg of poultry meat per inhabitant of the region⁶⁴.

Out of all species of domestic animals, poultry farming is superior when it comes to reproductive capacity which, in addition to other advantages, makes it a very profitable branch with extremely fast capital turnover (in biological production) which is logical compared to other types of production based on domestic animals. In order to achieve realistically planned and strategically justified production in poultry farming, the volume of this production should be attained through modern farm poultry production. Farm-type poultry production is primarily located in Vrbas, Posavina, Una and Semberija regions. It is logical that the existing trends will continue; and in addition to production by means of light and heavy chicken hybrids, production of turkey and ostrich meat is also foreseen as well as of pheasant and partridge.

3.4.2. Egg production

Eggs are one of the rare agricultural products where BiH has achieved self-sufficiency.

⁶⁴ RS Ministry of Agriculture, Water Management and Forestry (for 2015)

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Table 17 Volume of egg production (2006-2015 Average)

Number of laying hens (in million units)	
Federation of Bosnia and Herzegovina	1,6
Republika Srpska	1,9
Brcko District	
Bosnia and Herzegovina	7,2
Volume of production (in million units)	
Federation of Bosnia and Herzegovina	246
Republika Srpska	448
Brcko District	
Bosnia and Herzegovina	703
Average yield (eggs/ laying hen)	
Federation of Bosnia and Herzegovina	156
Republika Srpska	197
Brcko District	
Bosnia and Herzegovina	97

BiH Federation: Since 2006, poultry in the BiH Federation has recorded significant positive trends in the production of table eggs, in addition to meat production, even though not with the same intensity. The average annual production of table eggs in the BiH Federation over the analyzed period (2006-2015) amounted to 246 million units as a result of breeding 1.6 million laying hens on average. In 2006, the level of production amounted to 256 million eggs, and ten years later this number increased to 302 million units. The largest egg producers in FBiH are: Bingo from Tuzla with annual production of around 70 million, Posavina koka – Orašje with annual production of around 30 million eggs, Đeno – Orašje with 20 million and Landgold – Gračanica with annual production of 20 million eggs.

The predominant cage breeding will be a special challenge and a potential threat to the FBiH poultry industry in terms of meeting increasingly stringent EU criteria in the field of animal welfare. However moderate increase in the production of table eggs has been recorded over the past years.

Republika Srpska: In recent years, the annual production of chicken eggs in Republika Srpska was about 400 million units. Market egg production is “driven” by a small number of specialized commercial farms, while a large number of rural households still breeds chickens and produces eggs merely for their own needs. Among the largest egg producers in RS are: Agreks – Donji Žabar with annual production of around 80 million eggs; Koka product from Ljubinja with around 65 million eggs annually, and Rakić – Bijeljina with annual production of 40 million eggs.

Commercial egg production is automated and based on the purchase of concentrate feeds. In the process of adaptation of domestic regulations to the EU regulations, local egg producers will face the necessity to adjust their breeding methods in order to comply with the stringent standards on animal welfare (especially Directive 1999/74/EC) (keeping laying hens in improved cages compared to standard cage system, maximum density per square meter, and other requirements), which will increase the costs of egg production in the future and reduce their competitiveness.

3.5. Beekeeping

In addition to production of honey and other bee products, the biggest significance of beekeeping lays in pollination of agricultural plants as agricultural production could not be realized without bees. Compared to other industrially developed countries, BiH has very clean and healthy nature, resulting in production of quality and safe honey as well as other bee products and queen bees. In addition to honey, beekeeping is characterized by production of other bee products which cannot be in any way neglected given their importance for rural development and economic prosperity, such are: production of queen bees, production of clusters and bee communities, production of pollen, royal jelly, propolis, bee venom, etc. Many of these bee products are very important for pharmaceutical industry such as royal jelly, propolis and lately also bee venom.

3.5.1. Honey production

Beekeeping in Bosnia and Herzegovina is expanding. A number of producers is engaged in beekeeping professionally, while others practice it as a sideline activity or a hobby, however, their number should not be ignored as it is getting increasingly bigger.

Table 18 Volume of honey production (2006-2015 Average)

Number of hives (000)	
Federation of Bosnia and Herzegovina	201
Republika Srpska	153
Brcko District	6
Bosnia and Herzegovina	359
Volume of production (tons)	
Federation of Bosnia and Herzegovina	1.809
Republika Srpska	1.369
Brcko District	60
Bosnia and Herzegovina	3.238
Average yield (kg/hive)	
Federation of Bosnia and Herzegovina	9,0
Republika Srpska	9,0
Brcko District	10,0

Bosnia and Herzegovina	9,0
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BiH Federation. In the period between 2006 and 2015, honey production recorded an increase by around 79% (see Appendix), as a result of an increased number of hives (by approximately 36%) and significant growth of the average honey production per hive (about 32%). On average, in the BiH Federation, 1,809 tons of honey is produced annually with 201,000 hives, where an average annual yield is 9 kg per hive. The structure of honey producers expressed in the number of beehives kept suggests that beekeeping is still, largely, a source of additional income. Specifically, only 0.2% of honey producers keeps more than 300 beehives, 1% of them keeps between 201 and 300 beehives, 11% of them keeps 100 to 200 beehives, 35.6% of producers keeps between 51 and 100 beehives, while 52.2% of them keeps less than 50 beehives⁶⁵. It is estimated that only 30% of produced honey is sold through official channels, while most producers sell their honey directly to the customers⁶⁶. Small producers thus achieve higher prices, and due to the small quantities of produced honey encounter no difficulties with its sale. They also sell their honey through associations of beekeepers. There are several honey processors in the BiH Federation ("Medicom" Grude, "Medprom" Cazin, PZ "Api Med" Sanski Most, "Solidmed" Živinice) who purchase honey from small producers, arrange the required control checks (pesticide residues, etc.), packaging and marketing of honey. The range of honey containers is limited (mostly jars of 900 g), and their appearance is generally unattractive. The utilization rate of other bee products is very low.

Beekeeping is regulated by the Law on Livestock Farming according to which secondary legislation will be developed to define the terms and conditions for being engaged in beekeeping, bee reproduction, location of hives, pasture and moving of bees, establishment of a bee pasture cadaster, sale of bees, queen bees and bee products, and establishment of a register of hives and beekeepers. **Republika Srpska.** Honey production varies from one to two million kg, depending on the agro-ecological conditions in a particular year. The increase in honey production is a result of the increased number of hives by 50,000 over the past decade. Beekeepers in Republika Srpska are well organized; they have 49 municipal associations that are affiliated to the Union of Beekeepers Association of Republika Srpska. The Union, in cooperation with the Associations, carries out numerous activities that contribute to the development and improvement of beekeeping.

Honey production has become an important source of additional income for rural households with available labor force, and these positive trends came as a result of the relatively small investments, possibility of adapting the number of hives to the available financial resources, simple storage requirements and the increasing price of honey. In relation to the 1981 Census data, Bosnia and Herzegovina nowadays has twice as many beehives.

3.5.2. Production of other bee products

Beekeepers in BiH are mostly focused on production of honey while production of other bee products such as royal jelly, propolis and pollen is very modest. The lack of local production is compensated by importing these produces (most often from neighboring Croatia and Serbia) which are most often uninspected and of unknown quality.

Only a few producers in BiH are engaged in collection of pollen (flower dust), i.e. production of royal jelly and bee venom. The biggest part of other bee products is sold via direct sale (sale at home/farm) while a smaller amount is sold through retail, on green markets or fairs.

⁶⁵ FMAWF, 2013

⁶⁶ FARMA, 2011, 2012

Modest (negligible) production of other bee products in BiH is a result of, among other things, traditional concept of beekeeping and relying on honey and wax as the only commercial products. Other bee products could be used to reduce the high risk of honey production due to ever more pronounced climate changes (increasing number of bad seasons for beekeepers). This means that BiH beekeepers should expand their product range, i.e. develop their potential to produce more bee products: royal jelly, pollen, bee venom, package bees, etc. According to the experts' calculations, production of royal jelly is more profitable than honey, and it does not entirely depend on climate conditions. The combination of honey and royal jelly production would provide for better security (reducing production risk) and more stable income for BiH beekeepers.

3.6 Fisheries

Fishery is dependent on sufficient quantities of water for fish to live and grow. In 2015 FAO developed the *Fisheries and Aquaculture Sector Review in Bosnia and Herzegovina*⁶⁷ and identified the priority recommendations. With regards to this, the results of sector analysis included: (i) transparent overview of the sector, (ii) an analysis of potential in the sector and obstacles to realizing this potential, (iii) as well as IPARD type measures and recommendations in order to target potential investments.

This area is regulated by various international regulations and/or standards which, though adopted by different bodies/authorities or international organizations, are aligned/harmonized among (OIE; CAC/RCP 52). The aim of this alignment is to provide high level of protection of human and animal health and eliminate trade barriers.

BiH is abundant with high quality water resources. In addition to extended and dense river network, BiH has natural and artificial lakes. All natural waters in BiH are owned by the state or Entities, and the ownership rights could be passed or leased to public and private organizations. Currently there is no monitoring or supervision in fisheries sector while aquaculture is poorly covered by country's statistical system⁶⁸.

In BiH there are 41 freshwater and sea fish farms registered with the BiH Veterinary Office. Due to the quality of hydrological resources, production facilities, processing capacities, year-long tradition and trained personnel, and with the state assistance, it is possible to develop this branch of agriculture very successfully. Freshwater fishery is of economic importance for BiH. Depending on the species of fish bred (which depends on water quality and quantity) we can differentiate between carp and trout fish farms (Salmonids and Cyprinids).

Table 19 Volume of production of fish (2006-2015 Average)

		Fish t		
a. BiH Federation				
1.	Volume of production (carp and other Cyprinids)	Minimum	-	2014.
		Maximum	-	2013.
		Average	-	2006-15.

⁶⁷ Project "Preparation of IPARD Forest and Fisheries Sector Reviews in Bosnia and Herzegovina ", funded by the EU

⁶⁸ Fisheries and Aquaculture Sector Review in Bosnia and Herzegovina, p. 10

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2.	Volume of production (trout and other Salmonids)	Minimum	1.040	2013.
		Maximum	1.938	2009.
		Average	1.425	2006-15.
b. Republika Srpska				
1.	Volume of production (carp and other Cyprinids)	Minimum	238	2014.
		Maximum	2.783	2009.
		Average	1.402	2006-15.
2.	Volume of production (trout and other Salmonids)	Minimum	1.151	2006.
		Maximum	1.963	2012.
		Average	1.617	2006-15.

BiH Federation: Fishery in FBiH is based exclusively on aquaculture within which Salmonids farming, i.e. trout breeding, is most developed. Trout production is organized in two directions: breeding trout for market and breeding fingerlings of autochthonous Salmonids for open waters stoking. Between 3,000 and 4,000 tons of trout for market was produced on average in FBiH in the period 2011-2015⁶⁹ with Californian trout having the largest share (around 95%) in this production while brown and brook trout account for the remaining share (5%).

The most important producers of trout for market in FBiH are fish farms with full-system in place, i.e. with the overall production process - from fry to fish for market: Norfish Blagaj – Mostar (approx. 600 t), RIZ Krajina Martin Brod – Bihać (approx. 550 t), Riba Neretva – Konjic (approx. 300 t), Salmon – Ljubuški (approx. 300 t), Laks – Mostar (approx. 200 t), Bugojno – Bugojno (approx. 100 t) and Krupić – Prozor/Rama (approx. 100 t)⁷⁰. There is a large number of small, family fish farms in FBiH with the annual capacity between 20 and 30 tons of trout for market. These are standard breeding stations solely producing trout for market. Most of small fish farms with the capacity of up to 10 t are not registered.

FBiH has only 24 km of coastline and 1,400 ha of sea area. Though this is a small area for breeding sea products (fish and shells) it is still underused. There are two farms in Neum bay breeding sea fish and shells: Ancora Commerce and Karaka. According to assessments of mariculture experts the average annual production of gild-head bream is 400-500 tons, and European seabass, mussels and oysters 1 ton.

⁶⁹ Data is based on the assessments of experts in this area and the figures are considerably higher compared to the official statistics according to which around 1,500 tons of trout and other Salmonids is produced on average in FBiH. The main reasons why statistical data on fish production indicate far smaller figures than are the actual ones is that fish farm owners report data on lower figures to avoid paying various taxes and income tax and because there is a large number of fish farms which are not registered.

⁷⁰ Source: FMAWMF (2014)

Republika Srpska. Republika Srpska has four large carp farms: Saničani near Prijedor (1.360 ha), Prnjavor (700 ha), Bardača near Srbac (650) and Brod (600 ha). Trout farms are larger in numbers; however their individual and total size is considerably smaller than that of carp farms. In addition to these two types of fish farms, cage fish breeding in lakes and bigger rivers is growing. The exploitation area of carp farms is reducing – it went down from 3 to 2 thousand ha. Production of carp and other Cyprinids is decreasing while, on the other hand, production of trout is increasing both in size and quantity. The main issue fish producers face are high water management fees, dependency on import of fish feed (in particular for trout) and a lack of broodstocks.

3.7 Organic farming

In response to the widespread deterioration in the quality of food and hazards to human health, the organic farming started to develop intensively. The organic farming in Bosnia and Herzegovina started developing in the 1990s of the last century, when the activities related to the promotion, application of the organic farming methods, quality control and certification began. Since 2001 the organic production has intensified and in 2003, the OK (Organic Control) Association was established with the aim to support the development of organic farming in Bosnia and Herzegovina by establishing an internationally accredited BiH certification body for organic agriculture. The Association established the BiH control body – Organic Control in 2004. This control body was accredited in 2007 by IFOAM accreditation agency IOAS (International Organic Accreditation Service) as the first control body in the region whose certification process is supervised and checked each year under the stringent accreditation criteria. In 2011 the Permanent Board for Organic Farming of the European Commission issued approval to this control body for certification of organic products in Bosnia and Herzegovina, Serbia and Montenegro, and for certification of products which are intended for sale in the EU MS markets. This body is also authorized by the Federal Office for Agriculture Switzerland (FOAG). In RS this body is authorized for control of organic production by the RS Ministry of Agriculture, Forestry and Water Management while in FBiH the secondary legislation needed for issuance of authorization has not been passed yet.

The organic farming in Bosnia and Herzegovina really materialized in 2001 with the implementation of the first internationally funded projects. It started with 48 ha, and in 2011, according to the information obtained from the certification agencies, the total size under organic production (certified and in conversion) was 681 ha. This area was covered by 92 organic farms (36 certified ones and 56 in conversion), mostly engaged in the production of cereals, vegetables, berries and medicinal herbs. Collection of medicinal herbs and berries under organic certification is done on about 365,000 ha.

Consumers with higher standard of living are nowadays willing to pay premium prices for food that is produced in line with the requirements of organic production, i.e. without the administration of chemicals. Given that the consumers with higher spending power mainly live in developed countries, the opportunity for sales of organic agricultural products produced in less developed countries, such as Bosnia and Herzegovina, is their export potential to developed countries.

Organic farming is the production of safe and quality food in an environmentally sustainable manner. In the system of organic production, farmers must apply strict regulations, and their end product must be certified, i.e. it must receive a certificate that it has been produced in compliance with the said regulations. Bosnia and Herzegovina has no law on organic production at the State level, but it has two Entity-level laws: in Republika Srpska, it is the Law on Organic production (adopted in 2013) and in the BiH Federation, it is the Law on Agricultural Organic Production in the FBiH (adopted in 2016).

Regardless of the preconceptions that most of the agricultural production in BiH meets the requirements of organic farming, as it takes place in a clean and unpolluted environment, small quantities of agricultural products actually meet these requirements, and are certified as organic products.

Apart from organic farming, integrated farming is also environmentally acceptable and it involves principles of integrated plant protection, balanced agricultural practices and rational use of agro-chemical agents and fertilizers in the production process. In BiH, certification scheme for integrated production (which is voluntary) has not been developed to date and according to the rulebook on obligations of users of phytopharmaceutical agents, BiH Official Gazette, No 101/12, PPA users are obliged to observe all available principles of integrated plant protection.

BiH has a national accreditation body – BiH Accreditation Institute (BATA) since 2002. Both Entity-level laws on organic production prescribed that control bodies for organic production have to be accredited by BATA according to the conditions under BAS EN ISO/IEC 17065 - general requirements for the assessment of conformity of bodies certifying products, processes and services. However, to date BATA has not developed an accreditation scheme (scope of accreditation) for control bodies in agriculture⁷¹.

BiH Federation. Currently, the statistics do not track this type of production. In addition, there is no register of organic producers at the FBiH level. Exports were largely tied to tea, dried mushrooms and dried wild fruits, and in 2011, the BiH value of exports of organic products (OK certified) was 2.34 million euros (internal data of the OK certification agent). In the BiH Federation, there is no certified organic cattle farm, and only two farms are in the process of transformation. The reasons for the underdevelopment of organic livestock production in the BiH Federation are manifold, ranging from the complexity of livestock production (even in the developed countries, organic crop production prevails over livestock), through insufficient knowledge of producers and consumers, underdevelopment of livestock farming in general, to a poor purchasing power of the population. Respecting the standards and holistic approach of organic production, it would be useful to organize integrated organic farms that would include the production of both crops and livestock products. Subsidies and incentives are allocated from public budget only from time to time.

Republika Srpska. The Ministry of Agriculture, Forestry and Water Management of Republika Srpska pays increasingly more attention to the improvement of conditions for the development of organic farming. The area of organic production is governed by the Law on Organic Production and implementing regulations⁷² that are aligned with the EU legislation, and some other relevant by-laws are currently in the drafting process as well. Agricultural producers that are currently in the system of organic production and those that are subject to the conversion process are supported financially through two measures related to organic production, and the procedures may be granted financial incentives for all other measures provided for in the Rulebook. The 2016-2020 Agriculture and Rural Development Strategy of Republika Srpska sets out the development of organic production, as well as providing additional incentives to the producers engaged in organic production. The Ministry is preparing a Manual for organic beekeeping, while its Department for the provision of professional services in agriculture delivers training sessions to the farmers who wish to engage, or are already engaged in the organic production. In Republika Srpska, the RS Association of Organic Producers and Processors has been established. Currently, there are 26 producers engaged in organic farming in Republika Srpska, most of which are operating in the area of medicinal plants and berries.

Although Bosnia and Herzegovina disposes of natural resources which are suitable for organic production, the number of producers involved in this type of production is rather small, and the

⁷¹ http://www.bata.gov.ba/O_nama/default.aspx?id=17&langTag=bs-BA

⁷² Rulebook on methods of organic plant and livestock production and period of conversion (RS Official Gazette, No 15/15) and Rulebook on conditions for operations of control organizations and manner of control in the process of organic production (RS Official Gazette, No 77/16)

quantities of organic food produced is modest. In addition to higher production costs, the reasons for this include the lack of knowledge, incomplete institutional support and poor demand for this type of food⁷³.

3.8. Medicinal, aromatic and wild herbs

Statistics do not monitor the sector of collecting and growing medicinal and aromatic herbs. According to some researches, annual export of this sector exceeds BAM 12 million⁷⁴. The *Organic Control* data show that the export value of organic sector (95% of which are MAP) reached EUR 1.9 million in 2011. The BiH export of wild organic certified herbs accounts for 5% of the EU market of these products⁷⁵.

BiH Federation. The diversity of species of medicinal herbs in FBiH is substantial. Out of total 160 original species of medicinal herbs, 49 are important for the economy, 7 are rare, 9 are endangered and 7 are protected species⁷⁶. Traditional collection is dominating the medicinal and aromatic plants sector in FBiH. The number of families engaged in MAP collection in BiH is estimated to 50,000 of which almost 30,000 are organized by around 50 companies which purchase medicinal herbs⁷⁷. According to estimates, between 1,500 and 1,900 tons of dried herbs are collected annually⁷⁸. Exports are dominated by economically important medicinal herb species of class I⁷⁹. Lately companies engaged in MAP purchase face the issue of input supply due to decreased interest of collectors (according to a survey 60% of collectors believe they did not get a fair price for their products⁸⁰) and gray market as well as number of administrative impediments to obtaining a license for collecting herbs. Production of cultivated medicinal herbs is established on around 180 ha with the biggest share of lemon balm, lavender and pot marigold. Global market demand is growing in particular for artichoke, pot marigold, buckwheat, valerian, etc.

Republika Srpska. In addition to collection and processing of wild medicinal herbs there is also a number of producers engaged in growing medicinal herbs on plantations (chamomile, menthe, sage, immortelle, etc.) and some started the process of certification of organic production of medicinal herbs. In 2016 medicinal and aromatic herbs were sown on 158 ha by 44 legal entities and 114 family farms⁸¹. In particular, poor rural households with larger number of household members are engaged in collecting wild medicinal herbs in nature, this sometimes being their only source of income. Purchased or produced medicinal herbs is dried and sold to pharmaceutical industry, mostly abroad. Part is also processed and sold on market by producers themselves. Production of medicinal herbs essential oils is not negligible. The main medicinal herbs buyout facilities in RS (though buyout often goes over the Entity border) and processors are located in the region of Trebinje and Banja Luka.

A group of purchasers of medicinal herbs attempt to add value to these products by producing different types of teas, cosmetics and essential oils. This usually involves processing medicinal herbs grown on plantations (chamomile, lemon balm, immortelle, sage, lavender, bay laurel) and evergreen

⁷³ Source: Čengiĉ-Džomba, S. et al. (2014): Organic production

⁷⁴ FARMA, 2010.

⁷⁵ ITC, 2007.

⁷⁶ Study Identification of Medical Herbs Species in FBiH – Agro-Mediterranean Faculty Mostar

⁷⁷ Development of Herbs Sector in FBiH – FBiH Citizens' Association for Medicinal Herbs, 2012

⁷⁸ FARMA, 2010.

⁷⁹ Red Book phase I – -Mediterranean Faculty Mostar

⁸⁰ Development of Herbs Sector in FBiH – FBiH Citizens' Association for Medicinal Herbs, 2012

⁸¹ Areas and plantation at the end of spring sowing, annual communication, no 161/15, RS Institute of Statistics

trees with needles (needles of pine, fir and spruce) and distilling them into essential oils. The value of export of essential oils in 2015 was BAM 3.2 million (or 28,642 kg) while in 2016 the value of export was at BAM 8 million (30,527 kg), which constitutes a significant increase. The growing trend is expected, in particular having in mind that most of plantations under immortelle will reach their full harvest potential during this and next year.

Though of large importance, this sector is poorly administratively regulated. Legislation and regulations relating to environmental protection and use of natural resources are based on good agricultural and collection practice guidelines. Regulations governing this area are passed at the Entity level; however, there is a lack of efficient inspection service which will decrease the gray market and overpicking of protected and endangered species.

3.9. Production of flowers and ornamental plants

It is difficult to collect data or assess total local production of seasonal flowers because of the large number of unregistered producers. Ornamental trees and bushes are mainly produced by public companies which are in charge of urban green areas. This segment has its potential; however the market is limited at this point. Currently, pot-flowers are not produced in BiH and are 100% imported.

BiH Federation. Production of ornamental plants and cut flowers was initially related to open areas of sub-Mediterranean Herzegovina, where subsequently indoor production facilities were established. The beginning of 1990s and the war brought a standstill in production, and postwar rehabilitation of production is slowed down by inadequate privatization and decreased market. Needs for ornamental plants in FBiH are presently mostly met through import.

Revitalized production in FBiH is concentrated in municipalities of Sarajevo, Tuzla, Gradačac and Visoko, and in particular in the region of Mostar, Ljubuški and Čapljina. Out of prewar capacities, 5.5 ha of greenhouses in Buna (Mostar) and 5.5 ha of greenhouses in Klepci (Čapljina), which combine vegetable and flower growing, have been reconstructed to date constituting only 30% of prewar potential and this is not sufficient for substantial production⁸².

The only significant, and currently active, segments within the sector of flowers and ornamental plants in BiH are: cut and seasonal flowers and some species of ornamental trees and bushes. Only three producers of cut flowers were operational up to recently: greenhouses in Čapljina (gerbera and rose); Apro-florami, Buna near Mostar (roses) and Vrtlarija Šarić, Livno (lily, gladiolus and chrysanthemum). Production of seasonal one-year-old and two-year-old seedlings for parks, gardens, balconies and terraces is more developed and spread than production of cut flowers. The main registered producers of seasonal ornamental seedlings are Nerium – Ljubuški, Mediteranka – Mostar, Bemiko – Sarajevo and public enterprise JKP Park, Sarajevo.

Around twenty flower producers are registered in **Republika Srpska**; however there are far bigger number of those unregistered that produce smaller quantities of various species of flowers. Registered producers are registered with the Phyto Register. Production is based on open space and greenhouses.

Ornamental plants are largely grown on family farms; however due to inadequate equipment of indoor facilities for modern production, fragmentation and lack of specialization, local producers cannot compete with foreign producers' offer neither by quality and quantity nor by product range. Total production areas under flowers and ornamental plants in FBiH are estimated to 150-170 ha. Big problem for the entire sector is unavailability of inputs, in particular seeds, seedling material and adequate protection agents. All inputs are fully imported; hence the sector is entirely dependent on imports. In addition to reconstruction of capacities, this production would benefit from market

⁸² State of play as at 2013

organization of entrepreneurs into flower associations and other associations such are those in Western Europe (Italy and France). This is the fastest way to address the issues of this high income generating and investment intensive production with large capacities to provide employment to population. Family capacities for flower growing as an additional business could be of around 500 or more m², while they should not be smaller than 1,000 m² of production area to provide full employment to a household.

3.10. Production of cultivated mushrooms

Mushroom farming is seen as a sector with no close ties with other economic branches of agricultural sector though it could have a number of input and output interactions with numerous entities, in particular those from food and processing sub-sectors. Due to the importance of labor engagement in rural areas, this sector should become sustainable; hence efforts targeting competitiveness and market principles are imposed as predominant focus of its development.

A smaller number of people is involved in cultivated mushroom farming who are mostly producing button mushrooms and much less cultivating oyster mushrooms. According to 2010 data, total production of button mushrooms in FBiH was 1,102 tons and of oyster mushroom 48 tons. In RS this production is somewhat smaller, 830 tons of button mushrooms and 44 tons of oyster mushroom while Brcko District recorded production of button mushrooms of 110 tons⁸³. Hence, production of cultivated mushrooms is rather modest in BiH and is at somewhat over 2,000 tons or only 0.5 kg per capita. Processing of mushrooms is almost negligible. In facts, there is no serious company whose main focus of business is mushroom processing. The existing production facilities are mostly focused on drying mushrooms partly naturally and partially in mushroom drying facilities.

3.11. Wool production

Production of wool is most important among other livestock products. In 2015 wool production was at 1,391 tons which constitutes an increase of 6% relative to the previous year. Sheep wool is traditional, natural, renewable and sustainable material familiar to humans. At the same time, this is a material which during processing, embedding and recycling reduces the threat of climate changes and emission of CO₂. In the past, as a byproduct of sheep farming, wool was exported without any processing or finishing for the needs of production of insulation materials, where it is largely present as researches showed that sheep wool is an ideal material for insulation in construction sector. The price of sheep wool in BiH is relatively low. In BiH there are processing and finishing facilities for sheep wool, such is the machine wool washing facility in Visoko, capacity of which is 100 tons monthly, and wool washing in Kalinovik. The former system had a developed infrastructure for purchase of wool though purchase stations which is presently not functional.

3.12. Other unconventional productions

For the time being unconventional agricultural production has no significant economic or development role in BiH, though there are certain potentials for this. A small number of producers of Japanese quails and a farm of minks have to be mentioned. Snails with shells from natural population are collected on regular basis and according to some estimates the average of 90 tons of snails with shells are supplied annually. Initial investment for snail farming is usually relatively low, it does not require large physical work, and production technology is familiar. Regardless of this, three earlier

⁸³ Source: Tanović, N., Čosović-Medić Amela (2011): Development of Mushroom Sector, Sustainable and Inclusive Market, UNDP BiH study, Sarajevo

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developed snail farms in BiH have been closed down and presently there are no initiatives or interest for this production. Rabbit farming is poorly represented and does not have a character of production of commodities due to a lack of tradition and no consumption habits, and the similar situation is with other unconventional types of production.

4. Efficiency and competitiveness of agriculture

4.1. Efficiency of agricultural production

In order to determine the efficiency of agricultural production, data on the key financial indicators (income, costs, profit, number of employees, etc.) are needed; however they are not available given that BiH agricultural sector is dominated by small-scale farms. Large number of farms, even when they are registered as commercial, does not have bookkeeping and does not have the obligation of reporting on financial results achieved. The Farm Accountancy Data Network, which is used to provide such data from carefully selected sample of farms from all EU Member States, does not exist in BiH though pilot program 'Strengthening and harmonization of information system in agriculture and rural sector (AIS) in Bosnia and Herzegovina' (BiHAIS) was implemented via IPA projects in both Entities in 2010-2014, whose one of the activities was to test FADN methodology on a sample of 120 holdings during one year. There are some activities in RS to establish this system; however it is not operational yet.

4.2. Competitiveness of agricultural production

Competitiveness is analyzed by comparing data on average yields generated by the most important agricultural products and by calculating the index of relative import to export ratio and net export (NX) index.

4.2.1. Average yield generated

The average yields generated per unit area are one of the ways to measure productivity of agricultural production according to one production factor – land. BiH lacks data on engaged work (quantity of produced products relative to the number of invested working hours) to calculate work productivity.

Several distinctive agricultural products of largest importance for agricultural production in BiH are selected to compare the average yields generated. The comparison is done based on the data from FAOSTAT database (which is supplied with this data by the BiH Agency for Statistics)⁸⁴.

All data on average yields subject to comparison are brought down to 9-year averages for 2006-2014 period⁸⁵ in order to eliminate seasonal impacts of unfavorable years (in which consequences of drought, hail, frost, flood, etc. are manifested to extremes). The yields of both BiH Entities, two neighboring countries, Serbia and Croatia, and the EU (whose number of MSs ranged from 25 to 28 in this period) have been compared.

Table 20 Comparative overview of average yields generated by important cereals in BiH Entities, neighboring countries and the EU (t/ha) (2006-2014 average)

Type of cereals	BiH Federation	Republika Srpska	Serbia	Croatia	EU
Maize (grain)	4,2	4,8	5,2	8,1	6,9
Wheat	3,6	3,4	3,8	4,8	5,3
Oat	2,6	2,5	2,2	2,8	2,9
Barely	2,8	3,3	3,3	3,9	4,4
Rye	3,3	2,6	2,4	2,7	3,4

⁸⁴ Data taken from FAOSTAT, <http://www.fao.org/faostat/en/#data/QC>, (accessed on January 26, 2017)

⁸⁵ Data for 2015 have not been available on FAOSTAT website at the time this document was drafted

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Source: Own data processing based on data from FAOSTAT database

In case of all five selected representatives of cereals, which are sown on 95% of areas under cereals in BiH, the average yields in BiH are lower than in the EU, and in most cases lower than the yields generated in neighboring Serbia and Croatia. Comparing the two BiH Entities, RS has larger average yields of maize and barley while FBiH of wheat, oat and rye.

The least difference in cereals yields of RS compared to the EU is that of oat (85% of EU average) and the biggest of maize and wheat (63% of EU average) which are sown on the largest portion of plowed fields. All this indicates that the productivity in production of cereals, measured by the volume of yield per unit area, is low and that there is room for increase by using advanced agro-technical measures.

Similar ratios are identified in case of comparison of average cereal yields between FBiH and the EU. Rye and oat yields are closest to the EU average with 97% and 90% of EU average respectively while those furthest from the EU average are of the most important cereal crops – wheat (68% of EU average) and maize (61% of EU average).

In terms of industrial crops, the compared yields included those of soya, tobacco, oilseed rape and sunflower.

Table 21 Comparative overview of average yields generated by industrial crops in BiH Entities, neighboring countries and the EU (t/ha) (2006-2014 average)

Industrial crop species	BiH Federation	Republika Srpska	Serbia	Croatia	EU
Soya	2,1	1,8	2,6	2,5	2,7
Tobacco	0,9	1,6	1,6	2,0	2,3
Oilseed rape	2,2	2,3	2,5	2,7	3,1
Sunflower	0,9	0,9	2,3	2,8	1,8

Source: Own data processing based on data from FAOSTAT database

Industrial crop yields in RS are around 2/3 of the EU average, while the 10-year average yield of sunflower is only 50% of the EU average though both neighboring countries (Serbia and Croatia) have bigger average yields than the EU regarding sunflower production. Similar situation is with soya yield confirming that these industrial crops could be cost-effectively produced in the region in which BiH is situated.

Industrial crop yields in FBiH are rather far from both the average of the neighboring countries and that of the EU, in particular regarding tobacco (only 39% of EU average) and sunflower the yield of which is twice lower than that of the EU MS.

Out of around 30 species of vegetables 5 most widely represented (by area) were selected: potato, beans, cabbage and kale, paprika and tomato.

Table 22 Comparative overview of average yields generated by selected species of vegetables in BiH Entities, neighboring countries and the EU (t/ha) (2006-2014 average)

Vegetable species	BiH Federation	Republika Srpska	Serbia	Croatia	EU
Potato	9,6	10,7	11,4	16,4	29,9
Beans	1,3	1,4	1,6	1,2	1,6
Cabbage and kale	13,2	13,7	18,5	21,4	30,0
Paprika	9,2	11,3			

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Tomato	11,3	10,9	11,6	32,3	57,4
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Source: Own data processing based on data from FAOSTAT database

Vegetable yields are two to three times smaller than the EU yields, with the exception of beans. Comparing vegetable yields of RS and FBiH with those of the neighboring countries this difference is smaller. This is the consequence of the fact that production of vegetables for the needs of rural and suburban households on small areas is still important in the region, and these quantities are also balanced as they provide for meeting a substantial portion of needs for vegetables in the season.

It is impossible to compare the yields of large fruits (plums, apples, pears, etc.) in the same way as in previous cases. The reason is that the BiH statistics express the data on large fruit yields per tree while FAOSTAT per hectare. Truth be told, FAOSTAT publishes data on fruit yields in ha for BiH as well; however these are unrealistic because they are calculated based on overestimated areas and the resulting average yield is extremely low. However, the average yield of berries, primarily strawberries and raspberries, due to the same manner of monitoring and publication of data, can be compared.

Table 23 Comparative overview of average yields generated by raspberries and strawberries in BiH Entities, neighboring countries and the EU (t/ha) (2006-2014 average)

Fruit species	BiH Federation	Republika Srpska	Serbia	Croatia	EU
Strawberry	9,3	4,7	4,8	10,2	10,7
Raspberry	7,0	7,6	5,6	3,2	4,4

Source: Own data processing based on data from FAOSTAT database

The only product whose yields per ha in BiH are bigger than the yields in the EU (though there are EU countries with higher individual yields) and neighboring countries is raspberry even despite the fact that sector representatives often dispute the statistical data on raspberry yields, claiming that the actual average is considerably higher.

All data on average yields generated in FBiH and RS, and thus in BiH, indicate that there is room and need to increase productivity in agricultural production. This would increase income, with slower increase of production costs, and generate favorable financial result which provides for sustainability of doing business in a long-term and increases interest of agricultural producers to engage in this type of business.

4.2.2. Index of relative import to export ratio

Index of relative import to export ratio is a modification of original Revealed Comparative Advantage (RCA) index where the quotient of import and export of certain (*i*) product, i.e. in this case a group of products classified under the same tariff chapter, are compared with the quotient of total import and export of a given country.

$$RPU_{ij} = \frac{\frac{X_{ij}}{M_{ij}}}{\frac{\sum_{i=1}^n X_{ij}}{\sum_{i=1}^n M_{ij}}}$$

where:

X_{ij} – value of export of (group of) product(s) and country j ($j=BiH$);

M_{ij} – value of import of (group of) product(s) and in country j ($j=BiH$).

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Table 24 Index of relative import to export ratio of BiH (2006-2015)⁸⁶

Chapter CT	Year									
	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
01	0,02	0,00	0,06	0,05	0,16	0,13	0,12	0,15	0,15	0,06
02	0,07	0,10	0,10	0,17	0,24	0,25	0,28	0,14	0,17	0,69
03	1,55	1,91	1,89	1,98	1,49	1,60	1,35	1,40	1,37	1,35
04	0,63	0,82	1,00	1,08	1,05	0,98	1,07	1,02	0,93	0,87
05	1,26	0,70	1,02	0,67	0,00	0,47	0,91	0,60	0,20	0,29
06	0,09	0,08	0,09	0,09	0,18	0,36	0,51	0,44	0,45	0,50
07	0,67	0,80	0,63	0,83	1,08	0,86	0,83	0,70	0,72	0,71
08	0,48	0,55	0,60	0,85	0,84	0,91	0,66	0,85	0,92	1,24
09	0,12	0,14	0,19	0,21	0,21	0,10	0,12	0,16	0,17	0,19
10	0,01	0,02	0,02	0,14	0,29	0,04	0,04	0,17	0,27	0,25
11	0,23	0,10	0,11	0,10	0,10	0,16	0,22	0,22	0,30	0,37
12	0,19	0,15	0,15	0,15	0,11	0,17	0,13	0,19	0,22	0,13
13	0,00	1,17	3,70	0,00	0,00	0,00	0,00	0,00	0,09	0,13
14	1,10	2,34	2,43	0,00	0,96	0,00	0,00	0,60	0,47	0,88
15	0,56	0,91	0,92	0,89	1,03	0,79	0,86	1,03	1,16	1,25
16	0,38	0,57	0,94	0,95	0,79	0,68	0,73	0,65	0,93	0,99
17	0,42	0,59	0,61	0,52	0,56	0,83	1,09	0,81	0,48	0,59
18	0,25	0,24	0,21	0,24	0,26	0,22	0,30	0,35	0,31	0,33
19	0,46	0,55	0,59	0,58	0,46	0,51	0,61	0,60	0,62	0,66
20	1,17	1,21	1,19	1,14	0,78	0,79	0,50	0,59	0,51	0,39
21	0,14	0,21	0,26	0,19	0,18	0,18	0,17	0,20	0,26	0,28
22	0,16	0,17	0,19	0,23	0,23	0,26	0,22	0,25	0,26	0,24

⁸⁶ This index can only have positive value, RPU>0 the better.

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23	0,19	0,19	0,31	0,22	0,25	0,19	0,08	0,17	0,20	0,23
24	0,19	0,17	0,20	0,34	0,28	0,26	0,16	0,43	0,38	0,49
	0,31	0,36	0,40	0,44	0,44	0,43	0,43	0,46	0,45	0,52

Source: Own data processing from BiH Foreign Trade Chamber database

Regardless of BiH's foreign trade deficit in all these years, this deficit was even bigger regarding agricultural and food products. Better import to export ratio than the BiH average was continuously recorded only for fish, and in some years for milk and milk products (2009-2013), fats and oil of plant and animal origin (2013-2015), and fruit and vegetable products (2006-2010). Most other products saw a deficit larger than the average deficit of BiH foreign trade.

4.2.3. Net export index

Net export index is calculated as a ratio of difference between import and export (surplus or deficit) of a specific product or group of products and aggregate of import and export of the same product (total foreign trade).

$$NX_{ij} = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}}$$

where:

X_{ij} – value of export of (group of) product(s) and country j (j=BiH);

M_{ij} – value of import of (group of) product(s) and in country j (j=BiH).

The value of net export index can range between -1 and +1. The index is negative in case of foreign trade deficit and positive in case of foreign trade surplus.

Net export index is calculated for agricultural and food products which are grouped in the first 24 chapters of the harmonized tariff nomenclature at the level of HS2.

Table 25 Net export index for BiH (2006.2015)

Chapter	Year									
	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
01	-0,98	-0,97	-0,95	-0,96	-0,85	-0,87	-0,89	-0,85	-0,85	-0,93
02	-0,94	-0,92	-0,92	-0,86	-0,78	-0,77	-0,75	-0,86	-0,84	-0,44
03	-0,17	-0,10	-0,12	-0,06	-0,12	-0,08	-0,18	-0,13	-0,15	-0,13
04	-0,56	-0,48	-0,42	-0,35	-0,29	-0,32	-0,29	-0,28	-0,33	-0,34
05	-0,27	-0,54	-0,41	-0,54	-1,00	-0,60	-0,36	-0,50	-0,81	-0,71
06	-0,92	-0,93	-0,93	-0,93	-0,82	-0,68	-0,59	-0,61	-0,61	-0,56

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07	-0,54	-0,49	-0,59	-0,46	-0,28	-0,37	-0,40	-0,44	-0,44	-0,42
08	-0,64	-0,62	-0,61	-0,45	-0,39	-0,35	-0,49	-0,36	-0,34	-0,18
09	-0,90	-0,89	-0,86	-0,83	-0,80	-0,90	-0,88	-0,84	-0,83	-0,80
10	-0,99	-0,98	-0,98	-0,88	-0,74	-0,96	-0,96	-0,82	-0,74	-0,75
11	-0,81	-0,92	-0,91	-0,92	-0,90	-0,85	-0,80	-0,78	-0,73	-0,65
12	-0,84	-0,88	-0,89	-0,87	-0,89	-0,84	-0,87	-0,81	-0,79	-0,86
13	-1,00	-0,33	0,21	-1,00	-1,00	-1,00	-1,00	-1,00	-0,90	-0,86
14	-0,33	0,00	0,00	-1,00	-0,33	-1,00	-1,00	-0,50	-0,60	-0,33
15	-0,60	-0,44	-0,45	-0,43	-0,30	-0,41	-0,39	-0,27	-0,23	-0,17
16	-0,71	-0,61	-0,44	-0,40	-0,42	-0,47	-0,45	-0,47	-0,34	-0,28
17	-0,68	-0,60	-0,60	-0,62	-0,55	-0,39	-0,28	-0,38	-0,59	-0,50
18	-0,80	-0,81	-0,84	-0,81	-0,76	-0,79	-0,73	-0,68	-0,71	-0,69
19	-0,65	-0,62	-0,61	-0,59	-0,61	-0,58	-0,52	-0,50	-0,50	-0,45
20	-0,31	-0,32	-0,34	-0,32	-0,42	-0,41	-0,59	-0,51	-0,57	-0,64
21	-0,88	-0,84	-0,81	-0,85	-0,83	-0,82	-0,84	-0,80	-0,76	-0,73
22	-0,87	-0,87	-0,85	-0,81	-0,79	-0,76	-0,80	-0,76	-0,76	-0,76
23	-0,84	-0,85	-0,78	-0,82	-0,77	-0,82	-0,92	-0,83	-0,81	-0,77
24	-0,84	-0,87	-0,85	-0,74	-0,74	-0,76	-0,85	-0,62	-0,66	-0,57
01-24	-0,75	-0,74	-0,72	-0,67	-0,63	-0,63	-0,64	-0,60	-0,61	-0,55

Source: Own data processing from BiH Foreign Trade Chamber database

In all 24 chapters of harmonized tariff BiH has negative net export index, meaning that it recorded deficit in foreign trade for all groups of agricultural and food products during all ten analyzed years. However, it is encouraging that negative value of this index is decreasing for most products, though at a very slow pace.

For the needs of development of Republika Srpska Strategic Plan for the Development of Agriculture and Rural Areas until 2020 RCA index is calculated for agro-industrial sector in RS for the period 2007-2014 which showed comparative advantages (positive RCA indices) of RS regarding fish and milk production during the entire period and for some other products in individual years. However, such analysis has certain limitations since the original data used as a basis for the analysis are based on the

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foreign trade statistics data where the criteria for dividing import/export data by Entities is the place of registration of a legal person (importer/exporter).

The previous and other data on BiH foreign trade indicate that the situation is alarming and that, despite sound natural resources, food import is enormous since foreign trade deficit of agricultural and food products amounted to around BAM 2 billion during the past years.

Foreign trade deficit of agricultural and food products is a consequence of a lack of competitiveness of local agricultural production the causes of which include: low productivity, unstandardized quality and product origin, small-scale subsidies and liberal foreign trade regime.

5. Food industry

Food industry is a precondition and result of development of agricultural production. It is a stable and reliable buyer of primary agricultural products. Food industry capacities in former SFRY were planned and developed in accordance with the input base. The same was applicable for BiH where part of the inputs of agricultural origin was processed in neighboring republics and part of inputs for BiH food industry was transported from these republics. War events brought physical devastation to large number of food industry plants in BiH while transition largely destroyed them economically.

Most companies from food industry are privatized and smaller number of them continued its operations. At the same time, new greenfield investments arrived partially compensating for the collapse of prewar food industry capacities. The main motive of doing business in the market economy environment is the possibility to generate and increase profits and so local entrepreneurs from food industry are not particularly sensitive to the issues and needs of local farmers while the needed inputs are often imported instead of being bought from local producers. Dealers act similarly and are largely indifferent to the origin of goods they sell and primary criteria to decide whether to sell local or imported food products are purchase price and profit⁸⁷. As last participants in the value chain, buyers purchase what retailers offer and they too prefer lower prices than product origin. Due to not being able to compete with imported products on equal basis, food industry capacities in BiH are insufficiently utilized and this is additional cause of their poor competitiveness (higher unit costs)⁸⁸.

Food industry in BiH has a rather traditional range of products. Little is invested into innovation of product range and adaptation to the requirements of ever more sophisticated markets. The design of products, size of packaging and market communication are not adjusted to the needs of modern clients and are substantially poorer compared to regional leaders. Companies pay little attention to the product aspects that save time for buyers, facilitate simple use and product preservation. This is one of the most important reasons of poor competitiveness of BiH food industry.

Food industry value chain is inefficient, i.e. both vertical and horizontal coordination (cooperation) is at a very low level due to which companies cannot enjoy advantages of external economy of scale (easy access to market information, joint representation at foreign markets, technology transfer, etc.). Horizontal coordination at the level of food industry is almost non-existent. Companies are not even ready to forward, exchange or consider data on their own business and capacities. This is the reason BiH companies operate in a limited segment of local market and present competition to one another while very attractive segments of local market are almost entirely left to foreign producers.

Underdevelopment of complementary industrial branches has an impact on competitiveness of food industry. Companies have to import many inputs and materials. This further complicates their business, especially for micro and small food industry companies. A link between food industry, wholesale and retail almost does not exist. Large supermarkets often charge companies to sell their products and then impact the prices with their payment regime, thus reducing the possibility of significant return on investment for food industry companies. This reduces industry's capacity to invest and innovate and improve efficiency of its production and distribution.

Food industry in BiH is in its development phase in which it has to improve all aspects of efficiency of doing business as well as market-, i.e. client-orientation. In terms of business efficiency companies

⁸⁷ Attempt to legally impose the obligation of large retailers to sell products of local origin in a specific proportion to imported goods were contrary to the Stabilization and Accession Agreement and WTO rules due to which these obligations had to be removed from the law on trade.

⁸⁸ Data on food industry capacities and their utilization in BiH are not available for the two Entities and are thus presented and analyzed by individual Entity.

have to be more proactive in developing and designing efficient value chains and all other aspects of business networking based on interest, sharing of information and resources, and start to actively work on efficient transfer of knowledge and technology.

BiH Federation. According to the available data, insufficient use of installed capacities continues to pose one of the bigger problems for food industry in FBiH. The highest level of utilization of installed capacities is in fruit and vegetable processing (62%), milk processing (56%) and production of beverages (54%) while quite low level of utilization is found in production of mineral water (16%), wine (16%) and biscuits and waffles (19%). The overview of installed capacities and total production in FBiH food industry for 2015 is provided in the table below.

Table 26 Installed and utilized food industry capacities in BiH Federation (2015)⁸⁹

	Branch of food industry	Unit of measurement	Installed capacities	Total production	% of utilization
1.	Milling industry	t	397.500	146.215	37%
2.	Milk processing	000 lit.	332.000	185.956	56%
3.	Meat processing	t	169.000	56.288	33%
4.	Frut and vegetable processing	t	16.400	10.170	62%
5.	Biscuit and waffle production	t	28.100	5.452	19%
6.	Beer production	hl	1.500.000	406.354	27%
7.	Mineral water production	000 lit.	420.000	66.315	16%
8.	Beverages production	000 lit.	360.600	194.464	54%
9.	Wine production	000 lit.	26.400	4.114	16%
10.	Cigarette production	tons	7.000	2.289	33%

Source: Annual Report for Agriculture, Food and Rural Development for Bosnia and Herzegovina for 2015

Milk processing. FBiH milk industry cooperates with around 12.5 thousand farms. The milk buyout infrastructure covers more than 80% of FBiH territory, milk is collected at over 750 buyout locations in 46 municipalities; however, substantial milk quantities are still not being purchased. The period from 2006 to 2015 is characterized by upgrading and expanding the production programs with new modern products (low fat products, probiotics, feta cheese, dairy spreads, etc.), expanding export of milk products, entry of foreign milk companies and taking over large milk processing facilities, and winding up of a number of mostly small-scale dairy processors. Installed milk processing capacities in dairies in FBiH amount to 332 million liters (2015) while the level of their utilization stands at 56%. In 2014/2015 around 77.1% of milk was processes in 4 dairies. Croatian entry into the EU in 2013 posed a large problem of reentry into this demanding market. Since 2015 three large dairies from FBiH

⁸⁹ Annual Report for Agriculture, Food and Rural Development for Bosnia and Herzegovina for 2015, Ministry of Foreign Trade and Economic Relations, 2016, p.28

managed to meet the necessary standards and gain access to the EU states. Dairies' production programs include 12 groups of milk products with around 35 types of products. The structure of milk processing in FBiH dairies is largely consisted of liquid milk products (80.8%), cheese (17%) and other products (2.2%). This structure is unfavorable for long-term development of export as it limits the exports to regional market primarily due to the structure of export products (UHT milk). The share of long shelf life products (cheese, powder milk, butter, etc.), which are a prerequisite for further development of export to the EU and wider global market, is quite low (19.2%). Though the production program and range of products have been largely expanded over the past years, the demand for certain value added milk products is still met mostly through import (processed cheese, sweet products program, etc.). Furthermore, while systematic policy regarding milk in the EU and countries with developed milk production is primarily based on the approach to long shelf life products which regulate the stability of development of primary milk production, the systematic policy regarding these products is nonexistent in FBiH. Traditional milk products, especially cheeses, are specific resource for FBiH. They are produced in a traditional way, mostly from fresh milk, on small family farms. Though its share in total milk processing is small, this production is of wider importance, especially in terms of development of rural areas. The level of utilization of sheep and goat milk is particularly important as it is not industrially processed at all. Over time 3 significant traditional cheeses singled out in BiH: Travnik/Vlašić cheese, Livno cheese and Herzegovina cheese from sheep skin sack which are regional brands. Over the past 10 years activities were undertaken to support producers of these cheeses and protect and valorize their specificities; however there was no systematic support and these steps were taken by various organizations, mostly international ones. Presently, not one traditional milk product has a protection mark (PDO, PGI, TSG) in BiH. Moreover, traditional cheeses are not included in the group of subsidized products.

Meat processing. According to 2012 data, there are 73 companies in FBiH engaged in meat processing and these are mostly small and micro companies. Installed capacities of 169 thousand tons per year or between 5 and 30 tons a day are more than sufficient for meat processing and production of meat products. Only one third of these capacities was utilized in 2015. In FBiH meat processors are largely oriented to importing inputs (frozen beef and chicken MOM).

Most of processors have certified HACCP system (implemented by private certification bodies) though there is no legal obligation for certification. However, most EU expert reports indicate the fact that HACCP is not fully implemented. Moreover, the aspect of production traceability is not implemented in a way to satisfy the requirements of Hygiene Package. In addition to this, it is necessary to improve the aspect of product labeling (BiH Rulebook on Informing Consumers about Food)⁹⁰.

However, meat processing industry in FBiH still does not meet all the necessary standards to ensure its presence in the EU market.

Fruit and vegetable processing. Unlike other branches of food industry, where production is based on imported inputs, processing of fruits and vegetables is largely based on local inputs which, according to the expert estimates, accounted for 91% of vegetables and 95% of fruits processed in local industry capacities between 2010 and 2015. The problem is that very small portion of local production of fruits and vegetables (less than 5%) is processed. One of the reasons for this is insufficient and unevenly distributed cooling facilities. There are 24 active stakeholders in FBiH with installed cooling capacities for preservation of fruits and vegetables. Total capacity of cooling facilities is 22,680 tons, i.e. 30,260 t including stakeholders which are no longer in business⁹¹. General assessment is that the available cooling capacities for fresh fruits and vegetables are insufficient. In addition to this, cooling capacities

⁹⁰ E.g. chicken meat producers have not aligned their labeling with the Rulebook on Informing Consumers about Food yet nor with the Rulebook on Market Requirements for Poultry Meat (both adopted at the state level).

⁹¹ Source: FBiH MAWMF (2014)

are unevenly distributed in FBiH, with largest concentration in Gradacac and surrounding areas, and Mostar and surrounding areas. Cooling capacities are mostly used to preserve table fruits and vegetables while only three cold storages preserve raw materials for processing. Total FBiH installed capacities for fruit and vegetable processing were at 16,400 tons in 2015 and the total production was at 10,170 tons. The level of utilization of installed capacities of 62% is far bigger than it was in 2011 when only 4,500 tons of processed products were produced in FBiH and the level of utilization of installed capacities was at 9%. Sour vegetables (mixed or as monoculture) have the largest share in total production of vegetable products while the share of other products is negligible. There is not one company in FBiH which produces frozen or dried vegetables. Fruit juice (mixed or produced from one fruit species or from concentrated fruit juice) has the largest share in total production of fruit products, while the share of other products is negligible. Not one company in FBiH produces concentrated fruit juice and the entire production of fruit juices and accompanying products is based on imported concentrate. Analysis of competitiveness of agricultural and food products in BiH shows that even in future BiH will not be able to compete with larger quantities of fruit and vegetable products on EU market. However, BiH opportunities lay in production of autochthonous products (e.g. traditional jam from indigenous fruit, thick jam with reduced fruit pulp, different fruit processed products, etc.). Production of these products is small-scale and takes place in small production capacities and households. This group of products has to look for its opportunities in export market as products with a protection mark (geographic origin, originality or traditional appearance).

Cereals processing. The volume of industrial production in milling industry in 2015 was 146,215 tons (flour from wheat or meslin or other cereals, pearl barley and grits from durum wheat, oat, maize, rice, rye, barley). Presently *Žitozajednica* FBiH includes around 10 large mills which annually buyout between 3,000 and 5,000 tons (maximum of 10,000 tons of grain). Large mills process around 50% of grain and the rest is processed by small mills, 37 of them according to estimates. Storing wheat in FBiH is mostly related to the existing mills. The storage capacities vary from several thousand tons to 65,000 tons which is the capacity of Klas wheat silo in Sarajevo, which is also the largest mill in FBiH. The main milling industry inputs are largely imported, and import accounts for around 90% of total inputs used. Processors of cereals believe that the quality of locally produced cereals does not meet requirements of bread-baking industry and thus they are forced to blend local cereals with imported ones⁹².

Oil crops processing: The only factory for processing oil crops and producing edible vegetable oil in BiH is Bimal d.d. in Brcko. Bimal was privatized in 2003 and has been increasing its production since. The factory produces edible refined vegetable oil from soybean, sunflower and oilseed rape (sunflower oil accounts for around 80%). Total factory capacity is 120,000 tons of processed fresh seeds. Annual production of edible oil is around 55,000 tons while annual processing of oil crops is at 100,000 tons. Cultivation of inputs in BiH is far from being sufficient for this production capacity; hence over 90% of inputs for production of edible oil are being imported. Olives are cultivated in South Herzegovina where around 75,000 trees were planted between 2005 and 2011. For the time being, there are no significant capacities to process olives or produce olive oil in BiH Federation.

Wine making. Total wine-making capacities in FBiH, in fact Herzegovina, are estimated to around 30 million liters. According to the estimates made by experts, processing and storing capacities of industrial wineries in FBiH are around 25 million liters. All industrial wineries are equipped with modern equipment to receive and process grapes, cool and store wine; and currently these capacities meet the needs of local grape processing. Industrial wineries usually process their own grapes, and they buy little aside. In addition to these, there are also private wineries (registered for wine and brandy production) of total capacities of around 4 million liters. In addition to their own grape they also process grapes purchased from their cooperants. Moreover, there are also grape producers and

⁹² Agricultural sector in BiH: Preparation IPARD Sector Analyses Bosnia and Herzegovina, GCP/BIH/007/EC, 2010

winemakers with small-scale wineries equipped with modern wine-making technologies. They mostly process their own grapes and those from their relatives and neighbors. They are not registered as winemakers and mostly sell bulk wine. Their capacities are estimated to around 2 million liters. Their share in total production of red and white wine is 45% and 55% respectively and such a structure has been very much balanced over the past ten years. Registered industrial wineries (14 of them) are the backbone of wine sector in BiH. Registered winemakers' production is primarily focused on high quality categories of wine, with large share of autochthonous varieties of *Žilavka* (white) and *Blatina* (red). Total wine production in FBiH is estimated to between 15 and 20 million liters. One of the issues for wine-making sector in BiH/FBiH is uncontrolled import of grapes from neighboring countries which are used for winemaking in unregistered wineries. This wine ends up in falsely labeled bottles as wine made locally from local grapes.

Republika Srpska: Over the past years RS food industry saw a pronounced consolidation process (e.g. in milk industry) and at the same time establishment of a large number of small-scale facilities (e.g. for processing fruits and vegetables, spices, wine). Regardless of RS food industry situation being unsatisfactory, its value in total sales of RS industry sectors is at 16.5% (additional 1.4% for production of beverages and 0.4% for production of tobacco products). Gross added value of food products produced in RS was BAM 201 million in 2015. The number of active legal entities in food sector in RS was at 309 at the end of 2015 with a trend of slight increase while the number of entities in beverage sector was 34⁹³. Also, overall business result of this sector is positive. The food industry growth rate was at 121% in 2015, 115% in 2014 and 108% in 2014. At the same time, employment growth was slower indicating that productivity in food industry is increasing⁹⁴.

The characteristic of local food industry is a low technological level, insufficient investments, delays in standardization of processes and products, insufficient use of installed capacities, lack of local inputs and reorientation to imported inputs.

Table 27 Number and utilization rate of food industry capacities in Republika Srpska (2015)⁹⁵

	Food industry branch	Number of facilities	% of utilization
1.	Production of meat and meat products	20	40%
2.	Production of fruits and vegetables	15	40%
3.	Production of milk and dairy products	14	60%
4.	Production of milling products	30	30%
5.	Production of confectionary products	4	30%
6.	Production of tea, species and similar products	3	40%
7.	Production of sugar	2	12%

⁹³ Topical bulettin Industry, RS Institute of Statistics

⁹⁴ Industry, Bulletin no. 1, RS Institute of Statistics, 2017

⁹⁵ Annual Report for Agriculture, Food and Rural Development in Bosnia and Herzegovina for 2015, BiH Ministry of Foreign Trade and Economic Relations, 2016, p. 28

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8.	Production of beer	1	40%
9.	Production and filling of water	2	50%
10.	Production of tobacco products	1	10%

Source: Annual Report for Agriculture, Food and Rural Development in Bosnia and Herzegovina for 2015

Meat processing. In addition to industrial capacities for meat processing and producing meat products, cattle is slaughtered in slaughterhouses and sold in butcher shops registered as sole proprietorship which solely supply local population. According to 2015 data, 17,943 tons of fresh meat (all kinds) and 6,151 tons of sausages and similar meat products were processed and produced in RS and meat processing registers an upward trend. Local meat processors import cheaper inputs used to produce meat products; and there are continuous debates about the questionable quality of such products. There are sufficient capacities for meat processing; however their utilization rate is low due to decline in livestock numbers and trade orientation towards imported meat products. Part of meat is sold through catering facilities; and one should not forget seasonal cattle slaughter for traditional and religious needs which additionally decreased the number of live animals for slaughter in slaughterhouses. Facilitation of export of baby beef from BiH to Turkey increased utilization rate of slaughterhouses but not the level of self-sufficiency regarding meat as exported quantities have to be substituted by import in the situation when the livestock numbers are stagnating.

Fruit and vegetable processing. The number of facilities for processing fruits and vegetables is increasing. They are mostly oriented to local inputs, though there are also cases of importing inputs for processing, in particular in years of local underproduction due to unfavorable weather conditions. Two factories for processing fruits and vegetables have been privatized – Vitaminka in Banja Luka and Sava in Bijeljina; while some new processors started with their operations. Processing of fruits and vegetables is observed together; around 15,000 tons of fruits and vegetables has been preserved and around 180.000 hl of fruit and vegetable juices produced (processing has doubled over the past 2-3 years). In 2015 RS processed 1,634 tons of potato (which falls under vegetables). In addition to processing, storage capacities with cold storage systems are also important for fruit and vegetable production and there are a number of these in RS, mostly concentrated in its Eastern and Northern parts.

As regards **milk processing** one processor – Mlijekoprodukt from Kozarska Dubica (operating as part of Implek Group) – predominates in RS and it is the biggest processor of fresh milk and exporter of dairy products in BiH. By acquisition of a number of small dairies and taking over leadership position this dairy closed a number of small dairies and is now dominating the milk processing in RS. Pađeni dairy from Bileća predominates in Southern parts of RS; its production program is now growingly oriented to cheeses, dairy spreads and other value added products. Total annual production of milk industry in RS (based on 2015 data) is 92,000 tons and of dairy products is around 23,000 tons. Part of milk is processed into autochthonous dairy products and sold through direct sale (Vlašić cheese, Herzegovina cheese from sheep skin sack, Kalnderovački cheese, Janj cream, etc.). There are some initiatives to protect the origin of these products (PDO, PGI, TSG); however none has been fully implemented yet. Milk industry faces the issue of limited production range based on the production of low added value products, and short shelf life (milk, yogurt, cream).

In addition to large industrial processors, **milling industry** also includes small-scale capacities (mills) which have the status of sole proprietorship. Large mills which have significant storage capacities (silos) are mostly located in Northern parts of RS (Bijeljina, Modriča, Prnjaovr, Banja Luka, Kozarska Dubic, Prijedor). Due to lower prices and better quality of cereals, local milling industry imports wheat while locally produced wheat is used as animal feed. RS milling industry produces (2015 data) around 92,000 tons of wheat flour and 30,000 tons of wheat bran annually. Bakery industry is expanding,

which addition to bread offers a growing range of pastry and is developing its own retail network. It annually produces around 14,000 tons of bread and somewhat more than 3,000 tons of cakes, pastry and other bakery products. Production of animal feed for domestic animals also recorded positive growth trends (185,000 tons in 2015).

Production of sugar in RS, and the entire BiH, depends on the destiny of sugar factories in Bijeljina and Brčko. The sugar factory in Bijeljina is practically out of business from the end of war and efforts to find an investor to revitalize it have been unsuccessful; while sugar factory in Brčko produces sugar from imported inputs and has almost no significance for local agricultural production. In addition to these two, HPK sugar factory in Draksenić produces high fructose sugar syrup from corn (around 30 thousand tons annually) which is being entirely exported.

Wine making is largely concentrated in Trebinje region (where 16 wineries have been registered) and **beer is produced** in one industrial brewery in Banja Luka. The Association of Wine-Growers and Wine-Makers of East Herzegovina Vinos has around 20 members while RS Association of Wine-Growers and Wine-Makers (northern parts of RS) has 6 registered members. Bigger wine producing facilities are: PODRUMI VUKOJE 1982 d.o.o. from Trebinje, PODRUM ANĐELIĆ d.o.o. from Trebinje, Vinarija JUNGIĆ d.o.o. from Čelinac and PODRUMI MANASTIRA TVRDOŠ d.o.o. from Trebinje.

Republika Srpska is an area with years-long tradition of production of alcoholic beverages, in particular *rakija* (brandy) for which it is known in Europe. The importance of brandy production is reflected in this food industry subsector being in demand beyond the country borders and its contribution to budget income as an excise duty product. Mostly small and medium companies are engaged in production and sale of brandy (584,775 liters were produced in 2015). The leaders in production of strong alcoholic beverages in RS are Prijedorčanka a.d. from Prijedor and MB Impex d.o.o. from Banja Luka which sell their products in international markets.

The renowned producer in **production and filling of drinking water** in RS is Vitinka a.d. Kozluk, from Zvornik which accounts for 95% of total production. Production of mineral and sparkling water industry recoded an increase in production (53.4 million liters were produced in 2015).

6. Foreign trade in agricultural and food products

One of the most significant characteristics of total BiH economy is the high foreign trade deficit and dependency on imports where agriculture and food sector has an important place. Bosnia and Herzegovina is a pronounced net importer of agricultural and food products which substantially contributes to poor image of BiH foreign trade.

Table 28: Share of agricultural and food products in total foreign trade of Bosnia and Herzegovina (2006-2015 period)

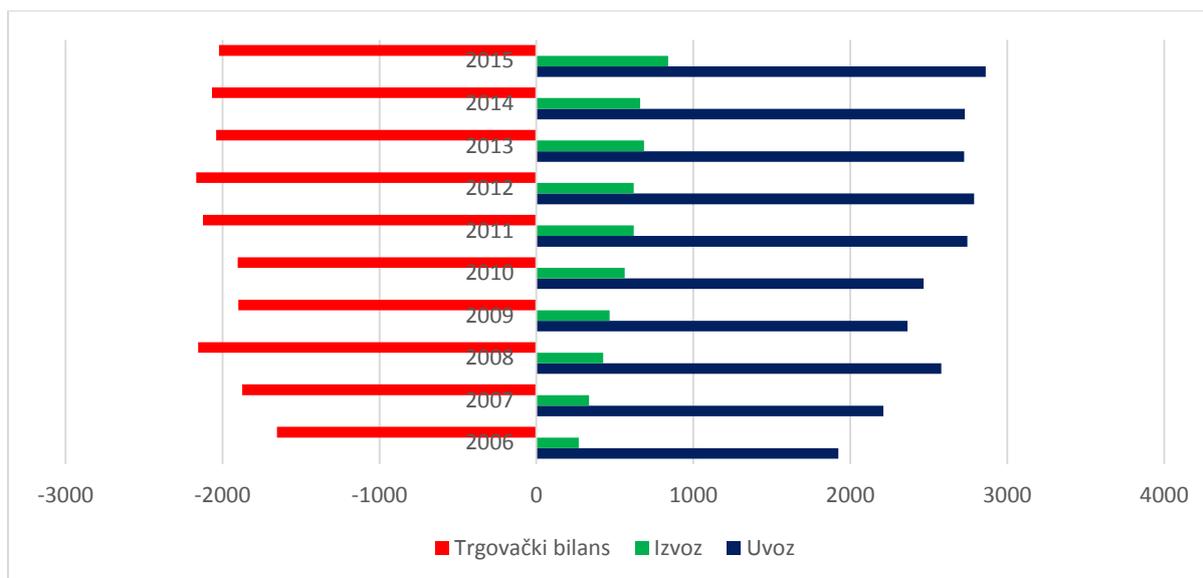
(in million BAM)

Description	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
Total export of goods	5.164	5.937	6.712	5.531	7.096	8.222	7.858	8.381	8.682	8.987
Total import of goods	11.389	13.898	16.293	12.355	13.616	15.526	15.253	15.169	16.200	15.852
Trade balance	-6.224	-7.962	-9.581	-6.824	-6.521	-7.304	-7.395	-6.789	-7.518	-6.864
AFP export	270,2	336,1	424,5	466,0	563,7	621,2	620,7	685,4	661,7	840,1
Share in total exports (%)	5,2	5,7	6,3	8,4	7,9	7,6	7,9	8,2	7,6	9,4
Import of AFP	1.923,5	2.210,6	2.580,8	2.365,8	2.466,7	2.745,4	2.788,9	2.725,4	2.728,9	2.862,1
Share in total export (%)	16,9	15,9	15,8	19,2	18,1	17,7	18,3	18,0	16,8	18,1
Trade balance in AFP	-1.653,7	-1.874,9	-2.156,8	-1.900,3	-1.903,4	-2.124,6	-2.168,7	-2.040,5	-2.067,7	-2.022,5
Import-export rate for AFP (%)	14,0	15,2	16,4	19,7	22,9	22,6	22,3	25,1	24,2	29,4

Note: AFP – Agricultural and food products

Source: BiH Foreign Trade Chamber database

In 2015, with BAM 840 million the share of agriculture and food sector in the value of BiH export was 9.4% and with BAM 2,862 million its share in total BiH export was 18.1%. The import to export ratio of agricultural and food products is still very low and was at 29.4% in 2015. Total trade balance in agricultural and food products was negative in 2015 (BAM -2,022.5 million) and accounted for 29.5% of total BiH trade deficit.



Source: Own data processing using the BiH Foreign Trade Chamber databases

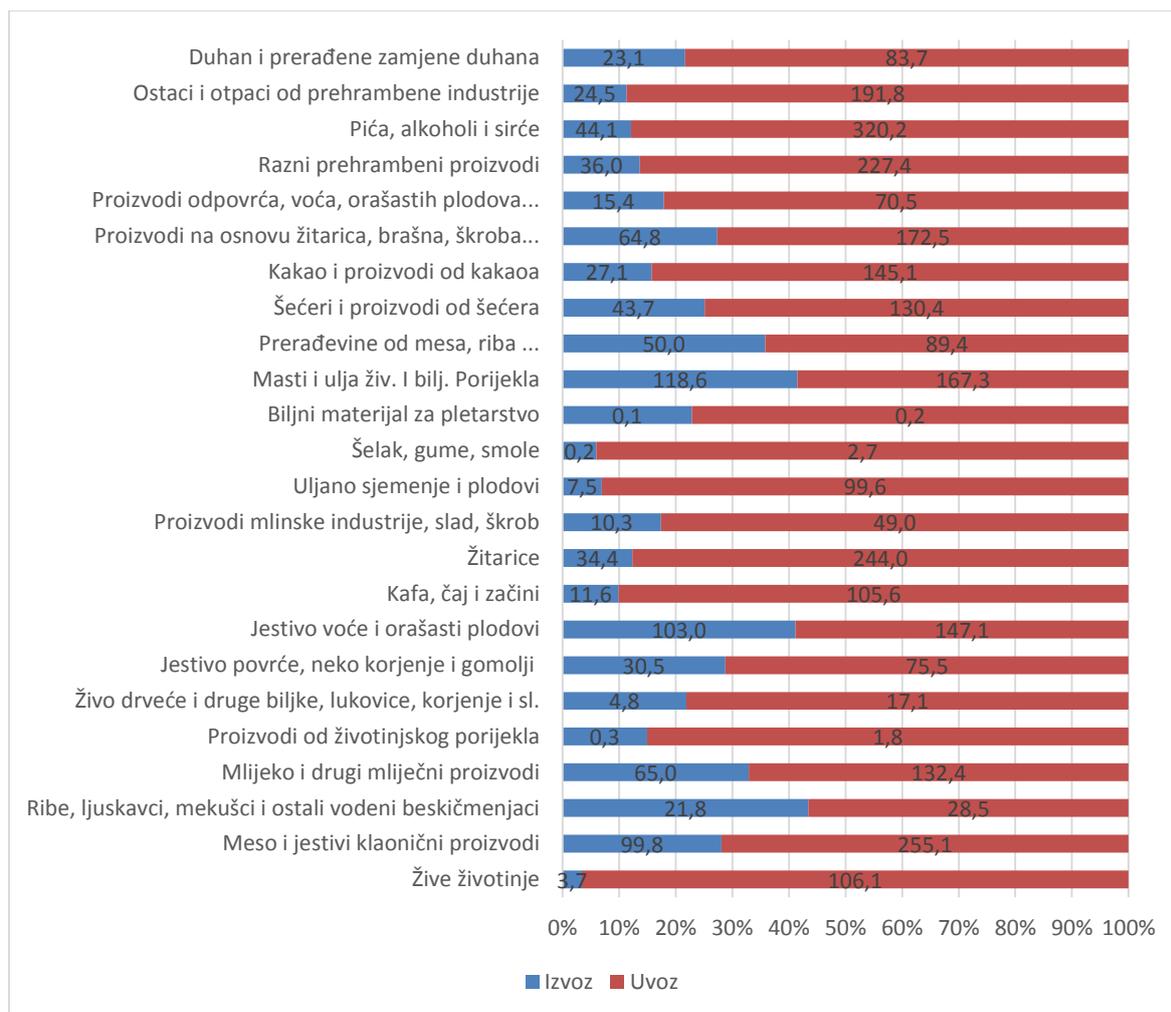
Chart 6: BiH foreign trade in agricultural and food products (2006-2015 period) (in million BAM)

Analysis of the overall trends of BiH import, export and trade balance in agricultural and food products in 2006-2015 period observed certain positive characteristics. Total export of agricultural and food products increased by more than three times and from BAM 270 million in 2006 reached the level of BAM 840 million ten years later - in 2015. Although, increase in total import of these products was recorded in the same period; however the increasing trend percentage was at lower level than the export trend. In 2006 import of agricultural and food products was at BAM 1.9 billion and increased to BAM 2.9 billion in 2015. Total import range of BAM 2.8-2.9 billion has been maintained in the past five years. Finally, the trends in import to export ratio confirm the positive developments in foreign trade balance in agricultural and food products. Table 28 shows that this rate doubled from 14% in 2006 to 29.4% in 2015.

6.1. Trade of important groups of agricultural and food products

Despite positive and promising developments, the state of play of foreign trade in agricultural and food products is still poor given that the deficit was at BAM 2 billion at the end of 2015. Detailed analysis of the structure of foreign trade in agriculture and food sector provides for consideration of the share of exports and imports by specific products. In 2015 not one group of agricultural and food products had higher export values compared to import values which can be seen in the chart below.

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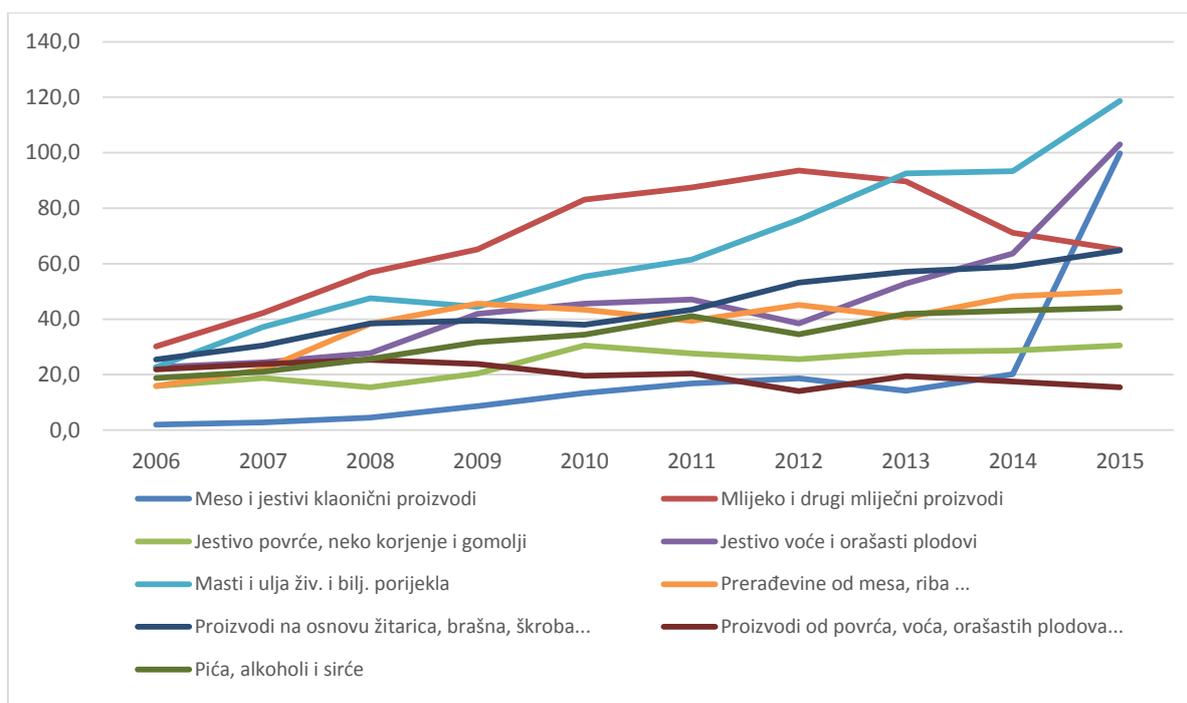


Source: Own data processing using the BiH Foreign Trade Chamber databases

Chart 7 Structure of import and export of agricultural and food products in BiH by groups of products in 2015 (in million BAM)

Tariff groups are the most important groups of products in the structure of export of agricultural and food products in 2015: 15 (fats of vegetable or animal origin) with 14.1%, 08 (fresh fruits) with 12.3%, 02 (meat and edible meat offal) with 11.9% and 04 (milk and dairy product) with 7.7% and 19 (preparations of cereals and flour) with 7.7%. On the other hand, tariff groups which are the most important groups of products in the structure of total import of agricultural and food products in Bosnia and Herzegovina in 2015 are: 22 (beverages – water, beer, wine, vinegar and spirits) with 11.2%, 02 (meat and edible meat offal) with 8.9%, 10 (cereals) with 8.5%, 21 (miscellaneous edible preparations) with 7.9%, 19 (preparations of cereals and flour) with 6.0% and 15 (fats of vegetable or animal origin) with 5.8% and 08 (fresh fruits) with 5.1%.

The trends in exports and imports of important groups of agricultural and food products are shown in the two charts below.



Source: Own data processing using the BiH Foreign Trade Chamber databases

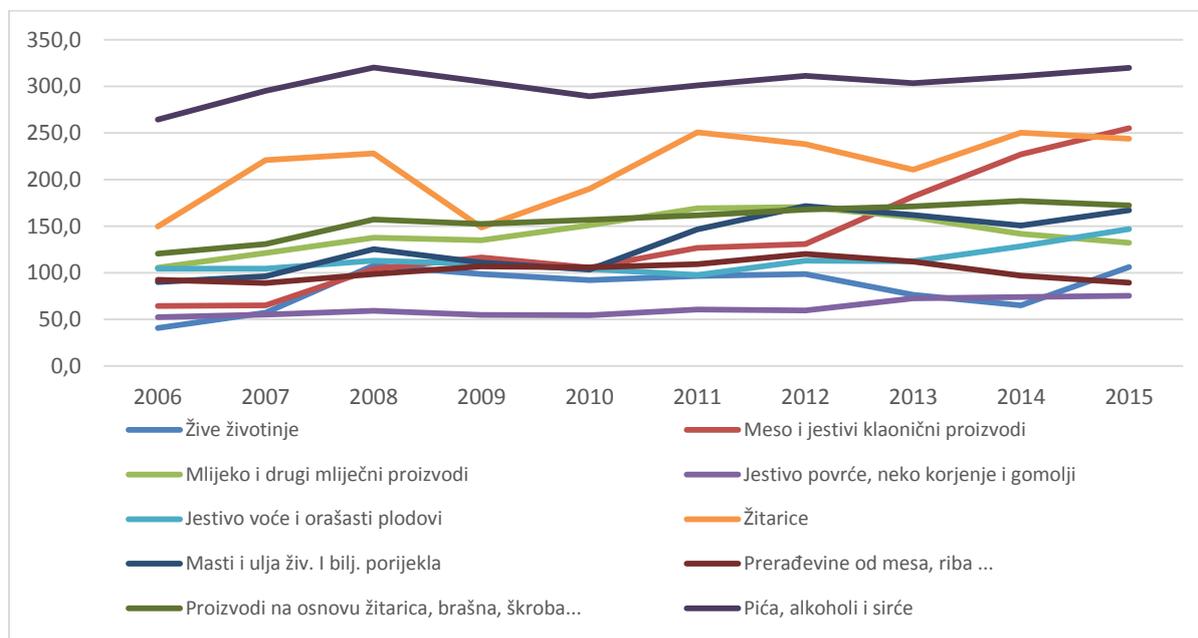
Chart 8: Overview of export of important groups of agricultural and food products, Bosnia and Herzegovina (2006-2015 period) (in million BAM)

In 2006-2015 period a certain number of groups of agricultural and food products recorded substantial export growth. From only BAM 2 million in 2006 meat and edible meat offal production reached the level of almost BAM 100 million in 2015⁹⁶. Milk and dairy products recorded a continuous export growth until 2013 when this trend ceased and showed a decline due to Croatia's entry into the EU and stricter export rules⁹⁷. The export of fresh vegetables also recorded growth but significantly lags behind compared to the export of fresh fruits. Fruits export was intensified, in particular in 2013-2015 period primarily to countries such as Russian Federation when favorable trade position was utilized due to embargo imposed over this country by the EU MS. Export of fresh fruits increased by almost five times and from BAM 22.7 million in 2006 reached BAM 103 million in 2015. Export growth trend is observable regarding the production of vegetable or animal origin oils, meat and meat products, and preparations of cereal and flour. Positive developments were observed as regards BiH beverage

⁹⁶ This should be seen as a result of favorable trade arrangements BiH has with Turkey, hence the largest export was to this country and included not only local production but also re-exported meat from the countries from the region, primarily Serbia.

⁹⁷ Particularly sensitive issue for development of agriculture in BiH is the destiny of milk sector which was and continues to be one of the most important subsectors in BiH. After years-long efforts to increase production, buyout and processing of milk in BiH, it is at risk due to liberalization of foreign trade regime and Croatia's entry into the EU which was the biggest importer of milk products from BiH. The detail structure of this trade shows that BiH exports more of dairy products of lower processing phases and imports more of value added products where deficit is created by substantially bigger import than export of cheeses (Source: <http://www.new.uino.gov.ba/sr/statistika>, accessed on: February 05, 2017)

producers (tariff group 22) which doubled the total export of their products from BAM 18.8 million in 2006 to BAM 44.1 million as was the value of total export in 2015.



Source: Own data processing using the BiH Foreign Trade Chamber databases

Chart 9: Overview of import of important groups of agricultural and food products, Bosnia and Herzegovina (2006-2015 period) (in million BAM)

In 2006-2015 period most groups of agricultural and food products continued their growth trends in BiH export while only few products saw stagnation in a certain period and maintained previously established level of export. Live animal import had a pronounced increasing trend between 2006 and 2009 after which the achieved level of around BAM 100 million persisted over the next 5 years only to record a decrease over the past years with the exception of 2015. Import of meat and edible meat offal recorded continuous growth and increased by almost four times from BAM 64.3 million in 2006 to BAM 255.1 million in 2015 as a result of negative developments in BiH animal production and lack of competitive prices of local meat production. Milk and dairy products recorded continuous increase in imports until 2013 when, due to Croatia entering the EU trade, ratios of this group of products were affected and their total import declined. Unfortunately, products for which BiH has very favorable conditions – fresh fruits and vegetables – recorded increasing trends in imports in the analyzed 2006-2015 period. Import of fresh vegetables increased from BAM 52.4 million (2006) to BAM 75.5 million (2015) while import of fresh fruits increased from BAM 104.6 million (2006) to BAM 147.1 million (2015). Bosnia and Herzegovina is to a large extent dependent on import of cereals and the value of import of these products is largely determined by local production and climate conditions in which this production was implemented. Total import of cereals varies between BAM 150 and BAM 250 million. Substantial increase of import was recorded for vegetable or animal origin fats group of products and for preparations of cereals and flour. From 2012 import of meat products recorded a decreasing trend as a result of strengthening of local processing industry. Import of products – beverages from tariff group 22 showed a slight increase trend in 2006-2015 period; however given the trend of BiH export of these products, it can be concluded that in fact this group of products saw a stagnating trend in trade balance over the past 7 years ranging between BAM 255 and 275 million.

6.2. Foreign trade of certain agricultural products

Out of the important agricultural and food products the following were selected for the purpose of this analysis: milk (including other dairy products), beef, pork, wheat, maize (grain), potato (mercantile) and apple.

6.2.1. Milk and dairy products

Milk sector is far ahead of other sectors when it comes to budgetary support and direct producer payments in FBiH and RS. Such support was to a certain extent reflected on the foreign trade results. Export of milk and dairy products saw a continuous increase in 2006-2012 period when from BAM 29.5 million in 2006 it almost tripled to reach the level of BAM 84.4 million in 2012 relative to BAM 164.4 million in imports. In 2012 Croatian market accounted for around 49% of BiH exports. After Croatia's entry into the EU exporters turned to regional markets as an alternative (primarily to Montenegro, followed by Serbia, Macedonia, Albania and Kosovo); however the overall export was limited and saw a decline to only BAM 61.2 million in 2015 (in the meantime some BiH dairies were granted approval to sell their products on the EU markets). The biggest deficiency in export of milk and dairy products is dominant share of UHT milk and modest share of long shelf life products such as cheese, i.e. value added products. Cheese is singled out as a category where import to export ratio was at only 7.7% in 2016 (exported BAM 5 million and imported almost BAM 67 million). When it comes to import of milk and dairy products, growth is observed until 2012 when a certain decline was recorded. This change should be considered in the context of Croatia as the new EU MS, i.e. part of import decreased as a result of increased supply and purchase of local products. 2016 data show increase of export to BAM 67.7 million; however the deficit is still very high (import was at BAM 133.6 million).

6.2.2. Beef

Unfortunately, favorable natural conditions and abundance of grass areas are underused, making BiH a country which largely depends on import of beef, primarily for the needs of meat processing industry. BiH is a pronounced net importer of beef and until 2014 it practically only imported this product. Import of beef in BiH shows a continuous growth and from BAM 16.7 million in 2006 reached the level of BAM 162.1 million in 2015. The year 2015 brought significant changes in foreign trade of beef as a result of favorable arrangement BiH made with Turkey and export of baby beef to this country. Namely, export surged to BAM 86.6 million as well as import which increased by BAM 32.2 million compared to 2014. The simultaneous increase of import and export was caused by, among other things, the need to import the initial breeding inputs given that the number of cows in BiH was declining, and hence increase in production of bullocks in short-term was possible only by importing calves.

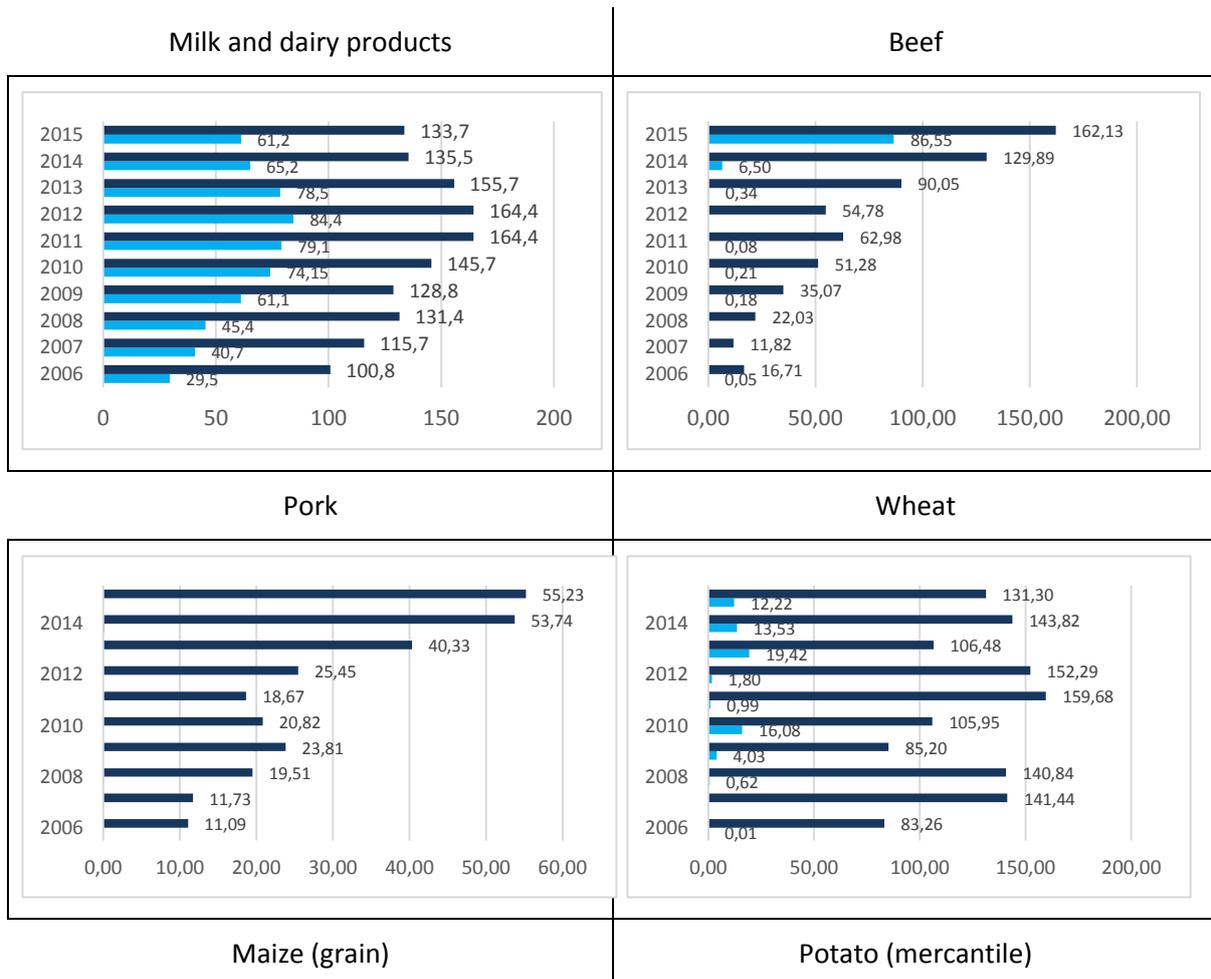
6.2.3. Chicken meat and eggs

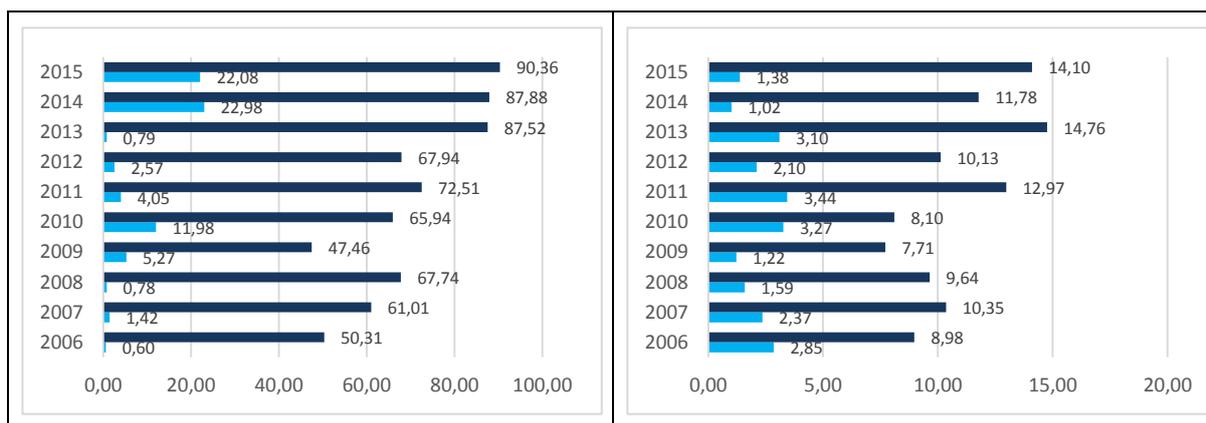
Pronounced expansion of chicken meat production in BiH impacted the exports of this product. Chicken meat export recorded a steady growth trend from 2008 to 2012 and from BAM 2.79 million (2008) the export of this animal product increased by almost six times to reach the level of BAM 15.86 million in 2012. With Croatia's entry into the EU in 2013 this important BiH market was lost (due to failure to meet the necessary EU standards) and this impacted the value of exports which in the period from 2013 to 2015 was at the annual average of BAM 10.76 million. Serbia and Montenegro are the most important BiH partners as regards chicken meat export. Local production of chicken meat is not sufficient to meet the country's needs, in particular those of meat processing industry. Therefore, substantial quantities of this product are imported and considerably exceed the value of exports. In the period from 2008 to 2015 chicken meat trade deficit ranged between BAM 10.18 million (2010) and BAM 23.04 million (2008). The value of total import of chicken meat recorded a steady growth in BiH in 2008-2012 period after which it saw a slight decrease.

Unlike most agricultural products, eggs are one of the rare products with which BiH has positive trade balance. Trade surplus as regards egg production was recorded in all observed years (2008-2015), except that the growth trend was pronounced until 2013 while in 2014 and 2015 it came down to the level of around BAM 1 million. Total export of eggs had been increasing steadily from 2008 (BAM 3.71 million) to 2013 (BAM 11.20 million) after which it recorded a sharp drop and substantially lower export values: BAM 5.88 million in 2014 and BAM 3.72 million in 2015. As regards importing eggs into BiH, there is no pronounced trend and in fact import of this product varies from year to year, ranging from BAM 2.12 million (2008) to BAM 4.63 million (2014). When it comes to exporting eggs, the most important BiH trade partners are Serbia and Montenegro, the same as for chicken meat.

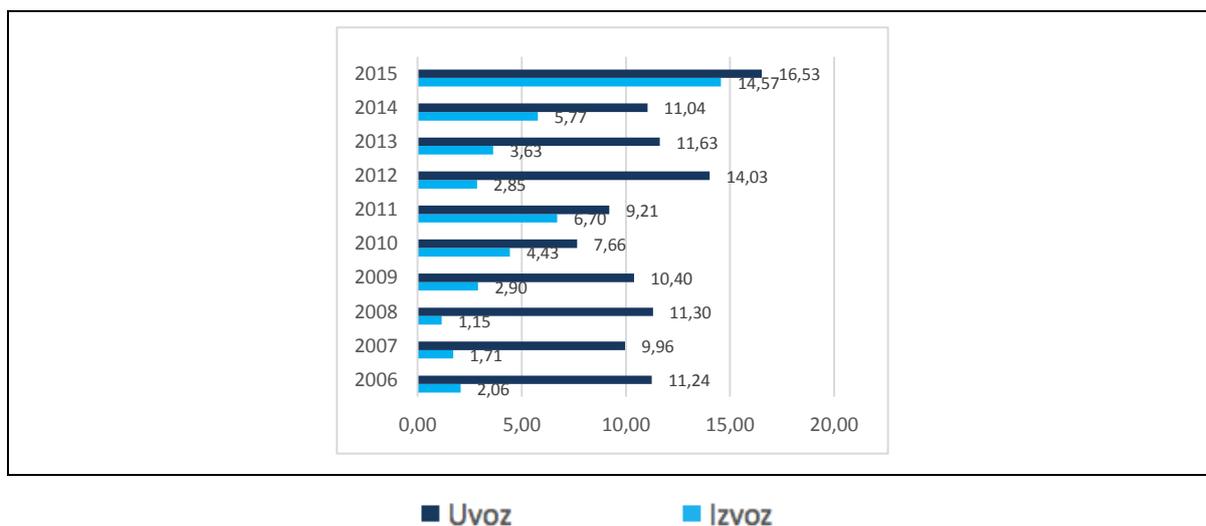
6.2.4. Pork

BiH is a pronounced importer of pork. Export of this product from BiH is practically nonexistent. Import of pork to BiH shows a continuous growth as a result of development of processing sector. The value of pork import increased almost 5 times and from BAM 11.1 million in 2006 reached the value of BAM 55.2 million in 2015. Low level of local production, which is insufficiently supported from the budget, obviously cannot be competitive either on local or on international market yet, hence local needs, especially of meat processing industry, are mostly relying on import.





Apple



Source: Own data processing from the BiH Foreign Trade Chamber database

Chart 10 BiH foreign trade of important agricultural products, 2006 - 2015 period (in million BAM)

6.2.5. Wheat

BiH, and FBiH in particular, is largely dependent on import of strategically important products – wheat. Local production meets only 5-10% of country’s needs and the rest is compensated by import, usually from Hungary and neighboring Serbia and Croatia. Total value of wheat import depends on the total local production and of course the global market price. In 2011-2015 period, with the exception of 2013, total wheat import ranged from BAM 130 and BAM 160 million. BiH also exports wheat, which was rather modest in 2013 (BAM 1-3 million) and significantly increased over the past 3 years to reach the level of BAM 12.2-19.4 million. The need for wheat import increased because part of wheat produced in BiH was used as animal feed, and so the need for wheat import increase by this amount.

6.2.6. Maize (grain)

BiH meets its local needs for maize for preparing concentrated mixtures for animal feed through import. Total quantity of maize depends on the total local production. 2006-2015 period saw a slight increase of maize import, with certain variations year by year, reaching its peak in 2013-2015 period when it was at 88.6 million on average. Unlike wheat, BiH has significant export of maize which in 2014 and 2015 reached the level of almost BAM 22-23 million or coverage rate of 25% (2015).

6.2.7. Potato (mercantile)

Though some analyses⁹⁸ indicated that potato is one of the rare agricultural products for which BiH meets its needs, the data on trade balance point out that this is not exactly the case. The value of potato import shows continuous increase and from BAM 9 million in 2006 increased to BAM 14.1 million in 2015. The value of BiH potato import shows considerable variations as a result of uneven local production. Export of BiH potato was quite even over the entire analyzed period and ranged from BAM 1.2 to BAM 3.4 million.

6.2.8. Apple

Though BiH and its Entities have very favorable conditions for apple production, their dependency on importing this product is increasing from year to year. Apple import into BiH is very much determined by local production which varies from year to year due to climate conditions and pronounced alternative harvest of a large number of producers; hence, for example, total production of over 91,000 tons in 2015 declined to 69,000 tons. Over the past 10 years average value of import of apples into BiH was at BAM 11.3 million and ranged from BAM 7.7 million (2010) to BAM 16.5 million (2015). In 2014, and in particular in 2015, BiH export of apples saw a substantial increase, especially to the Russian Federation market. This was primarily a result of favorable conditions caused by Russian embargo to importing agricultural and food products from the EU MS and this trend continued until 2016. However, trade balance is still unfavorable with import to export ratio of 49%.

6.3. Important BiH foreign trade partners in the sector of agricultural and food products

The most important BiH export partners for agricultural and food products are Western Balkan countries, i.e. CEFTA⁹⁹ and EU-28 countries. The value of foreign trade with these partners saw considerable changes over the analyzed 2006-2015 period. They reflect other changes such as entry of Bulgaria, Romania and Croatia into the EU, and also BiH, Serbia, Croatia (until entry into the EU), Macedonia and other countries with which BiH has intensive foreign trade in agricultural products acceding to CEFTA Agreement in 2006. BiH has the largest values of exports of agricultural and food products with Western Balkan countries and it saw a growing trend until 2012 after which, due to the new status of Croatia as the EU MS, these values decreased but still make up the largest share of total imports. EU countries are second most important BiH market for exporting agricultural and food products. BiH export to the EU has been increasing continuously and with Croatia, as very important BiH partner, entering the EU in 2013, it was further increased to reach the level of BAM 256.5 million in 2015. Despite the increasing trends of BiH export of agricultural and food products into the EU MS, it is still very modest and far from actual possibilities. Increasing competitiveness of BiH products accompanied by meeting phyto-sanitary and other standards are the most important factors to increase exports into the demanding EU market. Milk and dairy product producers showed that this is possible. Turkey and Russian Federation have singled out among other countries which have been significantly increasing their share in total BiH exports (35% in 2015) over the past years.

Table 29 Structure of foreign trade of agricultural and food products by group of countries (2006-2015 period) (in million BAM)

Description	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.

⁹⁸ Ministry of Foreign Trade and Economic Relations (2009): Report on BiH Foreign Trade Balance for Agricultural and Food Products, Sarajevo

⁹⁹ Countries members of CEFTA Agreement are Bosnia and Herzegovina, Serbia, Croatia, Macedonia, Albania, Montenegro, Kosovo and Moldova. Western Balkan countries include Bosnia and Herzegovina, Serbia, Macedonia, Albania, Montenegro and Kosovo.

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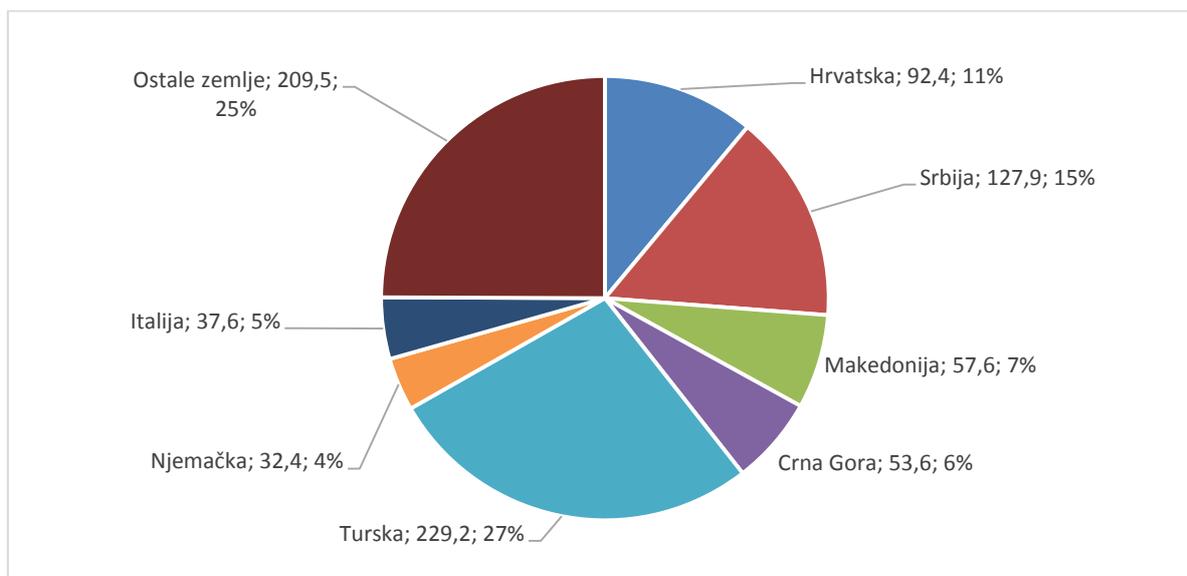
Export										
EU-27/28	69,2	82,5	90,0	109,5	144,5	140,2	118,8	339,1	250,0	256,5
Western Balkans	189,3	239,8	295,5	325,5	362,8	452,2	478,1	271,3	271,7	290,0
Other countries	11,7	13,9	39,1	31,1	56,5	28,9	23,9	75,3	140,1	293,7
Total	270,3	336,2	424,6	466,1	563,9	621,4	620,8	685,6	661,8	840,2
Import										
EU-27/28	741,3	769,2	960,3	834,9	907,5	1096,2	1116,3	1833,8	1773,3	1820,4
Western Balkans	1029,7	1281,9	1418,8	1355,0	1410,0	1495,8	1520,7	748,3	810,9	887,2
Other countries	152,9	160,0	202,2	176,4	149,8	153,9	152,5	144,0	145,4	155,1
Total (import)	1923,9	2211,1	2581,3	2366,4	2467,3	2746,0	2789,6	2726,0	2729,6	2862,7
Structure in % (Total = 100)										
Export										
EU-27/28	25,6	24,5	21,2	23,5	25,6	22,6	19,1	49,5	37,8	30,5
Western Balkans	70,0	71,3	69,6	69,8	64,3	72,8	77,0	39,6	41,1	34,5
Other countries	4,3	4,1	9,2	6,7	10,0	4,7	3,9	11,0	21,2	35,0
Total (export)	100,0									
Import										
EU-27/28	38,5	34,8	37,2	35,3	36,8	39,9	40,0	67,3	65,0	63,6
Western Balkans	53,5	58,0	55,0	57,3	57,1	54,5	54,5	27,4	29,7	31,0
Other countries	7,9	7,2	7,8	7,5	6,1	5,6	5,5	5,3	5,3	5,4
Total (import)	100,0									

Source: Own data processing using the BiH Foreign Trade Chamber databases

The most important partners in the structure of agricultural and food products import are still Western Balkan countries, which with Croatia's entry into the EU, decreased their share in total import from between 50% and 60% to less than 30%. Until 2013 the value of total import from Western Balkan countries ranged from BAM 1.03 billion (2006) to BAM 1.52 billion (2012) but was lower over the past 3 years, with BAM 887 million in 2015. Import of agricultural and food products from EU MS showed continuous increase which was extremely pronounced from 2013 onwards and with Croatia's status as the new EU MS. Total import more than doubled in the analyzed period recording an increase from BAM 741.3 million (2003) to BAM 1.82 billion (2015). This figure could be even higher in the coming period since adapted Stabilization and Association Agreement between BiH and the EU took effect in 2017 according to which all agricultural and food products from EU MS will no longer be burdened with import duties, i.e. tariffs. Import from other countries was rather steady over the observed period

and ranged from BAM 150 million to BAM 200 million, accounting for 5-8% of total BiH import of agricultural and food products.

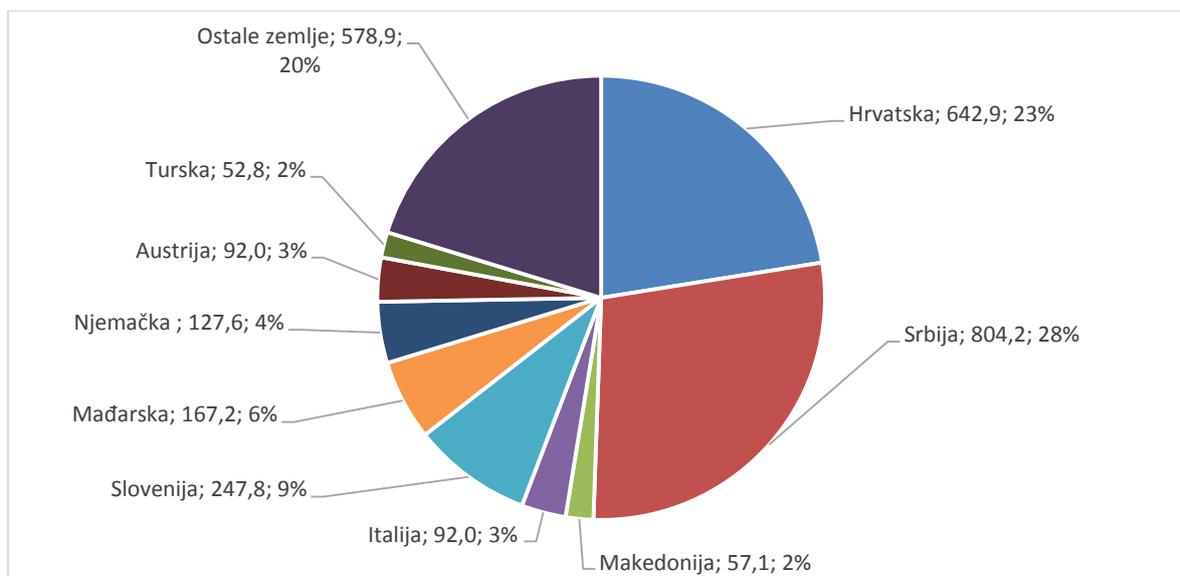
Looking at individual countries by their importance for the total BiH export of agricultural and food products in 2015, the most important partners include Turkey, Serbia and Croatia. The value of products exported to Turkey was at BAM 229.2 million or 27.3% of total export, followed by Serbia with BAM 127.9 million or 15.2%, while BAM 92.4 million in goods was exported to Croatia accounting for 11.0% of total export of agricultural and food products. In addition to these 3 countries the following also had an important role in BiH exports: Macedonia (6.9%), Montenegro (6.4%), Italy (4.5%) and Germany (3.9%). The overview of the share of individual countries in total BiH export of agricultural and food products is shown in the chart below.



Source: Own data processing using the BiH Foreign Trade Chamber databases

Chart 11 Structure of export of agricultural and food products by countries - most important BiH partners (2015) (in million BAM)

As regards import of agricultural and food products to BiH in 2015 the most important partners were neighboring countries, Serbia and Croatia. With BAM 804.2 million Serbia's share in total BiH import was at 28.1% while Croatia, with BAM 642.9 million, accounted for 22.5% of total BiH import.



Source: Own data processing using the BiH Foreign Trade Chamber databases

Chart 12 Structure of import of agricultural and food products by countries - most important BiH partners (2015) (in million BAM)

With these two countries BiH has substantial trade deficit and it is necessary to change this in the coming period. In 2015 BiH had negative total trade balance in agricultural and food products with Serbia to the amount of BAM 676.3 million, meaning that BiH import to export ratio with Serbia was only 15.9%. Similar ratio was with Croatia. Negative trade balance in agricultural and food products was at BAM 550.5 million in 2015 and BiH import to export ratio with Croatia was at modest 14.4%.

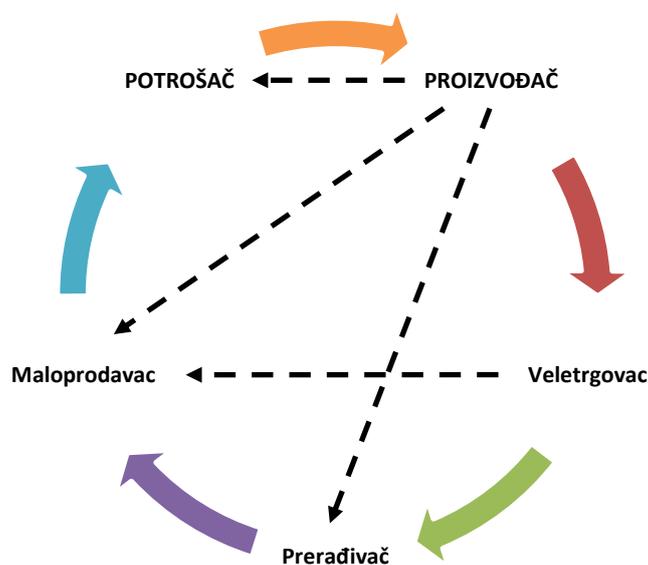
Other important BiH trade partners in 2015 in terms of importing agricultural and food products include Slovenia (8.7%), Hungary (5.8%), Germany (4.5%), Italy (3.2%), Austria (3.2%), Macedonia (2.0%) and Turkey (1.8%).

Negative foreign trade balance of all tariff groups of agricultural products indicates that liberal foreign trade regime was not a sufficient incentive to increase competitiveness of local agriculture and food industry. Many other negative factors prevailed, hence the competition of imported products, produced at higher productivity rate and with bigger subsidies, resulted in local producers giving up on further production and decline in the volume of production of most agricultural products. Unless certain import quotas and protective tariffs are introduced, and the chances for this are in reality quite small, the decline in the volume and value of local agricultural production will persist in the future period.

7. Market infrastructure

The market is defined as a meeting place of sellers and buyers characterized by different ways in which they make contact and exchange goods and services. The trade between sellers and buyers could be achieved directly or with a few or more intermediaries (short and long distribution channels). Contemporary times are characterized by reduced direct contacts between buyers and sellers and involvement of specialized agents in the distribution channels. All this is applicable to agricultural and food products. Furthermore, efforts to utilize natural and other comparative advantages and processes of internationalization and globalization of trade cause growing specialization of producers, and agriculture is no exception.

All distribution channels are present in Bosnia and Herzegovina. The number of intermediaries depends on the product characteristics and organization of marketing activities.



High level of fragmentation in supply chain along with a huge number of small-scale producers and similar fragmentation of processors cause increase in trade costs; and retail network benefits most from local trade in agricultural and food outputs. Lack of linkages and disorganization deprive farmers of possibility to negotiate with suppliers on favorable purchase terms and conditions of larger quantities of inputs such as seeds, mineral fertilizers, protection agents, etc. Due to seasonality and lack of storing capacities for their products, fruit and vegetable producers are not able to generate bigger income. Similarly to other agricultural producers in BiH, they are poorly organized and production for a prominent buyer is almost non-existent. This is accompanied by ineffective tariffs, poor transport network and a lack of market information system which all results in low income of food producers in the country.

Predomination of fragmented agricultural holdings, small-scale production and supply of certain agricultural products determined the position of **cooperatives** (during the previous period they were defined as rural, agricultural or farmer) as a significant participant in linking the value chains between producers and consumers. They were a successful model of linking agricultural producers with processors and consumers in the country and abroad but unfortunately lost this role during the transition process.

The role of buyers of agricultural products from agricultural producers was taken over by **trading companies** which perform this role solely if they find their business and financial interest in it, which

is understandable, given that the dominant model of doing business is the open economy model based on private ownership. Unfortunately, large retail chains use the “entry ticket” system to force buyout network to continually decrease prices, which indicates the difficult situation that needs to be changed. Furthermore, guided by the interest of generating large profits, local traders often opt to import agricultural and food products rather than to purchase them from local producers. One of the constraints for local goods to enter retail chains is minimum quantity of products which individual small-scale producers cannot provide, even if they act jointly.

Small quantities of agricultural products are sold via **direct sales** on agricultural holdings or at green or livestock markets. The volume of sales on these markets is declining as well as the volume of direct sales on farms since food consumers are more oriented to buying food in supermarkets/hypermarkets due to fast-paced life. There are positive examples of reviving purchase of agricultural products directly from known producers which largely depends on the initiative, supply and organization of agricultural producers. There are still just a few products with protected geographical origin, traditionality or originality (PGO, TSG or PDO).

Not being able to rely on cooperatives, local **processors of agricultural products** for which cooperatives have been the source of inputs for further processing (dairies, slaughterhouses, processors of industrial plants, fruits, vegetables, etc.) were forced to organize buyout of inputs on their own, directly or through intermediaries.

BiH Federation. The system of cooperatives in FBiH has a long tradition. Though their activities saw ups and downs and stagnation, cooperatives proved their viability and popularity. At the end of 1991 there were total of 190 cooperatives registered in BiH. Over the past years the number of cooperatives in FBiH has been growing continually, in particular after the adoption of the BiH General Law on Cooperatives. According to data¹⁰⁰ of registration courts there are 230 agricultural and 40 other cooperatives registered in FBiH which have brought together 12,000 members and around 45,000 cooperants. Most of present cooperatives are resolutely shifting their focus from once dominating trading function to organization of production and buyout of agricultural products. The most numerous cooperatives are those whose actual structure of activities includes, to a bigger or smaller extent, buyout of milk, vegetables, fruits and medicinal herbs, including provision of inputs and equipment to farmers. Almost 50% of cooperatives have own production in their structure of activities (fruits, vegetables, cereals, production of nursery products, production of broilers, cheese, wine, etc.).

The agricultural input market in BiH Federation is mainly relying on import. Seed production is poor and production of seedling material is insufficient. Though internal input market is liberal, producers do not see benefits from low prices of imported inputs. Traders have the biggest benefits from these prices which results in low competitiveness of local agricultural production. To turn the unfavorable situation into positive tendencies it is necessary to stimulate investments into local production of inputs, provide better organization of supply, reduce import procedures, accept EU regulations and strengthen institutions to perform testing to enter varieties into the variety list. These measures should be funded from the FBiH and Cantonal budgets¹⁰¹.

Republika Srpska. There are around 300 farmers’ cooperatives in RS. When developing the RS Program for Development of Agricultural Cooperatives 2011-2016 it was identified that there are 347 cooperatives in RS, noting that 2/3 are inactive and only 1/3 active. Unlike countries with developed cooperative movement, the biggest number of agricultural holdings in RS is neither the founder nor member of the existing cooperatives. Generally, cooperative sector is growing weaker and operates poorly. Old cooperatives with infrastructure for buyout of agricultural products ceased their buyout

¹⁰⁰ Source: MAWMF FBiH (2014)

¹⁰¹ Source: MAWMF FBiH (2014)

activities, some retained retail shops for sale of farm inputs and their business is growingly taken over by private trading companies. There are examples of establishing new cooperatives; however these are mostly family cooperatives whose nature of operations and decision-making would be more suitable for some form of partnership.

Each larger municipality in RS has traders, i.e. intermediaries who are exclusively or partially engaged in sale of agricultural equipment and inputs, often operating in a wider region. A few such companies are engaged in buyout of agricultural products and their further sale in the country and abroad. Available data do not facilitate determining the number of these companies while their turnover could be indirectly determined based on the value of buyout of agricultural products. A big number of retailers are engaged in food sales while small shops are increasingly being replaced by mini-, super- and hypermarket chains which base their supply on imported products with no sentimentality toward the products of local origin (even when owned by local entities).

Another unfavorable aspect of agricultural input market is that input producers are almost non-existent in BiH and inputs are largely imported; hence each increase in the volume of local agricultural production automatically causes increase in imports of inputs and equipment. BiH does not produce tractors locally and there is only one factory in the country which produces chemical agents, mineral fertilizers (only KAN) and tractor accessories. Various types of seeds and seedlings are also largely imported; though local production exists. In its report on the state of play in BiH agriculture in 2010, World Bank noted that farmers in BiH pay more for their inputs and receive less for their outputs making them less competitive relative to their equivalents in neighboring countries.¹⁰²

Bosnia and Herzegovina does not have a developed market infrastructure, especially regarding the system of buyout, auction and exchange. This and all other market infrastructure needs to be developed by stimulating the economy of scale. The results of better market infrastructure need to be reflected in linking agricultural producers with the market, in the program of market interventions, mitigating seasonal fluctuation of prices of agricultural products in order to stabilize farm income, and developing agricultural cooperatives owned by farmers. Appropriate measures should be continuously implemented to achieve the set objectives, which would include support to organization of farmers by funding cooperative's management structure during the first three years of operations, support to development of storage and cooling facilities through capital investment system, development of laboratories and adoption of accreditation methods, introduction of GLOBAL GAP and HACCAP systems, establishment of AMIS (Agricultural Market Information System) and development of other market infrastructure.

¹⁰² Agricultural sector policy note for Bosnia and Herzegovina, Trade and integration policy note, Report No. 57919-BA, The World Bank, 2010

8. Agricultural producers

Generally, agricultural producers, i.e. entrepreneurs in BiH agricultural sector, are divided into those which have registered agricultural operations, and which are most widely referred to in local terminology as legal persons, and those that do not have registered agricultural operations but are engaged in agricultural production, and are referred to as natural persons. The category of legal persons includes business entities which are, depending on their organizational form, divided into joint stock companies, limited liability companies and farmer's cooperatives, while category of natural persons includes agricultural holdings (farms).

8.1. Business entities

BiH Federation. According to FIA data¹⁰³, in 2015 there were 577 business entities registered in agriculture, forestry and fisheries (area A), which is 14 companies more than in 2014. Since 2011 there has been a steady upward trend in the number of companies. In 2015 there were total of 6,932 persons employed, which constitutes an increase of 1.6% relative to 2014. According to the 2015 Analysis of Operations of Business Entities in BiH Federation average productivity, measured by added value per employee, was BAM 25.2 thousand which is higher by 12.7% as compared to 2014.

Republika Srpska. According to the Companies Law applicable in RS, business entities may have a legal form of: partnership, limited, limited liability or joint stock company, whereas in practice these are most often limited liability and joint stock companies or farmers' cooperative. Entrepreneurs with large volume of production are most often registering their business or if obligated by a regulation. The data on the number of legal persons and the type of their organization are not easily obtained as there are legal persons which are registered but have been out of business for years, there are also legal persons whose chosen line of business does not fit their nature of business, those that have been in the process of winding-up for years, etc. One of the sources which may be used to determine the number of legal persons registered for agricultural activities (which also has its limitations) is the register of financial reports which all legal persons in RS have to submit the at the year-end to the Agency for Intermediary, IT and Financial Services (APIF)¹⁰⁴. This register has between 306 and 349 business entities among which the largest number is of limited liability companies, followed by farmers' cooperatives and associations, and least of joint stock companies. All other agricultural production rests with farms.

Table 30 Number of legal persons in agriculture in RS (2007-2015)¹⁰⁵

		2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015
1.	Joint stock	28	27	24	24	19	19	16	17	18
2.	LLC	155	191	206	206	209	209	193	196	201
3.	Cooperatives	108	124	110	110	107	107	89	92	87

¹⁰³ Authorized institution established based on a specific law (FIA) in charge of control and processing of financial reports, and keeping a Common Register of Financial Reports.

¹⁰⁴ Though it is a legal obligation to submit financial report, some business entities ignore it due to which the database maintained by APIF is not entirely relevant to determine the number of registered business entities.

¹⁰⁵ Own data processing obtained from APIF upon request.

4.	Other	5	7	5	5	3	3	10	19	24
	Total	306	349	345	345	338	338	309	324	330

8.2. Agricultural holdings

BiH Federation. According to the results of 2013 population census there are 217,061 rural households engaged in agricultural activities (30.32% of total number of households) in FBiH out of which only 30,089 or 13.86% said to also sell their products on the market¹⁰⁶. In the absence of detailed analysis of data on rural households engaged in agricultural activities in the context of their structure according to the size of used agricultural land, i.e. number of certain species of livestock, limited data on agricultural holdings and their structure obtained through the 2010 Pilot Agricultural Census are used for the purpose of this analysis. According to this data, the average size of used land is 1.97 ha per agricultural holding with average 4 parcels per farm in case of family farms, which is far below the EU 27 average of 14.3 ha¹⁰⁷. These data as well as official population census data on the number of agricultural holdings indicate one of the key issues faced by BiH Federation/BiH – persisting large number of agricultural holdings resulting in small average holding size. If we add to this the pronounced fragmentation of land holdings (fragmentation of land parcels) and dual character of production, all known facts, it is clear that FBiH is faced with the challenge of insufficient size and structure of agricultural holdings which is imposed as one of the important strategic issues that needs to be addressed in the coming period. Future agricultural policy certainly must contain land management reform and define clear strategic/operational objectives such as land consolidation, increase in the number of sustainable farms, improvement of land quality, better water management and better approach to agricultural land.

According to data¹⁰⁸ from March 2017 there were total of 69,542 farms registered with the Farm Register out of which 2,986 registered legal persons while the remaining 66,556 are family farms. Registered agricultural holdings in FBiH use total of 106,014 ha of agricultural land, hence the average size of farms according to the agricultural land used is 1.52 ha. The structure of registered agricultural holdings is as follows: 45,982 or two thirds (66.1%) of size up to 1 ha, and 16,228 or 23.3% of farms the size from 1 to 3 ha.

Republika Srpska. According to the 2013 population census, there were 140,960 rural households in RS engaged in agricultural activities (34.48% of total number of households) out of which only 18% (25,335) said to sell their products on the market¹⁰⁹. This data speaks volumes about the situation in RS rural areas where there are many households with small-scale agricultural production, which use extensive technology and produce agricultural products for own need. However, the number of such households is considerable and it should not be neglected that these households maintain environmental balance of substantial agricultural areas and produce food which otherwise they would have to buy and most likely even import.

¹⁰⁶ 2013 Census of population, households and dwellings in Bosnia and Herzegovina, Final Results, FBiH Institute of Statistics, Sarajevo, Jul, 2016

¹⁰⁷ Eurostat, Statistics explained, Agricultural holdings 2000-2010

¹⁰⁸ Source: Database of the Farm Register and Client Register of the FBiH Ministry of Agriculture, Water Management and Forestry

¹⁰⁹ 2013 Census of population, households and dwellings in RS; Census results, RS Institute of Statistics, Banja Luka, 2016, p. 96

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RS Ministry of Agriculture, Forestry and Water Management established the Farm Register. Entry into this Register is voluntary for farms; however disbursement of any subsidies from agricultural budget is conditioned by farm registration. The number of farms entered into the register has varied over the past period. In mid-2013 there were around 65,000 farms in the Farm Register, followed by 13,400 in 2014 and at the end of 2016 this number was at 35,093¹¹⁰. The varying number of registered farms is a result of transition to new software for registration and also calculation and balancing farmholders make as regards the rights and obligations entry into the register brings along.

As at December 31, 2016 there were 35,093 agricultural holdings registered with the Farm Register out of which 603 had the status of legal person and the remaining 34,490 of family farms. According to the classification of size and economic potential, there were 4,090 (11.85%) commercial and 30,400 (88.15%) noncommercial farms. Farms registered with the Register own 160,528 ha of agricultural land out of which 140,490 is arable land, but reported using only around a half of the registered land.

As regards **BiH Brčko District**, 3,215 agricultural holdings from the territory of BiH BD were registered with the Farm Register while the total size of registered agricultural land was 7,507.9 ha. (MOFTER Report for 2015).

¹¹⁰ 2013 and 2014 data taken from Vaško Ž., Ostojić A., Rokvić G., Mrdalj V., Fugurek A., Brković D., Agriculture and Rural Development in RS until 2020, Banja Luka University, 2015, while 2016 data were obtained from the RS MAFWM upon request.

9. Policy and legal environment

Agricultural policy in Bosnia and Herzegovina rests at several separate levels due to the complex political system. The Entity level, which designs and implements agricultural policy, is consisted of individual ministries of agriculture, water management and forestry of BiH Federation and of Republika Srpska, and together with the Department for Agriculture of Brcko District Government represent the most important institutions in charge of agricultural policy in BiH. In addition to the Entity level, BiH Federation also has a cantonal (10 cantons) level and the way they conduct agricultural policy has a substantial impact on the overall position of agricultural producers and the sector as a whole. Moreover, one should not neglect certain sector support provided by municipal level, which is characteristic for both BiH Entities, however these allocations, apart from local aspects, are not of general importance.

The level of budgetary transfers, agricultural policy measures and rural development policy measures, and criteria under which support is provided to the producers are part of the policy which rests solely under the competence of Entity/Cantonal ministries of agriculture, i.e. Department for Agriculture of Brcko District Government. Using the available instruments state level Ministry of Foreign Trade and Economic Relations (MOFTER) impacts the agricultural policy of the country and its Entities by regulating trade in agricultural and food products and through defining and implementing rules regarding veterinary and plant health protection. This Ministry and its Department for Agriculture, Food and Rural Development, together with the Office for Harmonization of Payment System¹¹¹ are also in charge of coordination of activities among Entity ministries, and of implementation and coordination of international projects related to agriculture and rural development.

The framework goals of agriculture and food sector and rural development at the BiH level are defined by the BiH Law on Agriculture, Food and Rural Development¹¹². The main objectives under this Law are related to efficient use of resources, provision of food safety for population, harmonization with the EU policies, providing for diversification of income and improvement of the overall quality of life. As can be seen, the objectives go beyond the sectoral objectives and provide a wide approach to development of agriculture and rural areas. Under this Law, competences of MOFTER, Entity level and BiH Brcko District bodies are clearly defined as well as the competences of cantons and municipalities. Important competences of MOFTER are the following:

- a) Defining the framework for agro-economic policies in cooperation with the Competent bodies of the Entities and BiH Brcko District;
- b) Ensuring the effective harmonization, coordination, implementation and monitoring of the BiH strategies and action plans for the sector of agriculture, food and rural development;
- c) Adopting strategies which provide, among other things, a precise definition of the sector wide and specific objectives, framework of policy measures and implementation mechanisms, and monitoring and evaluation mechanisms;
- d) Regular monitoring and evaluation of the implementation of strategies and assessing individual agro-economic policies, their effectiveness and efficiency;
- e) Coordinating the implementation of all policy instruments to ensure that they are in line with the BiH Sector Strategies and relevant international agreements;

¹¹¹ Office for Harmonization and Coordination of Payment System in Agriculture, Food and Rural Development in BiH

¹¹² BiH Law on Agriculture, Food and Rural Development, Official Gazette of BiH, No 50/08

- f) Ensuring the harmonization and coordination of sector programs, laws, regulations and measures necessary for the negotiation and fulfilment of relevant international commitments;
- g) Ensuring the establishment and coordination of all necessary institutions and other bodies, coordinating necessary development measures and procedures for fulfillment of the international requirements and trading standards in the part related to the sector of agriculture, food and rural development and their harmonization and integration with the EU;
- h) Ensuring the effective coordination of all inspection services.

As mentioned above, due to constitutional competences, a fewer number of laws and bylaws is passed at the level of Bosnia and Herzegovina and most of them are passed at the level of Entities and Cantons (in FBiH). Such a process of regulating the subject matter falling with the area of agriculture enables different regulations at different administrative levels in BiH, at the same time making their harmonization more difficult, especially within the EU integration process.

Over the past 20 years, dozens of laws and their amendments have been passed at the Entity level. In addition to laws, dozens of bylaws, rulebooks, instructions, decisions, decrees and programs have also been adopted. A number of these acts, and laws in particular, has been harmonized with the EU acquis, which is being carefully taken account of especially in the years since BiH submitted its application for EU membership.

Since legislative and institutional framework clearly defines that the agricultural policy measures and support to rural development are mainly under the competence of Entities and Brcko District (and Cantons in the case of BiH Federation) the analysis of policies will be focused on analyzing policies at these individual levels of government. Both Entities have their agriculture and rural development policies verified by adopting relevant strategies and programs, and the same is in place at the level of some Cantons (applicable for FBiH) and municipalities.

9.1. Legal framework for agricultural policy

BiH Federation. FBiH agricultural policy is broadly defined by the Law on Agriculture of BiH Federation¹¹³ which sets the objectives and measures of agricultural policy in this Entity. This Law launched processes to strengthen competitiveness and improve quality of agricultural and food products and apply standards needed to achieve more dynamic development in the sector of agriculture, processing and rural development. The Law clearly sets the EU integration path in a way that support measures for agriculture and rural development will be gradually aligned at all governmental levels with the aim of harmonization with the relevant EU measures. Considering their area of activity, agricultural policy measures are divided into the following:

- 1) market-price policy measures,
- 2) structural policy measures,
- 3) land policy measures, and
- 4) financial support in agriculture.

According to this Law, agricultural policy measures have to be mutually aligned and have to be implemented in line with the principles of neutrality and equality. Agricultural policy measures under the competence of FBiH are funded from FBiH budget and other sources while agricultural policy measures under the competence of Cantons are funded from Cantonal budget. The Law on Agriculture defines notifications in agriculture and keeping registers as part of the future BiH integrated administrative and control system (IACS). In accordance with the provisions of this Law, FBiH MAWMF and Cantonal ministries competent for agricultural activities establish and keep registers and records,

¹¹³ Official Gazette of FBiH, No 08/07, 04/10, 27/12, 07/13)

including in particular the Farm Register and Client Register. The basis for keeping registers and records and their linking is a unique identification number.

However, the main Law in the area of support to agriculture at the level of BiH Federation is the Law on Financial Support in Agriculture and Rural Development. This Law (i) lays down the financial support measures in agriculture and rural development and provides support models and manner of their implementation, (ii) emphasizes the importance of implementation in accordance with the BiH obligations and signed agreements such is the Stabilization and Association Agreement with the EU, and (iii) aligns Entity and Cantonal level of support as this support does not match in terms of its basis and criteria¹¹⁴. Financial support includes support within measures to stimulate production and payments within the structural policy measures. Financial support within the measures to support production is implemented through a model of stimulating production while payments within the structural policy measures are implemented via 4 models: (i) capital investments model, (ii) rural development model, (iii) income support model, and (iv) model of other types of support. The Law is accompanied by secondary legislation – rulebooks prescribing conditions and manner of exercising the right to financial support and dynamics of payments¹¹⁵ and defines implementation of measures in agriculture and of structural policy measures¹¹⁶. The Rulebook on the manner and conditions of exercising the right to financial support under the model of stimulating production and under the model of other types of support and Program of Financial Support in Agriculture and Rural Development in FBiH, developed for each year, provide manners, conditions and criteria (general and specific) and level and distribution of budgetary funds by individual models and types of production which first need to be adopted by the FBiH Government and published in the FBiH Official Gazette.

Agricultural policy is implemented according to the mid-term (5 years) FBiH Strategy for Development of Agriculture which is a group of basic principles setting the goals, measures and mechanisms of all agricultural policies of this BiH Entity.

Strategy for Development of Agricultural Sector in FBiH 2006-2010 was an important document used to draft and implement agricultural policies in FBiH and in the absence of a new such document it was implemented until the end of 2012. This Strategy clearly defined mid-term objectives which included increase of production of agricultural and food products, provision of food safety, better utilization of natural resources, enhancement of competitiveness, building institutional capacities and alignment in the context of WTO and EU integration.

The new strategic document for 2015-2019 period (adopted by the FBiH Parliament in mid 2015) stressed the need to increase technical and technological level of the sector, efficient use of available resources and improve the overall living standard and quality of life in rural areas. Regarding EU integration, this document clearly indicated the need for alignment of institutional and legislative framework and FBiH agricultural policy with the EU CAP. This means passing new, missing laws that will respect the CAP established directives (regulations), i.e. be in line with the EU legislation and *acquis*. In the context of building institutional capacities, this will mean development of a modern system of information and administrative management and further strengthening and establishment of a number of needed institutions, which will require substantial administrative, financial and personnel changes. Finally, the future agricultural policy of BiH Federation will be based on gradual

¹¹⁴ Agriculture and Food Sciences Faculty, Sarajevo University (2010): *Agricultural Policy to Date and Its Future Impact on Food Sector Development in BiH Federation*, Project Report 2007-2009, Sarajevo

¹¹⁵ Rulebook on Conditions and Manner of Exercising the Right to Financial Support under the Rural Development Model – FBiH Official Gazette No 109/12

¹¹⁶ Program of Spending of Funds with Fund Distribution Criteria for 'Agricultural Subsidies' – FBiH Official Gazette No 31/13

introduction of measures similar to EU CAP and refraining from introducing new measures which are not in line with CAP. The Strategy plans for implementation of 37 measures distributed within 3 pillars of agricultural policy – 10 measures relate to Pillar One and direct support to producers, 17 measures relate to sector restructuring and rural development policy (taken from FBiH Rural Development Program 2015-2020) while the remaining 10 measures are related to Pillar Three of Entity level agricultural policy and measures under the general services in agriculture. In addition to budgetary funds of FBiH Government and Cantonal Governments, funding of agricultural policy in this Entity is also foreseen partially from loans provided by the World Bank and European Investment Bank as well as from IPARD funds. The projected agricultural budget financed by the FBiH Government ranges from BAM 68.3 million (2015) to BAM 92.7 million (2019), adding part of the support coming from Cantonal level and ranging from BAM 15 million (2015) to BAM 23 million (2019). During the first years of Strategy implementation the projected ratio between direct payments and support to rural development is in favor of direct payments (67%:33%, 2016)¹¹⁷, and it is projected that this ratio is in favor of rural development measures in 2019 (45%:55%).

Analyzing the implementation of new Strategy over the past 2 years (2015 and 2016) the main conclusion which can be drawn is the persistence of political pragmatism and lack of readiness of the current Entity level authorities to make serious changes and to address the challenges EU integration brings. The adopted strategic framework of action is for the first time developed upon the principles and elements of modern public policies (analysis of the state of play, goals, mechanisms for taking action, implementation program, financial framework, monitoring and evaluation). The direct payments schemes are set clearly and project common payments per unit of area for all plant species while some measures, such as support to poultry production, have been removed in accordance with the harmonization with EU CAP. A realistic financial framework has been set and action plan defined a number of activities to strengthen institutional and legislative framework and align it with the CAP. Unfortunately, instead of proposed strategic and program arrangements the previous practice continued. This means continuation of high level of allocations for direct payments without a development orientation and support to rural development, and without any substantial changes regarding financing general services in agriculture.

As regards rural development and support to rural areas in FBiH, it is interesting that this Entity still has no valid program document with legal foothold dealing with these issues. Thus far support to rural areas in FBiH had no clear development goals or adequate accompanying measures. Thus, it is no surprise that thus far FBiH rural development policy could be said to have been unsystematic and inconsistent, with ad hoc solutions which is reflected in the variations of budgetary support and implemented measures. The first ever FBiH Rural Development Program 2015-2020 (2014) has not passed the parliamentary procedure and adoption yet, however it was used for development of FBiH Public Investment Program 2016-2020 where a substantial portion of investments are those in agriculture and food sector.

Republika Srpska. BiH Constitution does not provide for explicit competence of state in regulating issues in the area of agriculture. It follows that these issues are under the competence of Entities which is confirmed in RS by adopting the amendment XXXII to the RS Constitution which defines that Republika Srpska is competent to provide and regulate the main goals and directions of development of agriculture and rural areas. The legal framework for implementation of agricultural policy in RS includes primary and secondary legislation and strategic documents related to the development of

¹¹⁷ In 2015 it is foreseen that there are no budgetary allocations for rural development measures given considerable debts FBiH Government has towards agricultural producers from previous years.

entire sector or rural areas in this BiH Entity. RS Law on Administration¹¹⁸ defines the role of the Ministry of Agriculture, Water Management and Forestry as institution in charge of administrative and expert activities regarding designing and implementing agricultural policy. RS Law on Agriculture¹¹⁹ sets agricultural policy goals and measures, and manner of its implementation and monitoring. For the purpose of implementing economic, spatial, environmental and social conditions of agriculture and its sustainable development, the objectives of RS agricultural policy include:

- 1) Provision of food safety for population by local agricultural products as much as possible;
- 2) Increase of agricultural production and exports in order to strengthen competitiveness in local and global market;
- 3) Ensuring adequate production level, supply of quality food of price which is acceptable to consumers;
- 4) Provision of adequate living standards of farmers, by using modern technical and technological solutions in production, and by provision of stabile income for producers;
- 5) Development and preservation of rural areas and rural values, and
- 6) Rational use and conservation of natural resources, environmental protection and improvement of integrated and organic production.

Agricultural policy measures are economic measures which RS undertakes and which are used to achieve the mentioned agricultural policy objectives. Given their area of activities, agricultural policy measures are divided into: (i) market and price policy measures; (ii) structural policy measures; (iii) land policy measures, and (iv) support measures in agriculture. Some groups of measures are elaborated in details by specific articles of the Law. It could be noted that some provisions of the Agricultural Law, in particular in the area of agricultural policy measures provided under it, are outdated. On the other hand, having in mind that the Law was passed 10 years ago, it can be noted that it was progressive at the time as it provided for some measures that are topical only now.

RS Law on Agriculture provides for agricultural policy to be implemented based on the RS Strategy for Development of Agriculture as a group of basic principles setting the objectives, measures and instruments of agricultural policy. Republika Srpska initially had 2 distinct strategic documents which covered two complementary areas, i.e. agriculture and rural development – RS Strategy for Development of Agriculture until 2015 and RS Strategic Plan of Rural Development 2010-2015. It could be noted that the latter document was innovative and largely compatible with the EU rural development policy applicable at the time¹²⁰; however after its expiry it can be said that its strategic goals and specific objectives and measures largely have not been implemented in the planned scope and manner. The new RS Strategic Plan for Development of Agriculture and Rural Areas 2016-2020 has been timely adopted, prior to the expiry of the two above mentioned strategic documents which were due to expire at the end of 2015, thus providing for continuity in strategic planning of agricultural

¹¹⁸ Law on Administration of Republika Srpska, RS Official Gazette, Nos 118/08, 11/09, 74/10, 86/10, 24/12 and 121/12

¹¹⁹ RS Law on Agriculture, RS Official Gazette, Nos 70/06, 20/07, 86/07 and 71/09

¹²⁰ The first strategic goal was to improve competitiveness of agriculture and forestry (with 5 specific objectives, 18 measures and 66 sub-measures); the second strategic goal was to preserve nature and rationally manage natural resources (with 4 specific objectives, 12 measures and 23 sub-measures) and the third strategic goal was to improve living conditions and introduce larger diversity regarding generating income in rural economy (with 7 specific objectives, 24 measures and 72 sub-measures)

and rural policy. Unlike in the past period, new strategic document covers both areas – agriculture and rural development.

The current Strategic Plan for Development of Agriculture and Rural Areas includes 6 strategic goals (overview in table 31), 16 specific objectives and 52 measures for their implementation. It is expected that implementation of this strategic document will increase the volume and productivity of agricultural production and provide income stability for agricultural producers, strengthen competitiveness of agricultural sector by increasing investment level, increase the level of marketability of and finalization in agricultural production, provide for sustainable management of natural resources and mitigate consequences of climate changes, balanced integrated rural development and systematic support to development of agriculture and rural areas. This Plan provides for partial reform of thus far support policy which is along the lines of alignment with the financial support policy effective in the EU, in particular for countries that recently acceded to the EU (transition to direct payments per area unit and per animal). The projected agricultural budget funded by the RS Government ranges from BAM 95 million (2016) to BAM 115 million (2020) and projected ratio between direct payments and support to rural development is 60%:40%. Partial co-funding of some measures with IPARD is planned as of 2018 and this additional source of funding would provide for introducing additional payments for activities in areas with natural or other specific constraints (ANC) as of 2018. Out of 16 principles upon which the Strategic Plan is based, the following should be singled out in the context of this analysis: (8) aligning RS agricultural policy with the EU Common Agricultural Policy while observing local conditions and specificities; (9) observing the existing foreign trade regime and agreements; (10) regulation of foreign trade transactions and protection of local production, and (11) observing limitations which will be brought about by BiH's accession to the World Trade Organization¹²¹. Though largest attention is paid to measures involving financial support to agricultural producers, key measures to implement the set objectives fall under the area of goal no. 6, i.e. systematic support to development of agriculture and rural areas which is a prerequisite for implementation of strategic platform as a whole and also a precondition for measures under all previous 5 goals to result in full effect. These systematic measures in the area of public services (which are equally available to all users without any additional payment for their use) are related to, among others: improvement of legislative framework in agriculture and food industry; strengthening capacities and increasing efficiency of RS MAFWM and relevant institutions and organizations; development of information base for programing and monitoring of agricultural policy; improvement of the system for provision of extension services; improvement of health protection of plants and animals; increase in the volume and sources of funding for investments into agriculture and food industry; and improvement of foreign trade operations and protection of local agricultural production.

Strategic Plan elaborated in details the value of allocation of subsidies according to the objectives and measures for each year and source of funding. Unfortunately, the scheduled passing of the Law on Subsidies in Agriculture and Rural Development, through which the new strategic commitments regarding awarding subsidies should have been stable at least in medium term, is postponed until the prerequisites needed for its efficient implementation are fulfilled. This is primarily related to development of LPIS and updated Register of Domestic Animals. In addition to these technical prerequisites, the impediments to transition to the new system of disbursement of subsidies also include those of mindset nature and lack of readiness to changes both of agricultural producers and public officials competent for implementing agricultural policies.

Funds from agricultural budget disbursed for specific purposes are considered the 'real' support measures in agriculture by most agricultural producers. These measures are implemented in accordance with the RS Law on Agriculture, Agricultural Strategy, and Law on Provision and

¹²¹ RS Strategic Plan for Development of Agriculture and Rural Areas 2016-2020, p. 26

Earmarking of Funds for Stimulating Agriculture and Rural Development (from 2002) up to the level of funds planned in the budget for the relevant fiscal year. Natural and legal persons engaged in agricultural production on the territory of RS, which are registered with the Farm Register, have the right to subsidies and other types of support in agriculture. Support measures for commercial and non-commercial family farms and the total amount of funds is defined in details for each budgetary year based on the Plan of Use of Subsidies in the Current Year and Rulebook on Conditions and Manner of Exercising the Right to Financial Support for Development of Agriculture and Rural Areas.

Table 31: Agriculture (and rural areas) development goals in FBiH and RS

<p>BiH Federation</p> <p>(Mid-term Strategy for Development of Agriculture in BiH Federation 2015 - 2019)</p>
<ol style="list-style-type: none"> 1. Development of agriculture and complementary sectors together with increasing technical and technological level, efficient use of available resources and observing the modern market requirements. 2. Providing conditions for stronger generation of stable income within agricultural sector and improvement of quality of life in rural areas. 3. Sustainable management of natural resources and agriculture adaptation to climate changes. 4. Alignment of institutional and legislative framework and agricultural policy with EU CAP while observing the level of development of FBiH agricultural sector.
<p>Republika Srpska</p> <p>Strategic Plan for Development of Agriculture and Rural Areas in RS 2016-2020</p>
<ol style="list-style-type: none"> 1. Increasing volume and productivity of agricultural production and provision of income stability for agricultural producers. 2. Strengthening competitiveness of agricultural sector by increasing the level of investments. 3. Increasing the level of marketability of and finalization in agricultural production. 4. Sustainable management of natural resources and mitigation of consequences of climate change. 5. Balanced integrated rural development. 6. Systematic support to development of agriculture and rural areas.

Finally, when it comes to Brcko District, the current agricultural policy is being implemented based on the general strategic document addressing the overall economy of this BiH administrative unit; though there was a sectoral development strategy in place until 2013 which did not have a legal footing¹²².

9.2. Budgetary transfers for agricultural policy

The EU integration processes require adaptation and redefining of agricultural policy. Due to differences in its concept and measures, accession to the EU is an economic and political challenge for each EU aspirant. Since Bosnia and Herzegovina is a country which applied for candidate status, it is very important to have knowledge on the achieved level of support to agriculture and rural areas compared to the harmonized EU standards. Methodological tool called Agri-Policy Measures tool (APM), developed by Rednak and Volk, was used to analyze and compare agricultural policy of BiH as a country preparing itself for the entry into the EU with the EU Common Agricultural Policy. A common

¹²² Document titled 'Agriculture, Food and Rural Development Strategy of BiH Brcko District 2008-2013' was developed, however it was never passed by the BiH Brcko District Assembly.

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classification of agricultural budget support was developed using the current EU concept based on policy pillars as the main starting point and in combination with OECD PSE classification. EU program aspect (pillars, axis) was applied at higher levels of aggregation while OECD PSE criteria were used to establish groups or sub-groups according to individual pillars, and in particular to define lower levels of classification (basic chapters)¹²³. Therefore, APR allows for rough analysis of budgetary transfers in agriculture and according to OECD PSE classification according to the so-called *vice-versa*.

Agricultural policy of BiH, and its Entities – BiH Federation and Republika Srpska – and Brčko District, is consisted of 3 pillars, i.e. groups of measures, as follows:

Pillar One – Market and direct producer support measures

Pillar Two – Structural and rural development measures

Pillar Three – General measures related to agriculture

The overview of budget allocations for agriculture and rural development at the level of Entities, Brcko District and total for BiH in the period between 2006 and 2015 is provided in the following table.

Table 32 Overview of budget allocations for agriculture and rural areas, BiH Federation, Republika Srpska, Brčko District and Bosnia and Herzegovina, (2006-2015 period) (in million BAM)

Administrative unit/ Group of measures	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
BiH federation										
I Market and direct support measures	27,6	33,2	49,3	44,4	56,2	63,3	48,9	69,5	60,7	65,9
II Structural and rural development measures	5,5	22,2	28,1	23,6	19,2	7,8	35,3	1,7	11,2	2,3
III General measures in agriculture	2,0	4,4	5,5	2,1	1,8	0,8	1,0	2,5	0,5	0,4
Total budget support	35,2	59,8	82,8	70,0	77,2	71,9	85,2	73,7	72,4	68,6
Republika Srpska										
I Market and direct support measures	29,4	48,4	51,0	59,1	30,6	51,6	43,3	43,2	43,9	40,9
II Structural and rural development measures	13,3	15,2	17,2	13,1	39,8	7,7	21,8	10,9	6,6	2,9
III General measures in agriculture	5,1	7,5	11,6	8,5	8,2	3,5	5,0	4,5	5,3	5,6
Total budget support	47,8	71,1	79,7	80,6	78,5	62,7	70,1	58,5	55,7	49,5
Brčko District										
I Market and direct support measures	5,1	4,4	4,3	5,4	4,5	4,0	5,8	5,9	3,4	5,2
II Structural and rural development measures	0,3	0,4	0,2	0,7	0,5	0,6	0,7	0,7	0,2	0,4

¹²³ Rednak, M., Volk, T. (2010): Agricultural policy measures template – A tool for classifying and analyzing agricultural policy measures, Chapter 9, ed. Volk Tina, IAMO, Halle

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III General measures in agriculture	0,0	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total budget support	5,4	4,9	4,6	6,1	5,1	4,6	6,5	6,7	3,6	5,5
Bosnia and Herzegovina										
I Market and direct support measures	62,2	86,0	104,6	108,8	91,3	118,8	97,9	118,6	108,0	112,0
II Structural and rural development measures	19,1	37,7	45,5	37,3	59,5	16,0	57,9	13,3	18,0	5,6
III General measures in agriculture	7,1	12,1	17,1	10,5	9,9	4,3	6,0	7,0	5,8	6,1
Total budget support	88,4	135,8	167,1	156,7	160,7	139,2	161,8	139,0	131,7	123,7
Structure in % (Total = 100)										
BiH Federation										
I Market and direct support measures	78,6	55,5	59,5	63,4	72,8	88,1	57,4	94,3	83,9	96,0
II Structural and rural development measures	15,7	37,1	33,9	33,6	24,9	10,8	41,5	2,3	15,4	3,4
III General measures in agriculture	5,7	7,4	6,6	3,0	2,3	1,1	1,2	3,4	0,7	0,6
Total budget support	100,0									
Republika Srpska										
I Market and direct support measures	61,5	68,1	63,9	73,2	38,9	82,2	61,7	73,7	78,7	82,7
II Structural and rural development measures	27,8	21,4	21,5	16,3	50,7	12,2	31,2	18,6	11,8	5,9
III General measures in agriculture	10,7	10,5	14,5	10,5	10,4	5,6	7,1	7,7	9,5	11,4
Total budget support	100,0									
Brčko District										
I Market and direct support measures	95,0	89,9	93,8	88,8	89,2	87,4	88,5	89,1	93,3	93,7
II Structural and rural development measures	5,0	7,2	5,0	11,2	10,8	12,6	11,5	10,9	6,7	6,3
III General measures in agriculture	0,0	2,9	1,2	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total budget support	100,0									
Bosnia and Herzegovina										
I Market and direct support measures	70,3	63,3	62,6	69,4	56,8	85,4	60,5	85,4	82,0	90,5
II Structural and rural development measures	21,6	27,8	27,2	23,8	37,0	11,5	35,8	9,6	13,7	4,6
III General measures in agriculture	8,1	8,9	10,2	6,7	6,2	3,1	3,7	5,1	4,4	4,9
Total budget support	100,0									

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Source: APM database of FAO/JRC/SWG project

BiH Federation: Between 2006 and 2015 FBiH agricultural budget, with pronounced variations by years, showed a slight increase and from BAM 47.8 million in 2006 increased to the level of BAM 68.6 million in 2015. Variations in budgetary support to the sector observable from year to year and without a clear direction indicate inconsistency of agricultural policy of this Entity. Unstable economic environment and insufficient consistency of political structures in FBiH are just some of the reasons budgetary support to agriculture and rural development did not have clear frameworks in the observed period. Measures under Pillar One, i.e. direct producer support measures had the largest share in the total budgetary support to the sector and ranged from BAM 27.6 million (2006) to BAM 69.5 million (2013). Relative share of this group of measures in some years such were 2013 (94.3%) and 2015 (96.0%) clearly indicate the need of political powers for pragmatic resolution of urgent issues regarding subsidies to agricultural companies, which neglected development orientation of agricultural policy (rural development policy) as well as its important contribution to development of innovations and transfer of knowledge. The level of absolute amounts and relative share of budgetary support to FBiH agricultural policy Pillar Two, i.e. to structural and rural development measures, clearly show that the value of these measures is second-rated and that they are misunderstood in the context of development characteristics. While allocations for Pillar Two were substantial until 2012 and made up a significant share of total budgetary allocations in some years (2012 – 41.5%, 2008 and 2009 - 33%) over the past 3 years these allocations have been extremely low (2.3% -2013 and 3.4%-2015) and are almost minor. Finally, Pillar Three and general measures in agriculture account for the smallest share in total support to the sector and are at mere 2%-5%, i.e. total allocations range from BAM 0.4 million (2015) and BAM 5.5 million (2008). Very modest allocations for this agricultural policy Pillar are one of the reasons for undeveloped extension services and transfer of knowledge in FBiH as well as innovations and needed technological process in general.

Republika Srpska: Large oscillations of budgetary allocations for agriculture and rural development were noted in RS in the 2006-2015 period. The upward trend of budgetary support was pronounced from 2006 until 2009 when it reached its maximum (BAM 80.6 million) after which agricultural budget continually decreased primarily due to the economic crisis and in 2015 reached the level of only BAM 49.5 million. The economic and political crisis in this Entity, slow and insufficient growth of GDP, persistent lack of funds for any serious development action and lack of understanding of the importance of this sector are probably some of the reasons for the observed trends. The structure of agricultural budget, with the exception of 2010, was dominated by direct producer support measures whose absolute amounts ranged from BAM 29.4 million (2006) to BAM 59.1 million (2009) while relative share was between 38.9% (2010) and 82.7% (2015). Compared to BiH Federation, RS pays much more attention to Pillar Two and rural development measures. Until 2012 the allocations were substantial (BAM 39.8 million in 2010) and had a high share in total budgetary support (50.67% in 2010 and 31.17% in 2012), after which economic crisis and lack of funds impacted this type of support, hence allocations for structural and rural development measures were considerably reduced and reached the level of only BAM 2.9 million in 2015 or only 5.9% of total budgetary transfers. Average annual allocations for general measures in agriculture in RS for 2006-2015 period were at BAM 6.5 million and are substantially larger relative to BiH Federation. Allocations for strengthening transfer of knowledge and modernization of services in the sector ranged between BAM 3.5 million (2011) and BAM 11.6 million (2008) accounting for between 5.6% (2011) and 14.5% (2008) of total budgetary transfers for agriculture and food sector.

Brcko District was also characterized by unstable and inconsistent agricultural policy in the analyzed 2006-2015 period. Budgetary support to agriculture varied from year to year. The largest support to the sector was recorded in 2013 (BAM 6.7 million) and the lowest the following year (BAM 3.6 million). The most important measures are those under Pillar One of agricultural policy, i.e. direct producer

payment measures. This administrative BiH unit also failed to recognize the importance of rural development, hence allocations for this purpose do not exceed annual amounts of BAM 0.7 million and account for only 5-13% of total budgetary support. Measures under general services in agriculture are not applied in Brcko District.

9.2.1. Direct producer support

Direct producer support measures are the most important form of budgetary support to agricultural producers in Bosnia and Herzegovina. They are composed of direct payments in the form of subsidies, i.e. support based on the quantity of products sold and payments per area or animal, and payments for variable agricultural inputs. The chart below shows the level and structure of the direct support measures to agricultural producers at the level of Entities and Brcko District and by types of measures for the period between 2006 and 2015.



Source: APM database of FAO/JRC/SWG project

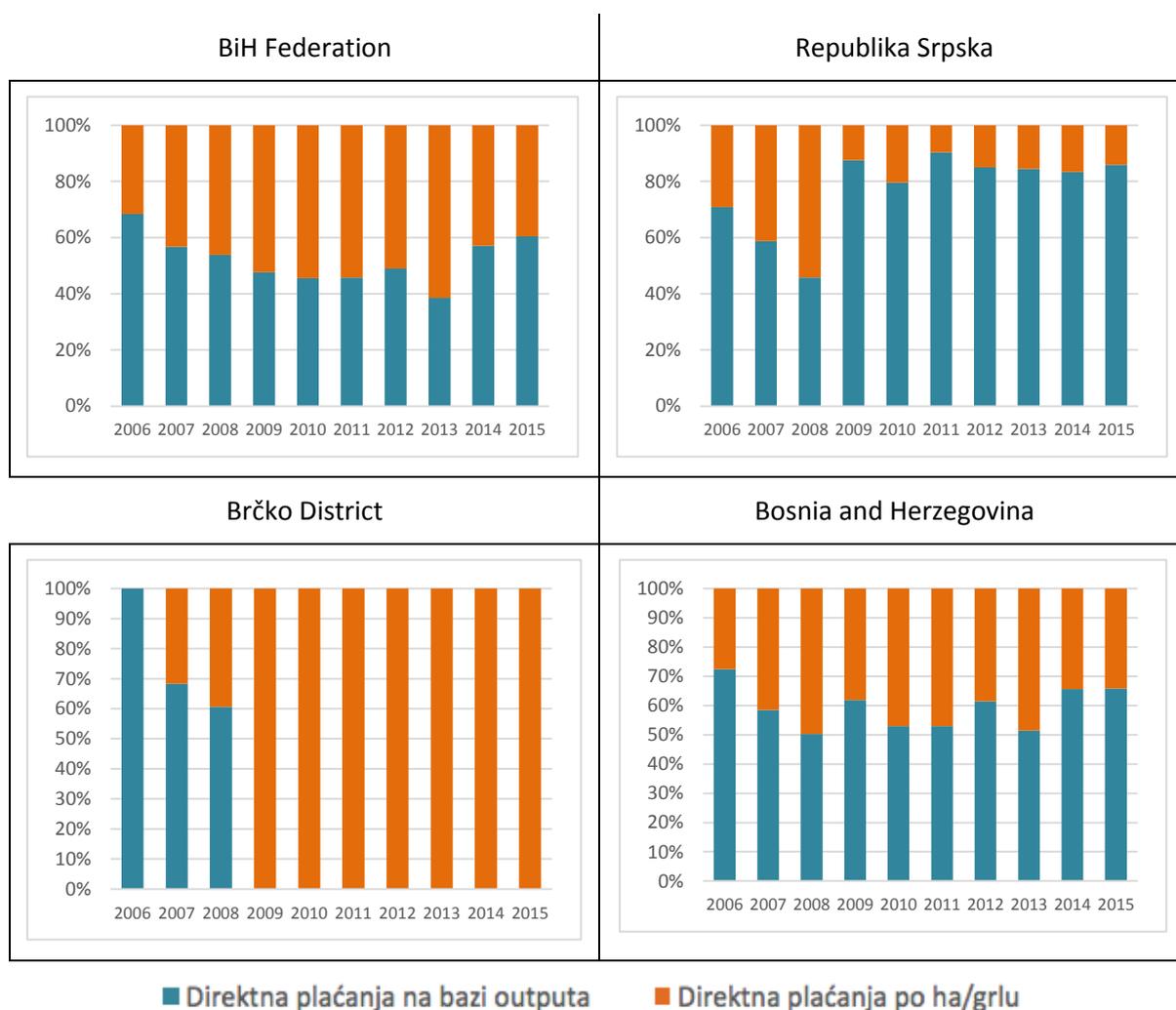
Chart 13 Structure of direct producer support, BiH Federation, Republika Srpska, Brčko District and Bosnia and Herzegovina (2006 - 2015 period) (in million BAM)

BiH Federation. Along with pronounced variations from year to year in this BiH Entity, it could be noted that there is a slight increase in total direct producer support which from BAM 27.1 million (2006) increased to the level of BAM 65.4 million (2015). Direct payments are in fact the only form of

this type of support while modest support to variable inputs comes exclusively from the Cantonal government level.

Republika Srpska. In terms of direct producer support measures in RS a negative trend of such budgetary allocations is observable, starting in 2009 and persisting until 2015. Allocations for direct producer support are declining each year relative to the previous one, hence this budgetary support decreased from BAM 58.1 million in 2009 to only BAM 40.1 million in 2015. Unlike BiH Federation, in addition to direct payments, support to variable inputs has a significant place in the structure of measures. In some years (2011), subsidizing variable inputs accounted for almost half of total direct support; however the share of this support has been decreasing over the past years and ranges between 12% and 20%.

As the most important form of direct producer support in Bosnia and Herzegovina, direct payments significantly differ among BiH administrative units both in terms of approach and figures. The common denominator is variations in support and inconsistent policy as a result of economic crisis, the consequence of which was reflected as decreased funding for agricultural sector. The structure of direct payments in BiH Federation, Republika Srpska and Brčko District is provided in the chart below.



Source: APM database of FAO/JRC/SWG project

Chart 14 Structure of direct payments in BiH Federation, Republika Srpska, Brčko District and Bosnia and Herzegovina (2006 - 2015 period) (in million BAM)

Payments based on outputs predominated in RS since 2009 and on average accounted for 85% of total direct payments, while their absolute amounts ranged from BAM 16.6 million (2011) to BAM 37 million (2014). More balanced distribution of direct payments could be noted in BiH Federation relative to RS, in particular in 2010-2015 period when payments based on outputs and payments based on area/animal had on average almost equal share. Total budgetary allocations in this Entity ranged from BAM 26.4 million (2006) to BAM 65.2 million (2015). As regards RS, it is important to stress that the direct support implementation system was changed as of 2011 so that almost all plant production moved from payment per kg to payment per area unit. However, this change did not have a substantial impact on the structure of direct payments. Moreover, it is noted that payments based on output prevailed in 2014 and 2015. It is obvious that high payments to milk producers (based on quantities sold) define the structure of this type of support in FBiH. As for Brcko District, this BiH administrative unit moved to common direct payment support per area unit/animal in 2009. The level of these allocations was quite uneven and varied from BAM 3.4 million (2014) to BAM 5.9 million (2013) in the observed period.

The existing structure of the main budgetary allocations – direct payments in BiH and its Entities and substantial share of payments based on products sold show that there is still a gap and insufficient level of harmonization in the context of EU integration and approximation to the EU CAP. This issues has been recognized in the new strategic frameworks developed by both BiH Entities, and it has been proposed that all direct payments are based on area/animal; hence they only remain to be implemented as such.

It has to be emphasized that direct payments are very sensitive issue in all BiH administrative units and are very often a reason of dissatisfaction and social unrest of agricultural producers (delays in disbursement of funds, budget development). Additionally, one of the bigger issues for direct payment measures in BiH Entities is their administration and control which are surely one of the key requirements BiH must fulfill before acceding to the EU. Though farm registers and animal identification systems are in place in both Entities, they are still far from the EU standard and have to be improved. Currently the biggest issue for proper and fair implementation of direct payment measures is lack of adequate supervision in identification of agricultural land (LPIS system) which provides opportunities for misuse and inefficient arrangements¹²⁴.

Bosnia and Herzegovina is a country in the region with the highest number of direct payment schemes¹²⁵. In 2015 there were total of 62 schemes at the BiH level out of which 23¹²⁶ in FBiH, 19 in RS and 20¹²⁷ in Brcko District. Compared to 2010, the total number of direct payment schemes increased in 2015 at all observed levels of government.

Table 33 Number of implemented direct producer support schemes according to the type of payment in BiH Federation, Republika Srpska and Brcko District in 2010 and 2015

Type of payment	BiH Federation	Republika Srpska	Brčko District
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¹²⁴ In BiH Federation a number of administrative employees, including the Minister of Agriculture, are under investigation and indicted for abuse of funds allocated for direct payments and rural development measures.

¹²⁵ Volk, T., Rednak, M., Erjavec, E. (2016): Overview of direct farm support schemes in Western Balkan countries, Draft interim synthesis report, SWG/IPTS project National Policy Instruments and EU Approximation Process: Effects on Farm Holdings in the Western Balkan Countries (EUEWB).

¹²⁶ This does not include Cantonal level where direct payment schemes are also implemented in some of the 10 Cantons.

¹²⁷ This, of course, does not mean the number of supported production facilities, but only a different approach to support to agricultural producers.

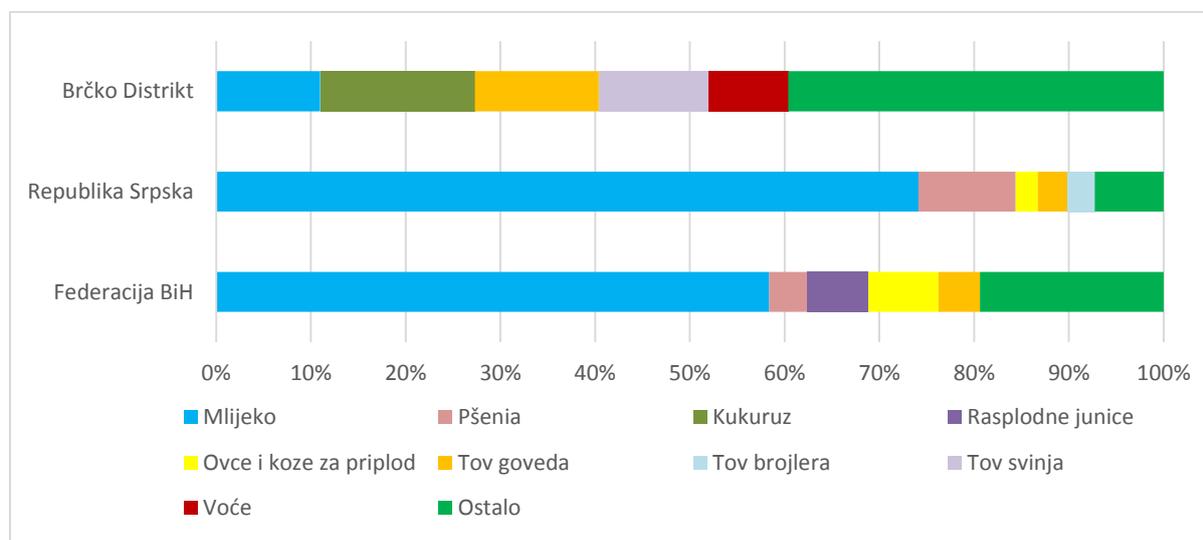
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	2010	2015	2010	2015	2010	2015
Payment based on outputs	9	2	7	7	0	0
Payment per area	3	12	1	1	6	8
Payment per animal	8	8	9	10	10	11
Subsidies for inputs	0	1	0	1	0	1
Direct support (total)	21	23	17	19	16	20

Source: APM database of FAO/JRC/SWG project

In the analyzed 2010-2015 period, the biggest changes in BiH Federation occurred regarding direct payment schemes. A considerable number (7) of schemes of payments based on outputs were replaced by payments per area unit, hence almost all plant production in this Entity is supported by hectare. There are 8 payment per animal schemes, while one payment for variable inputs scheme was introduced in 2015. Unlike BiH Federation, there are still a substantial number of direct payment schemes in Republika Srpska which are based on the quantity of sold product (7) and somewhat larger number of payment schemes per animal (10 schemes in 2015). Furthermore, implementation of direct support measures includes one payment per area unit scheme and one scheme for subsidizing inputs. Out of total of 20 direct producer support schemes in Brcko District in 2015 8 related to payments for plant production per area unit, 11 to payments per animal, and one scheme was related to subsidizing inputs.

Milk production is by far the most supported segment in Bosnia and Herzegovina (Chart 15). Together with tobacco production, milk production has had continuous support since 1997. In RS total budgetary transfers to this production amounted to BAM 24.4 million in 2015 and accounted for 70% of total direct payments. Allocations to milk producers were even bigger in BiH Federation with BAM 36.5 million, but had somewhat smaller relative share in the total direct payments which was at 56%. Production of fruits (8.0%), wheat (7.3%), and cattle (2.2%) are among other more supported segments in RS in 2015. In addition to milk, most supported segments in 2015 in FBiH were breed sheep and goats (7.4%) and heifers (6.4%) and wheat production (3.9%). Support to individual productions in Brcko District is more evenly distributed, among which maize, pig, cattle and fruit production are particularly noted.



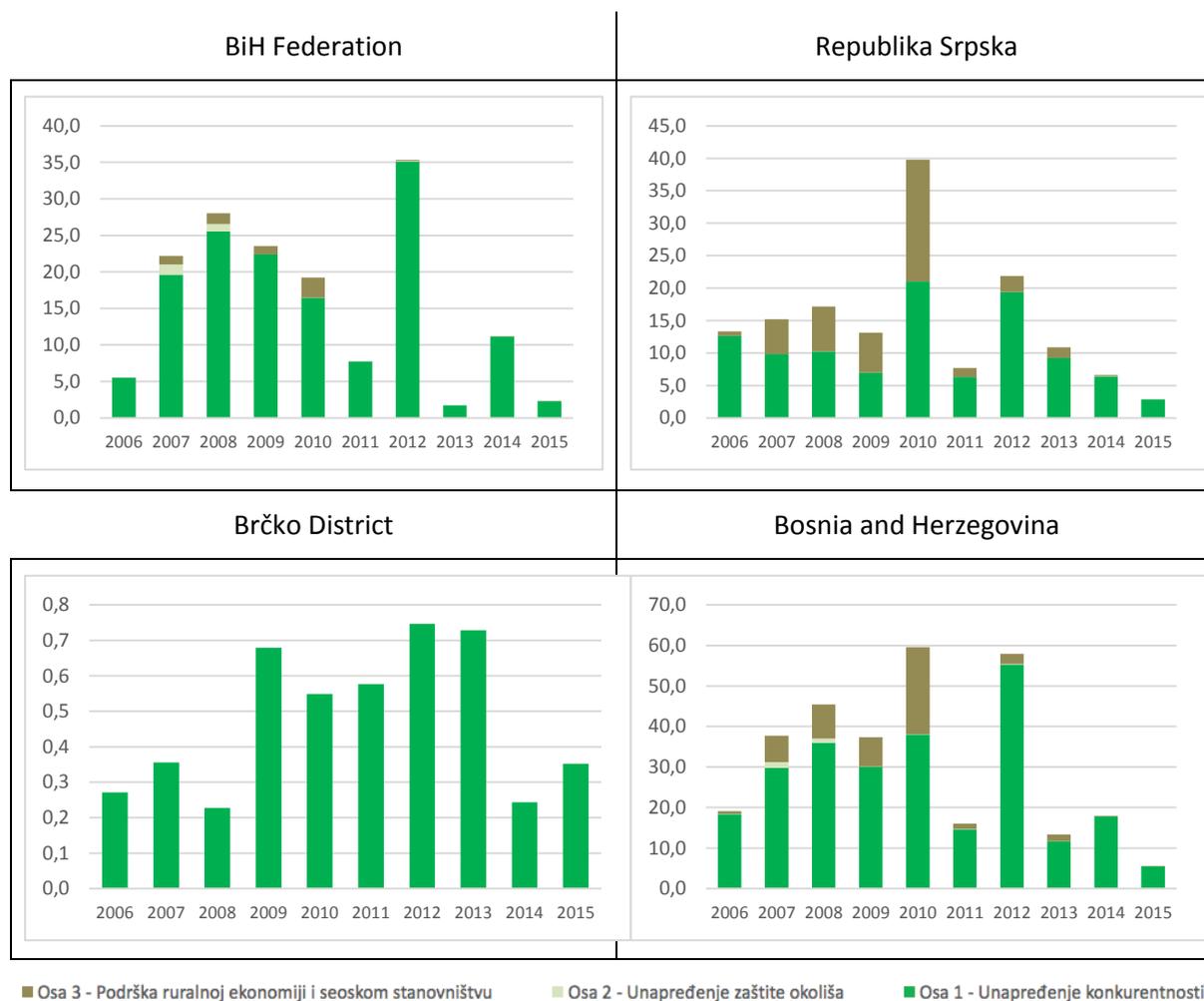
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Source: APM database of FAO/JRC/SWG project

Chart 15 Structure of the share of important products directly supported from the budget in BiH Federation, Republika Srpska and Brčko District (in %, 2015)

9.2.2. Support to rural development

As is the case with the policy of direct support to agricultural producers, rural development policy is entirely different between the Entities (Brčko District). This difference is reflected in the level of allocation of budgetary funds for this purpose, structure of support and approach towards the 3 axis of rural policy.



Source: APM database of FAO/JRC/SWG project

Chart 16 Overview of structural and rural development measures, BiH Federation, Republika Srpska, Brčko District and Bosnia and Herzegovina (2006 - 2015 period) (in million BAM)

BiH Federation. BiH Federation still has no strategic document addressing the rural development policy. The mentioned Program of Rural Development of BiH Federation 2014-2020 has not been in parliamentary procedure yet, and prior to it no similar documents had been developed. This is just one of the reasons rural development policy in FBiH is characterized by inconsistency, incoherency and lack of transparency along with chronic lack of funding. Support to rural development in FBiH recorded substantial increase from 2007 (BAM 22.2 million) to 2012 (BAM 35.3 million) after which it saw a sharp decline and was at only BAM 2.3 million in 2015. Economic crisis in this Entity accompanied by relevant political issues is obviously mostly reflected on the support to rural development. This is primarily because political structures still do not recognize the importance of its development

component (agricultural policy makers rather turn to direct payment measures which in practice can only be a reason for dissatisfaction of agricultural producers and social unrest), while, on the other hand, rural population and potential beneficiaries of this support still do not see rural development measures as an opportunity to become modern farmers and competitive in the market. Almost all allocations for rural development in FBiH were focused on measures under Axis 1 – improvement of competitiveness of agricultural sector, and primarily on investments into farms. The share of axis 1 in total budgetary transfers for rural development in FBiH ranged from 85.6% (2010) to 100% (2013). The other 2 axis supporting environmental protection (axis 2) and rural development (axis 3) are financially negligible and are practically symbolic.

Republika Srpska. It cannot be claimed that rural development policy in RS is consistent and sufficiently funded, despite strategic documents being in place. Considerable variations are noted in allocations from year to year (2010 – BAM 39.8 million, 2015 – BAM 2.9 million) and support comes down to Axis 1 – improvement of competitiveness and Axis 3 – support to rural development, while support to environmental issues is completely absent over the entire observed period. The largest number of beneficiaries has been achieved through competitiveness improvement measure (through purchase of mechanization, cattle, construction of facilities, development of plantations, greenhouses, glasshouses, etc.) while allocations for Axis 3 were mostly related to development of necessary rural infrastructure. The general impression regarding drafting and development of RS rural development policy is that a positive step was made towards strategic orientation of funds, in systematic and more numerous types of support measures, and substantial increase in the scope of allocated funds¹²⁸. On the other hand, the implemented reforms and a number of new measures which have been introduced required adoption of additional mechanisms for implementing policies in practice as well as application of new management models, all of which in fact lacked. Support to rural development in RS is certainly dependent on the current economic state of play of this Entity. With political and increasingly pronounced economic crisis, support to rural development in the past couple of years of observed period was very modest and with the tendency of further decrease.

Brcko District allocates modest funds for rural development measures and these are exclusively related to improvement of competitiveness, i.e. provision of fixed assets for production.

This approach which has been noted in both BiH Entities and Brcko District comes as no surprise given the fact the Axis 2 and Axis 3 measures are developed only after the “production support” system is finalized. The current structure of rural development support is not uncommon for countries in transition such is BiH. It should be emphasized that most of new EU MS (2004 and 2007 enlargement) used most of the rural development support funds through Axis 1, i.e. to increase competitiveness of agricultural sector¹²⁹.

9.2.3. General measures in agriculture

The group of measures under Pillar Three of agricultural policy – measures of general services in agriculture are not provided directly to agricultural producers as end beneficiaries but are focused on establishing better doing business conditions in agriculture, and include different types of inspection/supervision, research and development, marketing and promotion, etc.

BiH Federation. Very modest funds are allocated for measures of general services in agriculture in FBiH. The low level of support to general services in agriculture was particularly pronounced in 2011-

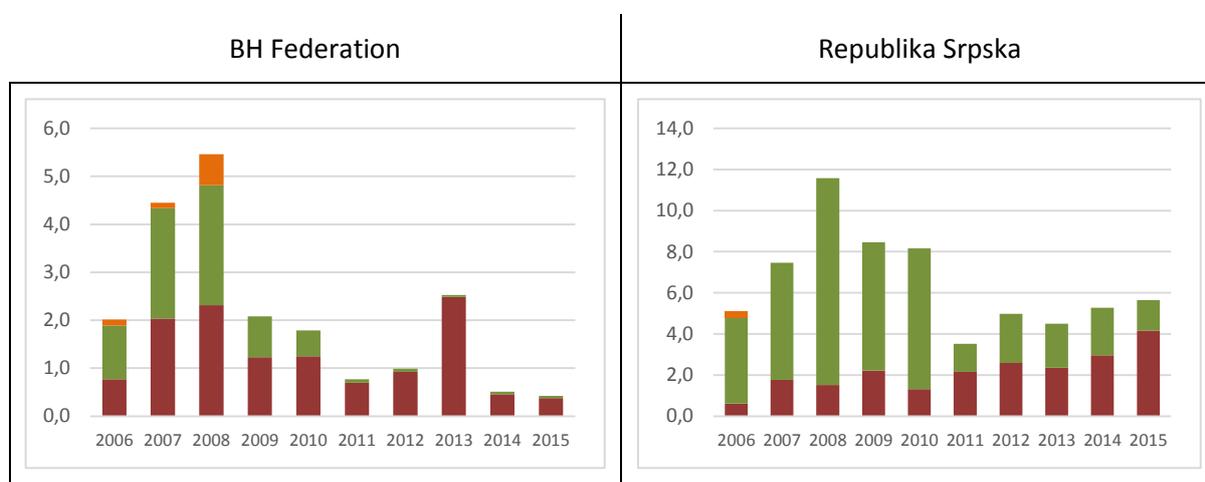
¹²⁸ Source: Rokvić, G. (2012): Research of the rural development model in BiH corresponding to the EU rural development policy, PhD Thesis, Banja Luka Faculty of Agriculture, Banja Luka

¹²⁹ Erjavec, E., Rednak, M., Bajramovic, S. (2010): Common Agricultural policy of EU and Challenges that expect Bosnia and Herzegovina, Works of the Faculty of Agriculture and Food Sciences University of Sarajevo, Volume LV, No 60/1, Sarajevo.

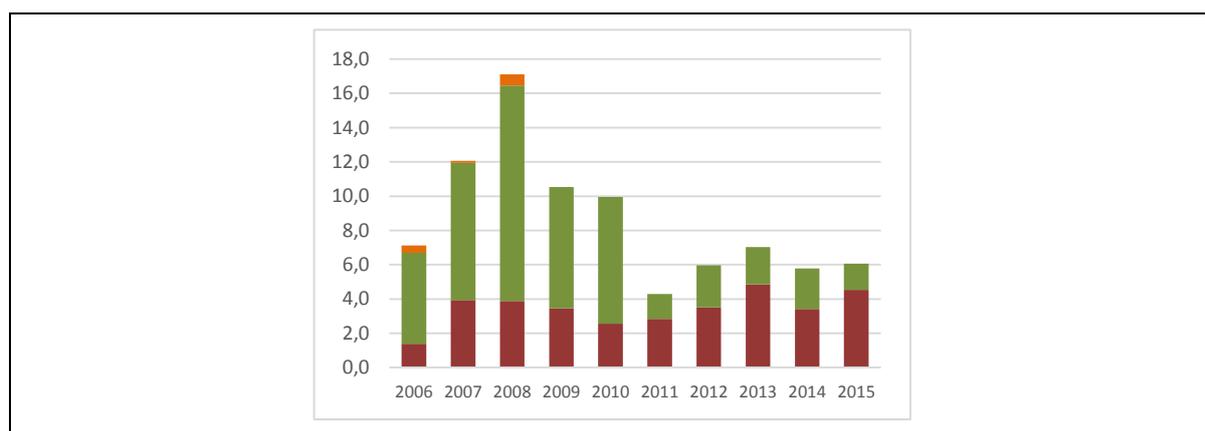
2015 period when the level of budgetary transfers (with the exception of 2013) did not exceed BAM 1 million. The average annual allocations in 2014 and 2015 were at BAM 450 thousand, accounting for less than 1% of total budgetary support to the sector¹³⁰. When it comes to support to this Pillar, allocations coming from Cantonal level are in fact more important in BiH Federation as they finance inspection services in charge of plant and animal (veterinary) health, extension services, and training of farmers in a number of different topical areas.

Republika Srpska. Compared to FBiH, RS pays more attention to this Pillar of sector support in both absolute and relative figures. Until 2010 the share in total budget continually exceeded 10% and was at BAM 8.2 million on average. Support to general services in agriculture declined both in absolute figures and in relative share in the period between 2011 and 2015. The support in this period was at BAM 4.8 million on average, accounting for 8.1% of total sector support. Until 2010 larger portion of support under Pillar Three of agricultural policy was focused on food safety, i.e. veterinary and plant health control, and between 2011 and 2015 research and development, i.e. advisory services had bigger relative share.

There are no allocations for the group of general measures related to agriculture in Brcko District.



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■ Istraživanje, razvoj, savjetodavstvo ■ Sigurnost hrane i kontrola kvalitete ■ Ostale opšte mjere u poljoprivredi

Source: APM database of FAO/JRC/SWG project

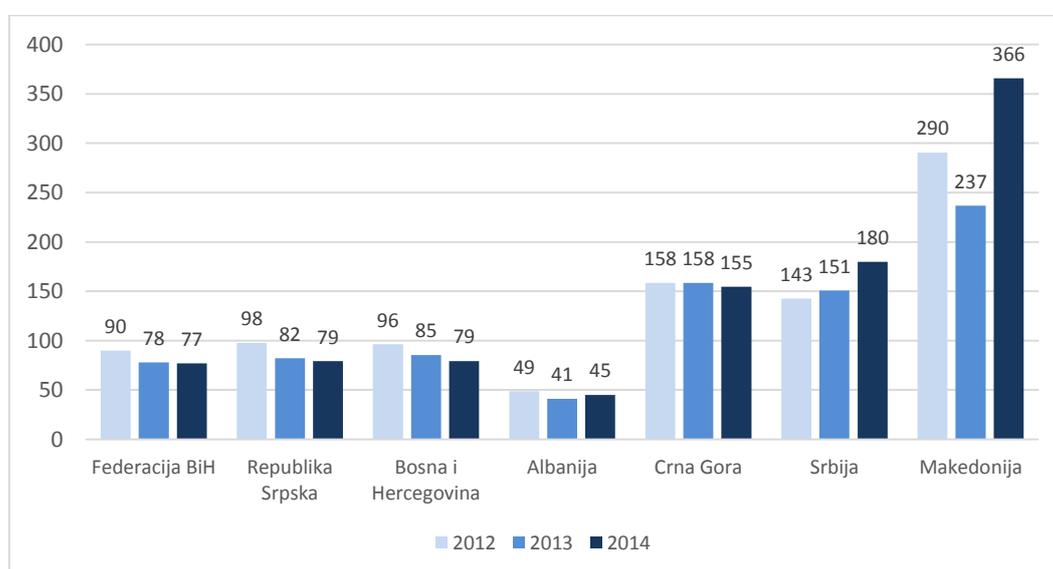
¹³⁰ Under the law, FBiH agricultural budget does not include funds provided to veterinary sector which amount to BAM 4 million on average.

Chart 17 Overview of general measures in agriculture, BiH Federation, Republika Srpska, Bosnia and Herzegovina (2006 - 2015 period) (in million BAM)

9.2.4. Budgetary support compared to countries in the region

Given that countries of the region (Albania, Montenegro, Macedonia, Serbia) are also in the process of EU integration and approximation to the EU CAP, this part of analysis focused on positioning BiH Entities and Bosnia and Herzegovina in the context of budgetary allocations for agriculture and specific types of support. Comparison is made based on calculated budgetary support in BAM per ha of utilized agricultural area¹³¹.

In 2014 total budgetary allocations per ha of utilized agricultural land (UAA) in BiH Federation (BAM 77) and Republika Srpska (BAM 79) were far behind the allocations provided in Macedonia (BAM 366), Serbia (BAM 180) and Montenegro (BAM 155). Agricultural sector is less supported only in Albania and in 2014 the support was at 45 BAM/ha of UAA. Considering that total budgetary support per ha of UAA was BAM 939 in EU-27, it is obvious that BiH budgetary support to the sector is still very low.



Source: APM database of FAO/JRC/SWG project

Chart 18 Comparative overview of total budgetary allocations in agriculture and food sector and rural areas in BiH Federation, Republika Srpska, Bosnia and Herzegovina and selected Western Balkan countries (BAM/ha of utilized agricultural area) (2012-2014 period)

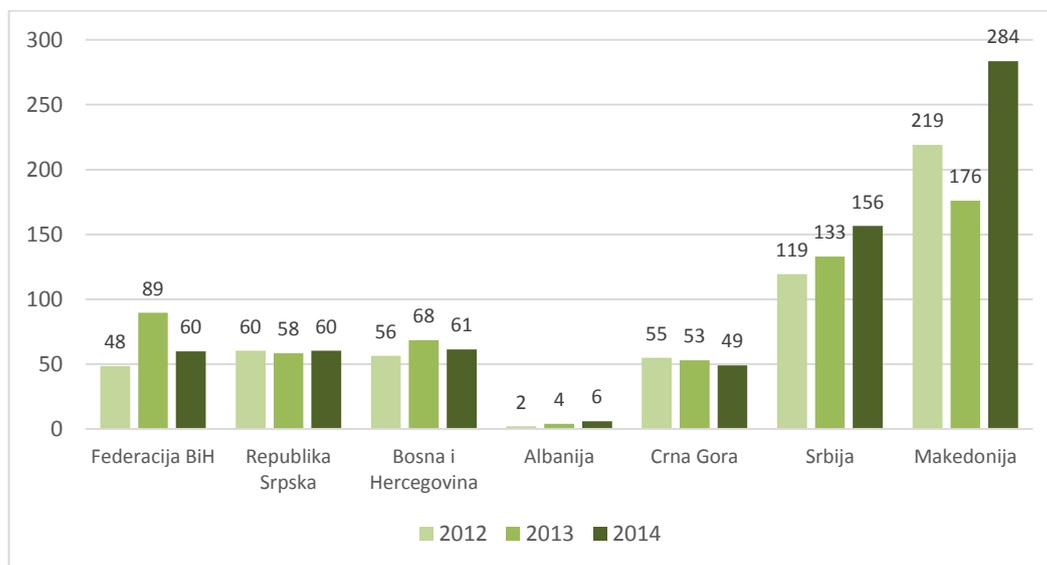
The first pillar of agricultural policy and market-price measures are the most important part of budgetary support in the countries of the region. Thus, it is interesting to see the level of allocations provided for direct producer support¹³². Equal allocation for direct producer support in 2014 in BiH Federation and Republika Srpska (60 BAM/ha of UAA) are larger only than those in Albania (6 BAM/ha of UAA) and Montenegro (49 BAM/ha of UAA), and are considerably lower compared to Macedonia

¹³¹ Since BiH still does not have Agricultural Census which would provide for exact identification of utilized agricultural area, for the purpose of this analysis the utilized agricultural area in BiH equals to total agricultural area decreased by the area of uncultivated plowed fields and fallow land.

¹³² According to JRC SWG study (2015) budgetary transfers related to market interventions were noted only in BiH and Montenegro.

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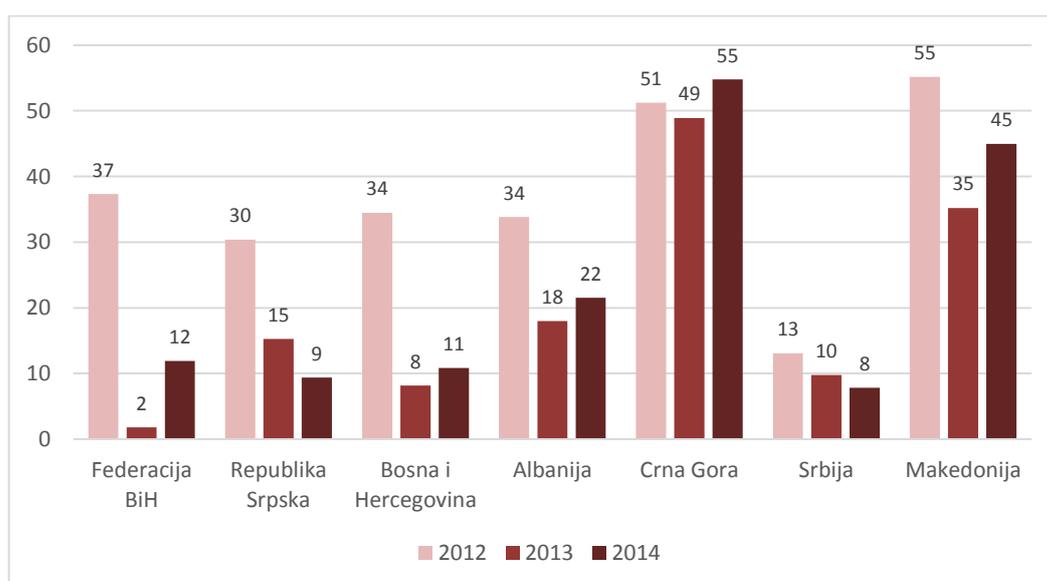
(284 BAM/ha of UAA) and Serbia (156 BAM/ha of UAA). In 2012-2014 period the level of this support was stagnant in Republika Srpska and had no pronounced trend in BiH Federation compared to Serbia and Macedonia where a clear growth trend was observed.



Source: APM database of FAO/JRC/SWG project

Chart 19 Comparative overview of direct producer support in BiH Federation, Republika Srpska, Bosnia and Herzegovina and selected Western Balkan countries (BAM/ha of utilized agricultural area) (2012-2014 period)

Finally, the analysis wanted to see what is the regional approach to rural development and structural support measures. The general rule applicable to all countries in the region is that agricultural budget is not development-oriented. In addition to amounts being rather low both as total figure and as per ha of UAA, negative trends in this type of budgetary support are observable in all Western Balkan counties, with the exception of Montenegro. The 2014 allocations for rural development in BiH Federation (12 BAM/ha of UAA) and Republika Srpska (9 BAM/ha of UAA) were bigger only compared to Serbia (8 BAM/ha of UAA) and considerably lower relative to Albania (22 BAM/ha), Macedonia (45 BAM/ha) and Montenegro.



Source: APM database of FAO/JRC/SWG project

Chart 20 Structural and rural development measures in BiH Federation, Republika Srpska, Bosnia and Herzegovina and selected Western Balkan countries (BAM/ha of utilized agricultural area) (2012-2014 period)

9.2.5. Concluding remarks

This analysis of agricultural policy in BiH and its Entities in 2006-2015 period clearly shows that both formal and essential implementation of the accession process and adaptation of agricultural policy to the CAP are still at a low and unsatisfactory level. Agricultural policy in both BiH Entities is significantly different, in both the range and structure of measures, so the policy applied is far from the EU model. In both BiH Entities, direct payments per output make up a large part of direct payments, whereas they hardly exist in the EU countries. Modest transfers for rural development measures almost completely pertain to Axis 1 and investments in agricultural holdings, while Axis 2 and environmental preservation measures, as a mandatory part of the CAP, practically do not exist in BiH. Legal harmonization is being introduced gradually and institutional capacities of a modern state are still being built. Deficits in institutional structure and human resource management arise from poor motivation and lack of political will over the past years which inevitably left their consequences on the BiH state development. Agricultural policy in BiH is in fact an aggregation of entity and cantonal level policies without significant coordination among them. Such policy is unstable and very often dependent on political orientation and determination to serve to 'higher interests' more than to strategic goals. Incomparability of the policy is not a problem for itself but a fact that testifies about the populism and lack of strategy and vision in the politics¹³³. In order to come closer to CAP and take over its concept, it will be necessary to establish a system of policy coordination among BiH Federation, Republika Srpska and Brcko District. In the current complex political situation in the country, making a common platform of action in the context of EU integration and approaching the CAP could be the first step.

The countries with clear aspirations toward the EU integration have to take over the concepts, mechanisms and implementation systems of the CAP at the very beginning¹³⁴. CAP is a complex system of legal regulations, budgetary support and public regulatory interventions that considerably affect the situation in agriculture and rural areas in the EU. Gradual adaptation to CAP measures and instruments in the pre-accession period (when a country is a candidate or potential candidate for the EU membership) aims to prepare the country for an effective integration into a complex institutional and legislative EU CAP system. An additional value of this process derives from the fact that this is the way for agricultural producers in a (potential) candidate country for the EU membership to prepare timely for a significantly different approach such as the EU CAP planning and implementing.

BiH's EU path has no alternative. EU integration remains the key goal and alignment with the EU CAP the biggest challenge faced by decision makers in BiH Entities. The experience from past enlargements showed that countries in accession are not fully prepared for CAP programs, meaning that they are not capable of fully benefiting from substantial funds that become available to them¹³⁵. This is supported by similar newer experiences of Republic of Croatia. Thus, this conclusion perhaps

¹³³ Bajramović, S., Ognjenović, D., Butković, J. (2015): Bosnia and Herzegovina: Country Agricultural Policy Brief. SWG/IPTS project

¹³⁴ Erjavec, E., Rednak, M., Bajramovic, S. (2010): Common Agricultural policy of EU and Challenges that expect Bosnia and Herzegovina, Works of the Faculty of Agriculture and Food Sciences University of Sarajevo, Volume LV, No 60/1, Sarajevo

¹³⁵ Erjavec, E., Volk, T., Rednak, M., Eberlin, R., Ludvig, K. (2014): Gap Analysis and Recommendations. Agricultural Policy and European Integration in South East Europe, FAO, Budapest

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encourages local politicians to take a more decisive step towards the needed agricultural policy reforms and start to implement concrete adopted strategic documents in a more consistent manner.

10. Institutional environment

10.1. Institutions competent for agriculture and rural development in BiH

Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina is in charge of agricultural sector tasks and activities which fall under the competence of state level and relate to defining policies, main principles, coordination of activities and alignment of plans of Entity level authorities and institutions at international level. These activities are implemented as part of the **Department for Agriculture, Food, Forestry and Rural Development** which is in charge of preparing and drafting legislation (normative and legal acts), conducting surveys and analytical work, scientific and operational work, informational and documentary tasks, and administrative and technical tasks related to agriculture, food, fisheries, forestry, water management and rural development.

Administrative organizations with the BiH MOFTER are:

- Veterinary Office of BiH,
- BiH Plant Health Protection Administration, and
- Office for Harmonization and Coordination of Payment System in Agriculture, Food and Rural Development.

Veterinary Office of BiH (VO) was established in 2000 as a state level body which exercises its competences prescribed by the law in a harmonized manner and in accordance with the operational activities of Entity level veterinary offices and Brcko District veterinary office with the aim of improving the efficiency and effectiveness of the overall system of veterinary services in BiH and its cooperation with international veterinary, health and similar institutions and associations.

Agency for Animal Identification (AAI) was established as part of the VO and is in charge of registration, identification and control of animal movement.

The system of animal identification and movement control (SAIMC) identifies all animals (from the population of cattle, including population of bison and mouflons) and registers their movement on the entire territory of BiH as foreseen by the Veterinary Law. This system is also used to register all holdings, slaughterhouses and livestock markets, including those newly established.

For this purpose:

- each holding, slaughterhouse and livestock market has to be entered in the State Database (SDB) which will be assigned a specific and permanent letter-number code;
- each animal has to be marked with individual ear marks and its owner has to have the passport for this animal which is also entered into the SDB;
- consequently, movement of each animal could be tracked only if having appropriate documents and also each animal movement has to be registered in the SDB.

The system of animal identification and movement control in BiH is under the direct competence of the BiH Veterinary Office (VO) while operational activities of SAIMC system are efficiently and effectively implemented by the Agency for Animal Marking, which is part of the BiH VO.

Organizational chart of the Office: Veterinary Office management is consisted of Office Director, Office Deputy Director and Office Secretary. The Office has several individual departments: Department for Animal Health and Welfare, Department for Food Safety and Facility Conditions, Agency for Identification of Animals headquartered in Banja Luka, Department of Border Veterinary Inspection, Department for Veterinary Inspections, and Department for Legal, Financial and Administrative Affairs.

BiH Plant Health Protection Administration was established in 2004 as a national body for plant health protection in charge of coordination and contacts as regards plant health issues as well as of provisions arising from International Plant Protection Convention and local legislation.

Office for Harmonization and Coordination of Payment System in Agriculture, Food and Rural Development was established at the BiH level in 2009 with the aim to provide for transparency and coordination of payment system in Bosnia and Herzegovina, support policy measures and gradually align the payment system with that of the EU.

In addition to this, there is a **BiH Food Safety Agency** at the state level which is an independent administrative organization and administratively directly subordinated to the Council of Ministers. BiH Food Safety Agency was established in 2005 based on the BiH Food Law. The Agency was established to provide for safety of food and feed, perform scientific, expert and technical tasks under the Food Law and implement international conventions and international agreements in food and feed safety which are binding for BiH.

Organizational chart of the Food Safety Agency: Agency Director, Deputy Agency Director, Agency Secretary, Senior Expert on Public Relations and Agency Technical Secretary. The Agency has a number of individual divisions: Joint Services Division, Division for Risk Analysis which includes: Food Safety Section, Declaration Section, Pathogens Microorganisms Section, Food Safety Section, Section for Cooperation with Codex Alimentarius Commission, Division for Crisis Management and Urgencies which also included a Section for Cooperation with International Project Organizations, Division for Official Controls, Traceability, Risk Management and Risk Notifications.

In BiH most activities in the area of agriculture are implemented by agricultural ministries of the two Entities and Department for Agriculture of Brcko District. The competences of these ministries, and their departments, include agriculture as well as forestry and water management.

Republika Srpska: RS Ministry of Agriculture, Forestry and Water Management is an independent administrative body performing administrative and other tasks in a number of administrative areas and is indirectly subordinated to the SR Government. RS MAFWM performs administrative and other expert tasks related to: protection and use of agricultural land; protection of agricultural plants and products from pathogens, pests and weed; production and sale of seeds and seedling material, production and improvement of livestock production; veterinary; animal health protection; control of safety and quality of inputs and products of animal origin until placement on the market, feed, drinking water for animals; improvement of production in forestry, cultivation, protection, regulation and improvement of forests, state of growing stock; timber harvesting; afforestation of degraded and coppice forest, bare land and rocky areas; communication in forests; hunting and hunting economy; integrated water management; preparation and adoption of plans and 10-year forest management plans; water balance; implementation of protection against adverse effects of water; defining conditions and issuing permits for abstraction and use of water; implementation and organization of water quality control; undertaking measures to provide water supply for population and industry; hydro-meliorations; functioning of RS Meteorological and Hydrological Institute and hail protection in RS; inspection supervision in agriculture and veterinary, forestry, hunting and water management; provision of information about its work via media and other communication channels; and other tasks in accordance with the RS and BiH laws and other regulations.

According to the Rulebook on Internal Organization and Systematization of Jobs¹³⁶ the following organizational units are established within the RS Ministry of Agriculture, Forestry and Water Management for the purpose of performing tasks falling within its competences: sectors – the main

¹³⁶ RS Official Gazette No 43/15, 18/16, 38/16 and 85/16

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organizational units, Ministry Secretariat as individual organizational unit; departments – internal organizational units and regional units with the status of sections.

The main organizational units of the Ministry are **sectors**: Sector for Agriculture, Food Industry and Rural Development; Sector for Extension Services in Agriculture; Sector for Veterinary; Sector for Forestry and Hunting; and Sector for Water Management.

Internal organizational units are **departments**:

- Department for Agricultural Policy, Rural Development and International Cooperation,
- Department for Plant Production,
- Department for Livestock Production,
- Department for Agricultural Land,
- Department for Food Industry,
- Department for Strategic Planning and Sustainable Forest Management,
- Department for Control of Forest Users,
- Department for Legal, Personnel and General Tasks, and
- Department for Finances, Accounting, Funds and Project Management.

RS **administrative organizations** within the Ministry are: Agency for Payments in Agriculture; RS Meteorological and Hydrological Institute; and Unit for Coordination of Projects in Agriculture.

Public enterprises under the supervision of the Ministry are PE 'Šume Republike Srpske' (RS Forests) and PE "Protivgradna preventiva RS" (RS Hail Prevention) while public institutions under the Ministry supervision include: PI 'Dr Vaso Butozan' Veterinary Institute Banja Luka, PI 'Vode Srpske' (Water Management) Bijeljina and PI 'Ergela Vučijak' Prnjavor (horse farm).

Since 2005 **inspection supervision** in RS is performed by the RS Administration for Inspection Activities which includes agricultural inspection, veterinary inspection, food inspection and forest inspection. Other inspections (market, water, health, labor, etc.) have certain points of contact with the agricultural sector. Municipal inspection bodies have been also set up.

BiH Federation: Within the existing constitutional arrangements, a minimum number of institutions, organizations and agencies needed for management and supervision in agriculture, food and rural development have been established in FBiH. The institutions competent for agriculture are FBiH Ministry of Agriculture, Water Management and Forestry; Cantonal line ministries of agriculture, water management and forestry (6); and departments for agriculture within ministries of economy (4).

The area of agriculture is regulated through 3 sectors within the FBiH Ministry of Agriculture, Water Management and Forestry:

- 1) Sector for Agriculture and Food Industry,
- 2) Sector for Rural Development and Extension Services in Agriculture, and
- 3) Sector for Payments in Agriculture.

Sector for Agriculture and Food Industry is composed of 4 departments: Department for Plant Production, Department for Livestock Production, Department for Food Industry and Department for Agricultural Policy and Analysis. The Sector for Rural Development and Extension Services in Agriculture is divided into two departments - Department for Rural Development and Department for Extension Services in Agriculture while the Sector for Payments in Agriculture is consisted of three departments: Department for Direct Payments, Department for Payments in Rural Development and Instrument for Pre-Accession Assistance in Rural Development (IPARD), and Section for Control.

Sectoral inspection supervision, which is limited by constitutional organization of FBiH, is performed by the FBiH Administration for Inspection Activities. The inspection administrations important for

agriculture, rural development and food industry are: agricultural; veterinary; sanitary, health and pharmaceutical; and market and tourism inspections. Inspection bodies are also established at the level of Cantons, i.e. cantonal administrations for inspection activities which exercise inspection activities at the cantonal level. FBiH Administration for Inspection Activities has no direct competences over the work of cantonal inspection bodies which needs to be taken into consideration in terms of implementation of official control, implementation of measures of supervision of animal health, management in the event of diseases, food safety, application of specific standards in production and processing, including control of animal movement and products of animal origin, which are preconditions for export of goods. Competences of FBiH and Cantonal inspection bodies are not always clearly divided, which is emphasized as a problem in their work both by FBiH and Cantonal inspectors.

Two independent FBiH level scientific and expert institutions have been established and operate in FBiH (FBiH Institute for Agriculture in Sarajevo and FBiH Agro-Mediterranean Institute in Mostar) as well as one institution specialized for agricultural land issues (FBiH Institute for Agropedology in Sarajevo). As regards sector institutions and bodies which lack at the FBiH level this document mentions only some of them whose establishment is provided for under the FBiH legislation on agriculture, veterinary and plant protection, and which may be beneficial for development planning and provision of services to agriculture, food and rural development. Hence, the following institutions have not been established and are not operational in FBiH: FBiH Extension Services in Agriculture¹³⁷, FBiH Institute for Plant Protection in Agriculture, FBiH Veterinary Institute¹³⁸(some Cantons established cantonal veterinary institutes: PI Veterinary Institute in Bihac, PI Veterinary Institute in Tuzla, PI Veterinary Institute in Zenica merged with the PI Public Health Institute Zenica into Centre for Health, and PI Veterinary Institute in Mostar), FBiH Agency for Rural Development, Chamber of Agronomists and Agricultural Information Centre.

Six Cantons in FBiH have established ministries of agriculture, water management and forestry while in four Cantons issues regarding agriculture fall within the competence of relevant sectors of the Ministry of Economy. All Cantonal level ministries are competent for strategic planning of agriculture and rural development of their respective cantons and implementation of defined agricultural policy, including own subsidies to agriculture and rural development. Cantonal level ministries of agriculture participate in planning of agricultural policy at FBiH level, thus providing for certain level of coordination of development plans and programs.

10.2. BiH in international and regional trade and economic integrations

Present and future BiH involvement in international and regional trade and economic integrations is important for foreign trade, including trade in agricultural and food products.

International trade is regulated by bilateral and multilateral agreements and is subject of interest of international, regional and national organizations and institution. At the global level, international trade is generally regulated by the rules of World Trade Organization. EU MS (currently 28 European countries) have their trade rules which, in case of food, pay particular attention to sanitary and phytosanitary standards and procedures. European countries outside the EU created their duty-free unions (e.g. CEFTA and EFTA) and concluded agreements on free trade with the EU.

¹³⁷ Extension services body has been established at the level of FBiH MAWMF but is not functional.

¹³⁸ Currently, the function and tasks of the FBiH Veterinary Institute are exercised by the Faculty of Veterinary, Sarajevo University. The building and all other necessary infrastructure for the FBiH Veterinary Institute is practically already in place and it is expected that this institution will become operational by the end of 2017.

10.2.1. BiH and World Trade Organization

World Trade Organization, as specialized organization of the United Nations, was established in 1995 with the aim of establishing and controlling institutional and legal framework for international trade in goods, services and intellectual property upon the principles of free trade, and removing tariff and non-tariff barriers. Currently, 164 countries are members of the WTO.

Bosnia and Herzegovina has been negotiating accession to the WTO for 18 years now, which is being prolonged for quite some time. As regards agriculture, the negotiations on local support to agriculture and export subsidies are led on plurilateral basis with interested members of the Working Group (negotiations with Brazil, Ukraine and Russian Federation are still open). An important aspect of negotiations with the WTO is limiting *de minimis* level of subsidies (5-10%), which are approved individually for each agricultural product against its total production, and identifying the maximum level, i.e. threshold of AMS (aggregate measures of support) which must not be exceeded.

In accordance with the WTO Agriculture Agreement, only developing countries have the right to *de minimis* support in the percentages exceeding 5% and in this respect BiH, as a European country with good natural conditions for agriculture, and regardless of the level of its (under)development, is not entitled to the status of developing country (which has not been granted to any new members from Europe since 1995). In addition to difficulties in negotiations and very rigid position of key WTO members in these negotiations, BiH is promised a preferential treatment regarding *de minimis* support of 10% during the 3-year transitional period (as of the day BiH accedes to the WTO), which has been challenged given that the negotiations on BiH accession to the WTO have dragged on.

BiH and its lower administrative levels will have to observe the rules and obligations BiH negotiates with the WTO and respect the provisions of special WTO agreements – Agriculture Agreement; Agreement on Sanitary and Phytosanitary Measures; and Agreement on Trade-related Aspects of Intellectual Property Rights (important for protection of geographic origin of agricultural products). This will inevitably require adaptation of subsidy policy in agriculture. According to the WTO rules, all subsidy measures and other measures of financial support in agriculture are divided into boxes depending on their character and purpose. Subsidies under green box are not subject to the obligation of limitations or reduction and can be retained; subsidies from blue box can be kept but are limited by the achieved level of support, and subsidies from amber box are subject to the obligation of reduction. Export subsidies are subject to continuous reduction with the intention to be fully abolished.

10.2.2. BiH and European Union

As regards the EU, Bosnia and Herzegovina has a status of potential candidate.

The EU has funds designated for preparation of potential candidate and candidate countries for EU membership. Currently, a common Instrument for Pre-Accession Assistance - IPA II 2014-2020 is in effect. Total budget of IPA II funds is EUR 11.7 billion. Given the status of potential candidate, BiH has the possibility to take part only in the first two policy areas (previously components) of IPA II program – i) institution and capacity building, and i) socio-economic and regional development. As regards agriculture, much is expected from pre-accession funds for policy area 4 – agriculture and rural development.

BiH signed the Stabilization and Association Agreement with the EU in 2008 which took effect in 2015. Adapted SAA was agreed in 2016 to take account of Croatia's entry into the EU. This agreement established free trade between the EU and BiH, and in the transition period BiH had specific preferential arrangements (import duties) which were reduced over time and disappeared while, in the meantime, BiH failed to create conditions to equalize the position of local agricultural producers, which realistically has not been possible in such a short period even if more elaborate reform activities than the actual ones had been undertaken.

BiH submitted its EU membership application on February 15, 2016. Currently, the country is preparing and providing answers to the questionnaire EU sent to BiH and depending on these answers EU will or will not grant BiH the candidate status. If BiH gets this status it will start negotiations and one of the important negotiation areas is agriculture. One of the prerequisites of EU accessions is that the candidate country establishes capacities to meet its obligations brought about by the EU membership, i.e. fulfilling the requirements from Reform Agenda.

The EU assessed that BiH is at the early stage of preparations and that some progress has been achieved in the area of food safety and veterinary and phytosanitary policies. Assessing the status BiH achieved¹³⁹, the Working Document singled out the following agricultural priorities: design and adopt a countrywide strategic plan for rural development and establish the national structures for obtaining pre-accession assistance to the agricultural sector through the Instrument for Pre-accession Assistance for Rural Development; further align its veterinary and phytosanitary control systems with European standards; and further upgrade its administrative capacity, in particular inspection services and laboratories.

In 2014-2017 period, EUR 165.8 million in grants has been allocated to BiH from IPA II program, and the allocation for the following three-year period (2018-2020) will be known soon.

10.2.3. BiH and CEFTA

CEFTA is abbreviation of Central European Free Trade Agreement. The principles of free trade (without tariffs) have been accepted by former socialist European countries which were outside the EU as a form of preparation for the free trade conditions within the EU. CEFTA rules are also aligned with the WTO rules.

Upon their entry into the EU, CEFTA members are obliged to leave this organization, and so the founders are no longer CEFTA members while its current parties are mainly Balkan countries with the EU membership candidate or potential candidate status. BiH has been CEFTA member since 2007. Around 15% of both BiH import and export in 2016 was between BiH and CEFTA members. In addition to BiH other CEFTA members include: Serbia, Montenegro, Macedonia, Albania and Moldova.

Views regarding benefits of BiH membership in CEFTA are quite controversial. BiH has bigger import from than export to CEFTA countries. In 2006 BiH import to export ratio was 67.7%. However, the situation is not favorable in other economies of this group either, hence it could be said that foreign trade between BiH and CEFTA follows the trends of overall BiH foreign trade. If the focus is narrowed down to only agricultural and food products, BiH recorded a deficit which has been declining over the years. In 2007 this deficit was BAM 907 million while in 2015 it was at BAM 582 million.

Reduced 2015 deficit was largely impacted by Croatia's entry into the EU which led to decrease in the BiH volume of trade with CEFTA. At that time problems begin to arise as Croatia, though it became an EU MS, insisted on keeping the preferential trade regime with BiH which it enjoyed while CEFTA member (zero or lower duty rate than for other EU MS). In the end BiH accepted that Croatia maintains preferential trade arrangements which it had as CEFTA member while the change of Croatia's status will have impact on the reduction of BiH trade with CEFTA and increase of trade with the EU (but also decrease of export from BiH into Croatia as stricter EU rules are applied to imports).

10.2.4. BiH and EFTA

European Free Trade Association (EFTA) was established in 1960. Presently, its members are: Island, Norway, Switzerland and Lichtenstein. Previously EFTA included some other countries which left this

¹³⁹ Commission Staff Working Document, Bosnia and Herzegovina 2016 report, SWD(2016) 365 final.

association after entering the EU (Great Britain, Austria, Denmark, Portugal, Sweden and Finland). EFTA market is relatively small with the total population of 13 million.

In 2013 BiH signed the Free Trade Agreement with EFTA. BiH foreign trade with the four EFTA members is balanced, and even with a slight surplus on the side of BiH while the share of agricultural products in this trade is relatively small.

10.3. Educational and R&D institutions in agriculture

Based on the data on total average yields, technological failures during production, insufficiently used available resources and other issue faced by agricultural producers in BiH, it is obvious that, in addition to other limiting factors, they lack knowledge. Knowledge can be acquired through regular and additional education and ad hoc trainings. The situation regarding the level of education of agricultural producers is rather unfavorable. A comprehensive survey conducted in RS in 2014 showed that only 2.5% of farmholders had formal education in agriculture (1.8% completed secondary agricultural school and 0.7% graduated from agricultural faculty). Since farms are the most numerous agricultural producers in BiH, lack of necessary knowledge directly impacts the overall sector results. This indicates the necessity for agricultural producers to acquire the needed knowledge and experiences subsequently through practical engagement in agricultural production, often learning on own mistakes and relying on family tradition which continues to apply the practice used by previous generations. Lack of formal specialized education indicates the need for life-long learning of agricultural producers through various trainings, where providers of agricultural extension services have an important role. The mentioned survey confirmed that 18.65% of agricultural producers take part in some sort of training in agricultural production during a year. The main information channels for agricultural producers (which is also a manner of learning in a broader sense) have been: TV (90%), radio (40%), local agronomist or veterinarian (35%), extension service (34%), newspapers (33%), agricultural pharmacy (31%), internet (27%) and cooperatives or associations (7%).

In BiH, agricultural sector labor force is educated in secondary agricultural schools and universities, i.e. agricultural, and agricultural and food science, and veterinary faculties. In addition to this, part of labor force is additionally trained through life-long learning programs.

Two state universities in Banja Luka and Istocno Sarajevo and one private university in Bijeljina educate agricultural labor force within first, second and third cycle of studies. In academic 2014/2015, 2,751 pupils in RS enrolled in secondary agricultural schools (12 schools) and 2,110 students enrolled in faculties of agricultural science and veterinary¹⁴⁰. In academic 2015/2016, 730 pupils¹⁴¹ in RS completed secondary school of agriculture and 195 students¹⁴² graduated from the Faculty of Agriculture.

In academic 2015/2016, 578 pupils in FBiH enrolled in food technologies (food processing), 1,409 in farming and livestock production, 60 pupils in horticulture and 479 pupils in veterinary school programs. These 2,047 pupils accounted for 2.3% of all pupils enrolled in secondary schools in FBiH. At the end of 2015, 207 pupils completed secondary school in the area of food processing, 523 in the area of farming and livestock production, 34 in the area of horticulture and 180 in veterinary¹⁴³. BiH

¹⁴⁰ RS Statistical yearbook 2016, RS Institute of Statistics, Banja Luka, 2016

¹⁴¹ Secondary education, Bulletin No 15, RS Institute of Statistics, Banja Luka, 2016

¹⁴² Higher education, Bulletin No 13, RS Institute of Statistics, Banja Luka, 2016

¹⁴³ Source: Secondary education in BiH Federation 2015, Statistical Bulletin 238, Sarajevo, 2016

Federation has 5 state (cantonal) faculties¹⁴⁴ of agricultural sciences and food technologies. In academic 2014/2015 there were total of 2,797 enrolled students¹⁴⁵. In the same academic year, 449 students enrolled to veterinary Faculty while 492 enrolled to Forestry Faculty.

On one hand, there is a lack of knowledge to achieve better results in agricultural production and on the other, there is a growing number of unemployed agricultural engineers¹⁴⁶. One of the main reasons for this is that small-scale farms cannot afford to employ an engineer of agriculture; they would have to share him/her with other farms in some way. Previously this was achieved through farmer's cooperatives which were the main leverage of extension services to farmers. Cooperative sector lost its former role and, with rare exceptions, fails to find a way to reach agricultural producers. Private companies (in various legal forms) took over almost the entire trade from cooperatives and only partially the advisory role and even that solely if they have some material gain from it (sale of equipment and inputs or contract farming). It is encouraging that there is a growing number of students at agricultural faculties coming from larger agricultural holdings who, after they complete their studies, return to family farms and continue family business in agriculture.

The gap between the needed and existing skills and knowledge of agricultural producers in BiH could be overcome by subsequent trainings. As a consequence of dissolution of the former system of trainings of agricultural producers due to war events and transition, a new structure of extension services in BiH was established through two EU funded projects (PFAP and ESP) at the end of 1990's. After the completion of these projects, agricultural extension services continued to function as public extension services the funding of which was covered by Entity or Cantonal level ministries of agriculture since it was not realistic to expect, among other things, these services to survive on commercial basis. Part of extension services to agricultural producers is still provided on project basis, with limited timeframe and geographical coverage, and within projects funded by international financial and development organizations/institutions (USDA, SIDA, IFAD, World Bank, etc.).

10.4. Extension services in agriculture

Republika Srpska: The beginnings of extension services are related to two EU projects which firstly established this service in North West parts of RS, and then extended it to other regions. The agricultural extension services in RS had been organized within the independent agency for 10 years and after reorganization of the RS Ministry of Agriculture, Forestry and Water Management the agency became part of the Ministry in 2013 as the Sector for Provision of Extension Services in Agriculture. This Sector has 78 employees and 7 regional centers (Banja Luka, Prijedor, Gradiška, Doboј, Bijeljina, Sokolac and Trebinje) in addition to the central office in Banja Luka. The scope of work of the Sector for Provision of Extension Services in Agriculture includes: provision of expert advices, knowledge, instructions and practical skills to agricultural producers and other clients; collection and processing of data at all levels of agricultural production; cooperation with educational and R&D institutions; collection and processing of data for market information system; collection of data for FADN system; encouraging development of rural areas and improvement of the quality of life in these areas; presentation of new varieties, hybrids, cultivated plants and agricultural technology; tasks related to reporting and forecasting; development of business plans; protection of healthy environment; assistance to establishing different forms of associations of farmers; registration of

¹⁴⁴ Agro-Mediterranean Faculty Mostar, Faculty of Agronomy and Food Technology Mostar, Biotechnical Faculty Bihac, Faculty of Agriculture and Food Sciences Sarajevo and Technological Faculty Tuzla

¹⁴⁵ Source: Higher education in BiH Federation 2014/2015, Statistical Bulletin 214, Sarajevo

¹⁴⁶ According to the RS Employment Office records, at the beginning of 2017 there were 540 unemployed engineers of agriculture of various areas of specializations in RS.

farms; provision of advices and instructions for standardization of production; monitoring, control and verification of productions which are part of the subsidies system, etc.

RS adopted the Agricultural Extension Services Strategy 2011-2015¹⁴⁷ whose validity period expired and was not updated in the meantime. However, it could be said that its main objectives remained unchanged: a) implementation of RS agricultural policy measures and its alignment with the EU directives for support to development of agriculture and rural areas, as well as contributing to implementation of RS Strategic Plan of Rural Development; b) designing extension services that would assist agricultural producers and other rural population to increase competitive abilities (profitability) in their main production, and stimulate generating additional and supplementary income; c) designing extension services which would implement rural development projects as joint overall development programs and which would both territorially and expertise-wise cover the entire territory of RS; and d) designing extension services which would operate as public service entirely funded from the budget with the possibility of funding from other projects and as specific or private advisory service funded from non-public and other sources (tenders, public call for proposals, etc.). All this indicates that the RS is committed to have both public and private extension services operating in the field simultaneously, while public funds would only finance the work of public extension services.

Chamber of Agricultural Engineers has been operational in RS since 2009 based on the RS Law on Chamber of Engineers. The membership is voluntary and Chamber organizes vocational education for all its members and issues, renews or revokes permits for performing specific expert tasks.

There are three R&D institutes registered in the area of agriculture and veterinary in RS: RS Institute of Agriculture in Banja Luka; Institute for Genetic Resources of Banja Luka University; and RS Veterinary Institute 'Dr Vaso Butozan' in Banja Luka. Over the past years, these Institutes invested considerable funds to procure necessary equipment, train personnel and accredit specific methods of laboratory analyses. In addition to independent institutes, scientists at universities are also engaged in research and development within university institutes as their sub-organizational units. The existing R&D base consisted of facilities, equipment and researchers needs to be further developed and expanded, in particular in the context of meeting the ever complex prerequisites for verification and control of quality and certification of composition and origin of agricultural products, accumulated in the process of harmonization of local legislation with the EU acquis. Human and material resources of R&D institutions are not sufficiently utilized for development of agriculture, mostly due to a lack of efficient mechanisms to link them with end beneficiaries, whether directly or indirectly¹⁴⁸.

BiH Federation: If we consider that contemporary transfer of knowledge in agriculture includes a number of systematically linked processes resting on education, agricultural research, application of information technologies, continuous training of advisors, etc. it can be said that FBiH has fragments of this system in place. FBiH still has no capacities that would enable implementation of even the outdated approach to transfer of knowledge in agriculture which is almost entirely resting on agricultural extension services and operation according to the model of occasional trainings and visits to farmers. At the same time, training of farmers mainly includes learning good agricultural practices with elements of transfer of knowledge while visits come down to proposals for resolving burning issues of agricultural production a farmer faces. Particular problem is related to limited local funds for

¹⁴⁷ Agricultural Extension Services Strategy 2011-2015, RS Government, 2011

¹⁴⁸ E.g. one such example was a model of competitive grants for R&D within the Small-scale Commercial Agriculture Development Project funded by the World Bank.

applied research in agriculture, and transfer of their results should be the focus of activities of the system of transfer of knowledge to producers¹⁴⁹.

In FBiH the Extension Services Strategy 2017-2020 was drafted and it is expected that parliamentary procedure will be initiated soon and Strategy adopted. This document clearly defines the strategic objectives of provision of extension services, including: (i) development of extension services which will assist agricultural producers and other rural population to increase their competitive abilities (profitability) in their main line of business, and encourage generation of additional income; (ii) development of extension services which will assist in development, implementation and application of strategic documents and regulations in agriculture, and cooperate as regards the alignment of regulations for support to development of agriculture and rural areas; (iii) development of extension services which will implement and participate in implementation of rural development projects as joint overall development programs and which will both territorially and expertise-wise cover the entire FBiH; and (iv) development of extension services which will act both as public service entirely funded from the FBiH budget, budgets of Cantons and municipalities and other sources, and as private service funded by its own funds and from other sources (grants, tenders, etc.).

The FBiH 2007 Law on Agriculture defines measures of institutional support, including: support to vocational training in agriculture, establishment and operations of a Chamber of Agronomists, establishment and operations of an Agricultural Research Council, and establishment and operations of Agricultural Extension Service. All these measures could be classified under the support to transfer of knowledge in agriculture; however only partial implementation was recorded in the past period. Chamber of Agronomists and Agricultural Research Council have not been established; while support programs allocate trifling funds for vocational training in agriculture. Agricultural extension services in FBiH are still fragmented to Cantonal levels and there is some coordination from the Department for Expert and Extension Services, Sector of Agriculture, FBiH MAWMF. The consequence of FBiH administrative organization is reflected in the different types of organization of Cantonal extension services in agriculture. In 2013 all ten FBiH Cantons had total of 41 persons engaged in extension services who are very often engaged in other tasks, i.e. tasks related to administering subsidies in agriculture.

¹⁴⁹ The system of agricultural extension services in BiH Federation is regulated by the Law on Agricultural Extension Services (FBiH Official Gazette No 66/13) secondary legislation passed based on this Law: Rulebook on Training, Certification and Register of Farm Advisors (FBiH Official Gazette No 33/15); - Rulebook on Manner and Procedure for Issuing Licenses, Entry and Keeping Data in the Register of Extension Services in Agriculture (FBiH Official Gazette No 38/15); and – Rulebook on Methods of Advisory Work (FBiH Official Gazette No 44/14).

11. Financing of agriculture

Farms and business entities fund their investment and current needs from various sources: own sources, loans from commercial banks and MCO/MCC, donations, subsidies and other sources (leasing, joint investments, etc.). Small-scale agricultural producers, i.e. agricultural holdings, traditionally do not use external funding sources much while business entities (joint stock, limited liability, farmers' cooperatives, etc.) are mostly focused on loans. Use of some less developed forms of funding such as leasing, factoring, forfaiting, warehouse receipt financing, etc. are almost non-existent in practice.

11.1 Credit financing of agriculture

A survey of the farm investment financing in RS was implemented in 2014 and showed that farms usually finance their investments from own funds (55%), followed by loans from microcredit organizations/companies (17%) and commercial banks (14%), subsidies (9%), donations (3%) and other sources (2%). Similar structure of funding sources for investments is shown by the RS Institute of Statistics data regarding investments of legal persons in agricultural sector for the same year (2014), but this data shows somewhat bigger share of own funds, and smaller share of donations and subsidies. This survey confirmed that the primary criterion for farmers when deciding whether to take a loan is the level of interest rate. The main reasons for not using loans included lack of possibilities to provide guarantees for loan repayment and high interest rates.

Table 34: Breakdown of loans to agriculture in FBiH and RS (2011-2015)¹⁵⁰

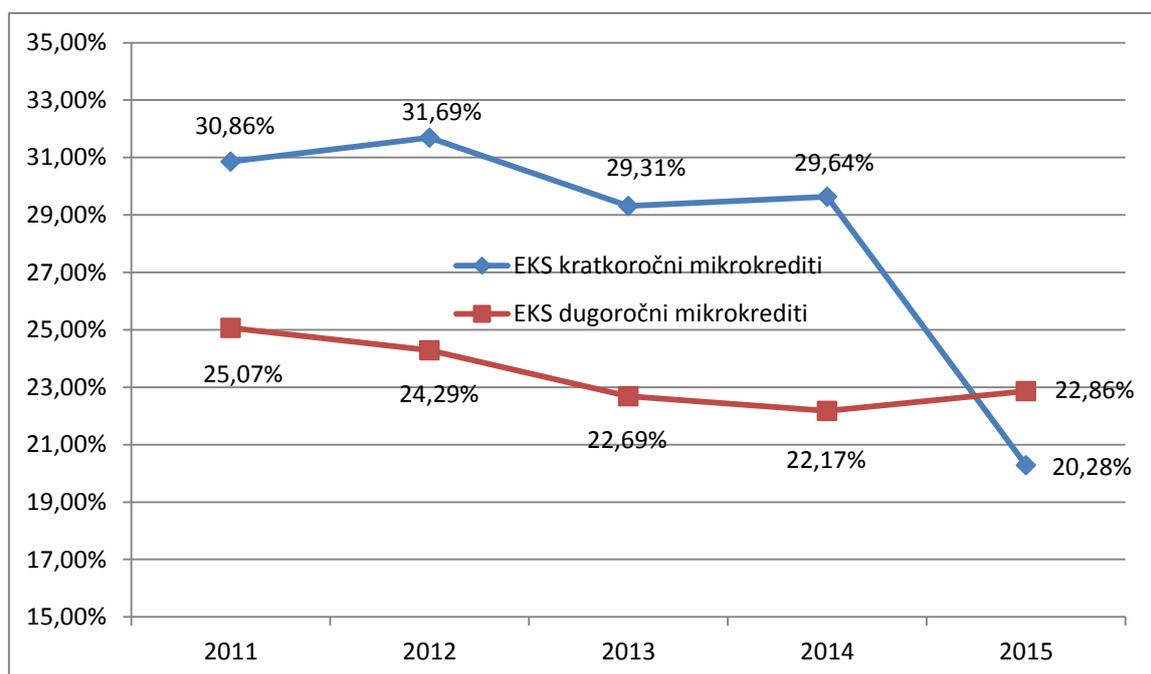
	2011.	2012.	2013.	2014.	2015.
a. BiH Federation					
Loans to legal persons for agriculture (000 BAM)	104.521	109.873	112.695	123.863	121.964
Share in total loans to legal persons (%)	1,9%	2,0%	2,0%	2,2%	2,1%
Microcredits to legal person for agriculture (000 BAM)	184	232	281	269	260
Share in total microcredits to legal persons (%)	1,7%	2,2%	3,0%	3,7%	3,7%
Microcredits to natural person for agriculture (000 BAM)	136.431	143.824	141.852	128.490	122.362
Share in total microcredits to natural persons (%)	33,8%	35,4%	36,7%	34,3%	35,1%
b. Republika Srpska					
Loans to legal persons for agriculture, hunting and fisheries (000 BAM)	98.808	119.971	137.113	122.788	125.453
Loans to legal persons for agriculture, hunting and fisheries (%)	1,8%	2,1%	2,2%	2,0%	2,0%

¹⁵⁰ Report on the State of Banking Sector in RS of the RS Banking Agency, and Information on FBiH Banking System and Information on Microcredit System in FBiH of the FBiH Banking Agency for relevant years.

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Microcredits to legal person for agriculture (000 BAM)	456	298	214	122	97
Microcredits to legal person for agriculture (%)	4,1%	4,7%	4,6%	4,9%	3,8%
Microcredits to natural person for agriculture (000 BAM)	63.041	64.838	57.050	64.838	68.719
Microcredits to natural person for agriculture (%)	35,5%	48,0%	38,4%	42,8%	43,0%

In BiH, loans to agriculture are provided by commercial banks, and microcredit organizations (MCO) and microcredit companies (MCC)¹⁵¹. RS passed a law on savings and loan organizations; however this type of financial institutions did not take root. Banks are mostly oriented towards business entities (they even do not separately classify loans awarded to natural persons for agricultural activities) and MCO mostly focus on natural persons among which there is a substantial number of farms. Legal persons owed between BAM 200 and BAM 250 million (around 2% of principal amount of the total approved loans to legal persons) to commercial banks in BiH. The number and amount of microcredits awarded to legal persons by MCO/MCC is negligible; however they are the main creditors of farms whose debt to MCO is around BAM 200 million, accounting for 35-50% of their credit portfolio. MCO approve loans to farmers fast and through a simplified procedure but the cost of this are high interest rates. The trends of interest rates on short- and long-term MCO loans in FBiH for 2011-2015, based on their status in fourth quarter of the relevant year, are given in the chart below¹⁵².



¹⁵¹ At the end of 2016, 16 commercial banks and 12 MCO registered in FBiH, and 8 commercial banks and 7 MCO registered in RS (total 24 banks and 19 MCO in BiH) had a work permit.

¹⁵² During the same period, RS Banking Agency did not report on the level of effective interest rates of MCO in RS, hence their trends could not be shown in this chart.

Chart 21: Trend of pondered effective interest rates on microcredits in FBiH¹⁵³

Formally, all commercial banks have some loan products for agriculture. However, banks perceive agriculture as a highly risky sector and therefore use rigorous procedures when approving agricultural loans or calculate higher risk margins (no loan repayment); consequently interest rates for agricultural loans are on average somewhat higher than for other, non-agricultural loans.

Sound economic logics dictate that it is justified to go into debt only if the profit rate is higher than the interest rate, which can be met only by a few investors in agricultural sector, and on which the banks insist more rigorously when evaluating loan applications. This is the reason microcredit organizations are the only other option for farmers. The absurd situation is that low-profit agriculture is mostly funded by expensive microcredits.

RS Government partially solved this problem by establishing earmarked credit lines for agriculture through RS Investment and Development Bank (RS IDB). Since 2008, RS IDB had two loan facilities: loan facility for agriculture targeting entrepreneurs and legal persons, and loan facility for microbusinesses in agriculture targeting agricultural holdings.

Table 35: Agricultural loans contracted through RS Investment and Development Bank (RS IDB) loan facilities (2008-2016)¹⁵⁴

		Loan principal (BAM)	Repayment schedule (years)	Grace period (years)	Interest rate	Loans approved	Approved amount (BAM)
1.	Loans for agriculture	≤10.000.000	≤ 10	≤ 3	≤ 4,4%	114	83.482.263
2.	Loans for microbusiness in agriculture	≤50.000	≤ 10	≤ 3	≤ 4,7%	2.067	35.503.584
3.	Loans for agriculture and processing industry	≤5.000.000	≤ 10	≤ 3	≤ 5,4%	20	41.017.211
4.	Loans for agriculture and agricultural products processing industry	≤5.000.000	≤ 10	≤ 3	≤ 5,4%	28	39.028.797
	Total:					2.229	199.031.855

Though the number (over 2,000) and amount of principal (BAM 119 million) of agricultural loans (processing industry excluded) approved through RS IDB seem impressive they are placed over a 9-year period, hence it is average of 242 loans annually or on average BAM 13.2 million of principal per

¹⁵³ Information on microcredit system in FBiH for the relevant years (2011, 2012, 2003), FBiH Banking Agency

¹⁵⁴ Loan facilities under 3 and 4 were abolished as at December 23, 2015.

year. These loans are placed via intermediaries, commercial banks and MCO/MCC with limited interest margin, this being the reason loan placement has not been larger. Financial institutions avoid offering more favorable loans as in this way they pose competition to themselves and make placement of own loans with double the interest rates more difficult. Certain loan facilities for agriculture are provided by some projects, primarily those funded by International Fund for Agricultural Development (IFAD), which try to provide favorable loans to specific target groups and less developed areas.

BiH Federation also has its Development Bank which directly or via intermediaries provides loans to agriculture. Currently, the Bank offers loans to fund agricultural production with the repayment schedule ranging from 18 months to 10 years, grace period in accordance with the line of business and effective interest rate of 3.1% annually¹⁵⁵. Beneficiaries of these loans could be either legal or natural persons. To date experiences show the need for reconstruction of the FBiH Development Bank to support sectors which could be drivers of FBiH development, including: review of management model, clearer identification of objectives and criteria to grant loans which requires implementation of measures and adoption of a new law which would include mechanisms to control the work of banks, placement of funds and evaluation of impacts.

Financial organizations have a network of organizational units which covers the entire BiH and are more represented in developed than in undeveloped regions (which often correspond to rural areas). They have various loan and other products and procedures which are often not adapted to the specificities and needs of agriculture. The same is applicable to the financial institution personnel (more of banks than of MCO) who do not know well the market situation, agricultural production technologies, its standards, turnover cycles, and other specificities. Due to their incompetence they categorize the analyzed investment projects as risky and decline their funding. Agricultural holdings usually have no records on their business (agricultural accounting) and the country does not have some benchmark data (e.g. data from FADN system) which would be used to look into the objectivity of presented business plans. One of the issues when approving loans are the collaterals farmers present as a guarantee of loan repayment which are not acceptable to the banks. This issue is partially resolved through intermediation of RS Guarantee Fund which provides guarantees for agricultural loans. BiH Central Bank keeps the central register of loans where all debtors and their loan history are registered which enables financial institutions to evaluate their creditworthiness realistically and objectively. Financial illiteracy is present among rural population, and farmers also, who avoid borrowing due to lack of knowledge of the loan approval and repayment procedures and fear of debts.

At the end of 2016 banking sector in BiH (in particular banks) were over-solvent, i.e. with substantially more deposits than the regulations on capital requirements require. This is a result of general increase in deposits and decrease of loans.

Unable to obtain (favorable) loans, farmers turn to subsidies and donations as alternative funding sources or give up on investments.

A donation syndrome is found in Bosnia and Herzegovina, caused by post-war reconstruction processes and presence of a large number of humanitarian organizations. Rural infrastructure was reconstructed owing to donations which were also used to partially revitalize production resources of agricultural holdings (facilities, livestock numbers, machinery); however, psychological dependence on these donations developed which is difficult to root out. Though donations are generally declining, and thus those to agriculture, they are still present in some parts of RS/FBiH and are drivers of development of certain subsectors such is, for example, raspberry production.

Another dependence is that on subsidies, various types of financial support for the ongoing agricultural production or investments into agricultural assets. It is in a way imposed by deteriorated

¹⁵⁵ Available at <http://www.rbfbih.ba/bih/txt.php?id=21> (accessed on February 27, 2017)

economic position of agricultural holdings which were first ‘allowed’ to enter the free market in the process of transition, then burdened with VAT on inputs and outputs (which have not been taxed previously) and finally ‘finished off’ by introduction of free trade regime through CEFTA and SAA agreements. The only remaining option is to cover the losses caused by the increase in purchase price and decrease in selling price of agricultural products by obtaining subsidies, i.e. various types of state aid, as the EU has been doing for 50 years now. The award of agricultural subsidies in BiH is accompanied by (at least) two issues: insufficient agricultural budget and outdated models of awarding subsidies which are not in line with the EU or WTO rules.

Agricultural insurance in BiH is also undeveloped. A small number of farms have insurance policies for crops, fruits and animals, despite the fact that both agriculture ministries subsidize part of costs of agricultural insurance.

11.2. Agricultural insurance

Due to climate changes and other unfavorable manifestation of natural phenomena, substantial extreme damages to agricultural production have been ever more frequent lately. One of the ways of protection is to get insurance against these risks. Crops, fruits, animals, facilities and farm equipment could be insured.

Republika Srpska. Data collected from insurance companies operating in RS showed that only 155 policies were issued in 2014 and 221 in 2015 (as much as half of insurance companies do not offer agricultural insurance at all!), whereas more policies related to crops and fruits than to animals. In both years disbursed damages exceeded the premiums collected under the agricultural insurance. A survey of agricultural producers determined that 74% of them suffered some damages over the past three years (due to droughts, floods, hail or death of animals) whereas only 12% had their crops, plantations, livestock or property insured. It could be indirectly concluded that maximum 2% of the value of agricultural production is covered by agricultural insurance, which increases the need for extraordinary indemnification from other sources in cases of natural disasters. Farmers explain their reluctance towards agricultural insurance by high insurance costs, lack of knowledge about the insurance terms and conditions and uncertainty of indemnification of damages, while insurance companies justify it by insufficient knowledge about the conditions and technology of agricultural production, difficult risk and damages assessment, lack of specialized personnel, poor purchasing power of clients, higher technical costs of contracting service and settlement of claims, etc.

BiH Federation. Similar situation is in BiH Federation. Though there are no concrete facts as in the case of RS, there is quite a small number of farmers in FBiH who decide to have some type of agricultural insurance. The reason of farmers’ resistance to agricultural insurance lies in high financial allocations farmers are not ready for yet. On the other hand, it seems that insurance companies do not recognize the sensitivity of this issue and treat agricultural sector as any other branch of industry. IFC Study (2014)¹⁵⁶ published an interview with two insurance companies: Bosna Sunce and Sarajevo. Bosna Sunce insurance company offers possibilities to insure agricultural production though it provides the insurance reluctantly given the high risks, in particular presently given the substantial climate changes. Bosna Sunce as well as Sarajevo insurance company does not invest in agriculture. Too high risk along with lack of knowledge about the sector are one of the important factors for the current state of play as it is much safer to invest in securities, deposits and businesses which are highly expected to yield profits.

¹⁵⁶ IFC Study (2014): Financial and Commodity Value Chain Flow Mapping of Dairy and Fruits and Vegetables (Selected Products) in Bosnia and Herzegovina

12. Social & Economical Assessment

Number of inhabitants living in rural areas is important for rural development. Though BiH does not have official classification of its territory to urban and rural parts, different instructions have their own estimates regarding the distribution of population to urban and rural areas. In 2013 UNDP determined that 61% of population in BiH lives in rural areas, thus ranking it as one of the most rural countries in Europe¹⁵⁷.

According to the 2004 Households Survey, rural households in BiH are somewhat larger in number than urban households, they had 3.63 members on average and 81% of rural households were headed by men¹⁵⁸.

All rural households were covered by a survey in 2012 and divided into 6 typical groups which resulted in unexpected data that only 6% of rural households in BiH generate their income mainly from agriculture and as much as 52.1% from employment and 35.9% for various types of support (the remaining 2.5% from occasional services; 1.3% from property income; 1.3% from mixed source; and 1% from self-employment). 35% of surveyed rural households has not been engaged in agriculture at all, 16% only had gardens (<0.1 ha or LSU¹⁵⁹), 37% a small holding (0.1-3 ha or LSU) and only 13% could be considered commercial agricultural holdings (>3 ha or 3 LSU)¹⁶⁰. Though this situation is not necessarily a true reflection of the state of play (since it is based on a survey sampling) it indicates the complexity of situation in rural areas in BiH where agriculture is not the main line of business and primary source of income for substantial number of population. Rural population turning to other sources of income voluntary or forcedly is a consequence of degradation of rural areas reflected in the decline of arable areas and reduction of livestock units, the main causes of which are inability to sell products and dissatisfaction with (low) buyout prices.

Compared to urban areas, rural areas lag behind regarding the level of infrastructure. In the absence of other sources (at least at the level of BiH) the data presented below is that from the 2012 Household Survey. 83% of rural households had indoor water taps, 32% had sewerage (and 62% had septic tanks), and 99% used wood or coal for heating, 63% had a mobile phone, 50% a PC, and 44% internet connection. The closest in distance to rural households in BiH are shops, primary school and local clinic, and the furthest are post office, bank and hospital. The primary meeting places for rural population are cafes and religious facilities, while they spend their free time usually by watching TV¹⁶¹.

12.1. Demographic situation and trends in rural areas

Republika Srpska has seen negative demographic trends over the past 10 years while FBiH has experienced them since 2013. The overview of natural movement of population in FBiH and RS in 2006-2015 period is shown in the table below.

¹⁵⁷ National Human Development Report 2013, Rural Development in Bosnia and Herzegovina: Myth and Reality, UNDP, 2013

¹⁵⁸ According to: Steve Goss, Rural Households Survey: Analysis, UNDP, 2012

¹⁵⁹ LSU – livestock standard unit

¹⁶⁰ According to: Steve Goss, Rural Households Survey: Analysis, UNDP, 2012

¹⁶¹ According to: Steve Goss, Rural Households Survey: Analysis, UNDP, 2012

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Table 36: Natural movement of population in FBiH and RS¹⁶² in 2006 – 2015 period

Year	Born	Dead	Population growth	Population growth rates
BiH Federation				
2006.	21.602	18.678	2.924	1,3
2007.	21.715	19.428	2.287	1,0
2008.	22.920	19.480	3.440	1,5
2009.	22.913	20.022	2.891	1,2
2010.	22.382	20.482	1.900	0,8
2011.	21.228	20.208	1.020	0,4
2012.	21.472	20.859	613	0,3
2013.	20.145	20.465	-320	-0,1
2014.	19.880	20.283	-403	-0,2
2015.	19.358	21.703	-2.345	-1,0
Republika Srpska				
2006.	10.524	13.232	-2.708	-1,9
2007.	10.110	14.146	-4.036	-2,8
2008.	10.198	13.501	-3.303	-2,3
2009.	10.603	13.775	-3.172	-2,2
2010.	10.147	13.517	-3.370	-2,4
2011.	9.561	13.658	-4.097	-2,9
2012.	9.978	13.796	-3.818	-2,7
2013.	9.510	13.978	-4.468	-3,1
2014.	9.335	14.409	-5.074	-3,5
2015.	9.357	15.059	-5.702	-4,0

¹⁶² Demographic Bulletins Nos 14 and 19, RS Institute of Statistics, 2011 and 2016

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Sources for RS: Demographic Bulletins Nos 14 and 19, RS Institute of Statistics, 2011 and 2016

Sources for FBiH: Demographic Statistical Bulletins (Natural Movement of Population per Place of Residence) of FBiH Institute of Statistics

These and other data are not processed separately for urban and rural areas for which neither BiH nor its Entities have adopted classification methodology.

In addition to migration from rural to urban areas, migrations abroad are substantial. After the migration wave of 1960's and 1970's, a new wave of migrations occurred during the 1992-1995 war¹⁶³. UNHCR estimated that out of 1.2 million of displaced persons from BiH around 750,000 still lives outside the country¹⁶⁴. Migrations continued in postwar period, in particular those of young highly qualified persons emigrating for economic reasons. Numerous BiH Diaspora has property and family ties with places they left and each year sends considerable foreign currency remittances and spends part of its income during their visits to homeland, which constitutes an important portion of income for rural population. Unfortunately, Diaspora savings rarely find their place in investments into production. World Bank estimated that 11.4% of BiH GDP comes from remittances¹⁶⁵.

Republika Srpska. After the publication of results of 2013 population census some earlier estimates of the total number of population had to be revised because, according to the latest census, RS has less population than previously estimated¹⁶⁶. However, the records of births and deaths in the past period, which are not questionable, confirm negative demographic trends (40 thousand inhabitants less in 10 years) which are additionally exacerbated by temporary or permanent emigration. According to the data on the number of births and deaths, RS has had negative population growth rate over the past 10 years.

There are 7 cities in Republika Srpska, 57 municipalities, and 2,755 inhabited places. The most densely populated parts of RS with more than 100 inhabitants/km² are Lijevče polje and Semberija while least densely populated areas are those of Southwest parts of Krajina, Herzegovina and Ozren.

Table 37 RS main demographic indicators¹⁶⁷

Size of RS in km ²	24.810
Number of cities in RS	7
Number of municipalities in RS	57
Number of inhabited areas	2.755
Number of inhabitants (census, 2013)	1.170.342

¹⁶³ According to the World Bank Report BiH is ranked high as a country with 44.5% of population living in emigration (Migration and Remittances Factbook 2016, third edition, The World bank group, 2006)

¹⁶⁴ According to: Steve Goss, Rural Households Survey: Analysis, UNDP, 2012

¹⁶⁵ Migration and Remittances Factbook 2016, third edition, The World Bank group, 2006

¹⁶⁶ Estimated population in RS for 2013 was 1,425 million, while 2013 census identified 1,170 million inhabitants

¹⁶⁷ Demographic Statistics, Second Edition, RS Institute of Statistics, 2016 and 2013 Census of population, households and dwellings in RS, Census Results, RS Institute of Statistics, Banja Luka 2016

All municipalities (and cities) in RS are divided into developed, medium developed, undeveloped and extremely underdeveloped, the list of which is updated annually by the RS Government which then passes a relevant decree. This classification impacts the right to specific benefits for municipalities falling under the undeveloped and extremely underdeveloped category.

BiH Federation. According to the 2013 population census 2.219.220 inhabitants live in BiH Federation. They are located in 3,336 inhabited places, 74 municipalities and 6 cities on the total territory of 26,109.7 km².

Table 38 FBiH main demographic indicators

Size of FBiH in km ²	26.109,7
Number of cities in FBiH	6
Number of municipalities in FBiH	74
Number of inhabited areas	3.336
Number of inhabitants (census, 2013)	2.219.220

Most densely populated areas in BiH Federation are located on the territory of Sarajevo Canton urban municipalities (Stari Grad, Centar, Novo Sarajevo, Novi Grad), almost all Tuzla Canton municipalities and several municipalities in Zenica-Doboj Canton. Other areas of FBiH have the characteristics of rural area and account for the largest portion of FBiH territory. These are primarily Canton 10, West-Herzegovina Canton and Central Bosnia Canton.

12.2. Rural areas

Classification of certain territory as urban or rural area is primarily done based on the population density, i.e. number of inhabitants per km². OECD criteria (which is used by the EC) predominates globally according to which the threshold between urban and rural areas is the population density of 150,000 inhabitants km².¹⁶⁸ Further steps include aggregating data at the lowest administrative level depending on the % of population living in smaller areas and the size of the city these areas gravitate to. In the case of BiH, currently it is possible to classify urban and rural areas depending on the number of inhabitants living in individual municipalities (cities) but not at the lower level of smaller inhabited areas (villages). In addition to this classification, a different, more moderate classification is used according to which areas with <50 inhabitants/km² are mostly considered rural, areas with 50-100 inhabitants/km² semi-urban, and areas with >100 inhabitant/km² mostly urban. Thus, 2013 census data has been processed so as to facilitate the use of both approaches.

Republika Srpska. Based on data from 2013 population census published by the RS Institute of Statistics for the territory of RS, population density was calculated at the level of municipalities (details in table below). It has been determined that only 2 smaller municipalities (total size of 65 km²) meet the primary criteria for urban areas. All other areas have less than 150 inhabitants/km² and are treated as rural areas. Population density of as much as 2/3 of RS territory is less than 50 inhabitants/km².

¹⁶⁸ With some exception, this threshold for Japan and Kore is 500 inhabitants/km²

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Table 39 Urban and rural areas in RS

		Type	Size km ²	Number of inhabitants	Population density dwelling/km ²	% territory	% population
1.	> 150 inhabitants/km ²	Urban	65	24.838	382,12	0,26%	2,12%
2.	100-150 inhabitants/km ²	Rural	2.973	406.848	136,85	12,0%	34,8%
3.	50-100 inhabitants/km ²		5.331	374.040	70,16	21,5%	32,0%
4.	0-50 inhabitants/km ²		16.441	364.616	22,18	66,3%	31,2%
	Total RS		24.810	1.170.342	47,17	100,0%	100,0%

Source:

Of course, if additional criteria would be applied at lower administrative level (village), some of the municipalities would perhaps meet the criteria to move from rural to urban areas.

BiH Federation. Based on the data on population and size of municipalities in BiH Federation from 2015 of the FBiH Planning and Development Institute, population density was calculated at the level of municipalities (details in the table below) which were then categorized as rural or urban areas. According to the common criteria (population density less than 150 inhabitants/ km²) it was determined that 84.4% of FBiH territory is rural accommodating 51.8% of FBiH population. Population density of almost half of FBiH territory (47.5%) is less than 50 inhabitants/km².

Table 40 Urban and rural areas in BiH Federation (2015)

		Type	Size km ²	Number of inhabitants	Population density dwelling/km ²	% territory	% population
1.	> 150 inhabitants/km ²	Urban	3.559,7	1.124.453	315,9	13,6	48,2
2.	100-150 inhabitants/km ²	Rural	3.512,9	417.508	118,8	13,5	17,9
3.	50-100 inhabitants/km ²		6.623,8	500.654	75,6	25,4	21,4
4.	0-50 inhabitants/km ²		12.413,3	291.733	23,5	47,5	12,5
	Total FBiH		26.109,7	2.334.348	89,4	100,0	100,0

12.3. State of rural areas in RS

Additional surveys on the state of rural areas have not been done for the needs of development of this strategic document. Therefore, data from some earlier surveys conducted for these purposes in RS (surveying 724 agricultural households at the beginning of 2014) will be presented below.

Republika Srpska.¹⁶⁹ The average number of members of agricultural households is 4.21 out of which 2.21 are male and 2.00 female members, of average age of 41.75 years. In 90.47% of cases the farmholders are male members of the household, while women account for only 9.53% of farmholders and mostly of elderly, single member farms. At the first glance the educational structure of agricultural holdings does not seem unfavorable since 36.64% of members completed secondary school, 31.79% of members completed primary school, and only 3.83% of members of agricultural holding have completed university education. However, only 2.49% of them have formal education in agricultural production (1.80% completed secondary agricultural school and 0.69% graduated from the faculty of agriculture) while as much as 92.82% of them acquired their experience only through practice.

According to the survey results, extension services of the Ministry of Agriculture, Forestry and Water Management were used only by one third of agricultural holdings (32.04%). Agricultural producers use number of ways to keep informed, and obtain information from TV, radio, newspapers and magazines, internet, local agronomists and veterinarians, and agricultural pharmacy. The survey confirmed the small role of cooperatives and associations in disseminating information and providing training to agricultural producers. On the other hand, producers are very much aware of the need for information, and survey results show that the largest needs indicated are those regarding information about subsidies, market, new knowledge and technologies, and loans. Survey results showed that only 2.5% of agricultural holdings analyze soil samples, and only 5.39% uses PC to keep records on farm production. The survey found that only 7.46% of farms are included in the VAT system, which, on one hand, testifies about the poor intensity of their agricultural production while, on the other hand, it is a confirmation of poor understanding of advantages of having one's business part of the VAT system.

Most farmholders had the status of agricultural producers (51.93%), around one fifth of them are retired persons (20.58%) while a smaller number worked for an employer (17.27%) and others had some other status (entrepreneurs, students, unemployed, etc.). Sale of agricultural products was the main source of income of agricultural holdings.

Table 41 Structure of annual income of farms

Type of income	Farms generating the relevant income type %	Average level of income at annual level KM/year
Sale of agricultural products	81,35%	11.610,18
Wage with employer	32,6%	9.335,00
Private business	2,62%	32.210,53
Services	4,83%	4.591,43
Seasonal job	4,83%	3.100,00
Income from real estate	0,41%	4.333,33

¹⁶⁹ The presented data is taken from the survey of 724 of agricultural households on the RS territory (according to: Vaško Ž., Ostojić A., Rokvić G., Mrdalj V., Figurek A., Brković D., Agriculture and Rural development in Republika Srpska until 2020, Banja Luka University, 2015)

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Remittances	0,69%	1.748,00
Support from relatives/children	2,35%	3.805,88
Pension	36,6%	4.298,52
Social aid	2,49%	2.123,89
Other	1,93%	5.544,43

One fourth or 23.48% of farms in RS have another income generating activity on their farms. The most common type of this income generating activity is processing of agricultural products (64.71%) and forestry (15.88%). Other activities such as crafts and wood processing are also in place but at only 5-10% of farms. It is interesting to note that rural tourism and energy generation from renewable sources, which are the most common other income activity at the EU level, are entirely undeveloped at the level of rural households in RS or occur in sporadic and individual cases.

Agricultural holdings in RS are relatively well equipped with machinery; however these machines are outdated (e.g. combine harvester less than 10 years old was not found with any of the surveyed farm). On average over 70% of farms have a tractor and 18% have more than one. On the other hand, almost 90% of tractors are older than 10 years. Farms are also relatively well equipped with attachments and over 60% of farms have a trailer. Other types of machinery are represented in smaller percentages and on a few farms.

Similar as in the case of machinery, agricultural holdings have the main facilities for livestock production and storage for agricultural products in place. Almost every farm has facilities for cattle, pigs, sheep and poultry, while most farms also have facilities to store machinery and maize. On the other hand, the utilization rate of these facilities ranges from 55% for cattle facilities to 70% for storage facilities. A small number of farms have facilities such as driers, trench silos, cold storages and glasshouses while the number of greenhouses is somewhat bigger with around 30% of farms with some type of a greenhouse.

Agricultural producers sell agricultural products mostly through short distribution channels.

Table 42 Methods of placement of agricultural products on the market

Mode of sale	Percentage
Directly on farm	54,28%
Organized direct sale	8,01%
Markets/bazaars	29,83%
Sale to dealers	28,18%
Processing industry	15,19%
Association	0,83%
Cooperative	0,83%

Comparing the structure of products placed on the market and modes of their sale, it can be concluded that large portion of farm produces end up in the so-called informal sales channels and remain unregistered in statistical records; this is most present in livestock production, i.e. regarding sale of livestock. Meat is a product with the highest share in farm sales in all regions. Vegetables has the biggest share in sales in Mediterranean region, cereals in flat and dairy products in hilly an mountainous regions.

According to the survey results, around 50% of registered agricultural holdings in RS use subsidies provided by ministries. As regards loans, only 12% of agricultural holdings use loans to finance agricultural production. Average loan amount and terms and conditions of loan repayment suggest that that these are mostly microcredits producers use to purchase raw materials and small-scale machinery. As expected, agricultural holdings in flat regions largely use subsidies (50.17% for production and 5.39% for investments) and loans for agriculture (17.51). The smallest number of farms which use subsidies is found in hilly and mountainous regions where also the smallest number of farms uses loans.

The future expectations of RS agricultural producers are restrained; over 50% of farms intent to continue with the same production without any changes. The readiness for modernization and increase of the volume of production was expressed by only 24% of farms. It is also evident that majority of agricultural holdings intend to continue their engagement in agricultural production while only 10% intends to launch additional activities on the farm and only 6% of them intend to quit agricultural business entirely.

Very few agricultural holdings expect benefits from the EU integration process with only 22.5% of them expecting benefits from pre-accession funds. Over 60% of agricultural producers in RS believe the state should allocate more funds to support the poor, which confirms the dependent status of such farms and speaks about the social position of rural areas in RS.

Table 43 The biggest constraints for future farm production

Constraint	Percentage of farms indicating this constraint
Finances	59,25%
Market	50,28%
Lack of labor force	23,62%
Lack of land	21,27%
New technologies	14,50%
Knowledge	12,98%
Small volume of production	12,02%

The equipment level of farms is one of the important prerequisites for agricultural production. This is primarily related to agricultural machinery but also other types of equipment such is, for example, equipment in facilities for livestock production or indoor production of vegetables.

Agricultural holdings are relatively well equipped with the main agricultural machinery, which is, however, old and often outdated. There is a small number of attachments per tractor, hence

producers are forced to outsource services or improvise execution of some works. Over 70% of farms have a tractor and 18% of them more than one. On the other hand, almost 90% of tractors are 10 and more years old (not one farm had a combine harvester less than 10 years old). Farms are relatively well equipped with tractor attachments (plow, disc harrow, trailer) while other types of tools (sowing machines, sprayers, manure spreaders, cisterns, diggers, etc.) are represented in far smaller numbers. The survey confirmed far better equipment level of farms in flat regions of RS and poor levels in hilly and mountainous regions. Another survey conducted in 2016 on a sample of 398 farms registered with the Register of Agricultural Producers showed that 82% of these farms have a tractor.

The situation regarding the level of agricultural machinery is probably somewhat better with legal persons, i.e. various types of business entities; however, due to low level of efficiency, they too do not replace the used agricultural machinery in timely fashion.

Though similar data does not exist for FBiH, it could be concluded that the situation regarding the level of agricultural machinery and their age does not differ much.

Regardless of the lack of cost-effectiveness and small scope of the use of certain specialized machines and accessories, agricultural producers in BiH avoid joint purchase and ownership of agricultural machinery (postwar experiments regarding development of 'machinery rings' in various parts of BiH were mostly unsuccessful).

Investment in replacement and procurement of new, specialized agricultural machinery is necessary for modernization of agricultural production while taking account of cost-effectiveness of such investment, i.e. give preference to larger farms or some models of its joint use by a number of users.

12.4. Less favorable areas

As in most other countries, natural and other conditions for agricultural production are not the same on the entire territory of BiH. The EU has a classification of less favorable areas for agriculture – LFA as previously called, which are now referred to as the areas with natural constrains. BiH does not have such a division and no specific measures to support these areas as does the EU within CAP.

In areas designated as less favorable, agricultural production or agricultural activity is made difficult due to nature deficiencies (poor climate conditions, steep terrains in mountain areas, low soil productivity, etc.). Due to limited conditions for agriculture there is a considerable risk of leaving these areas, and thus the risk of losing biological diversity, desertification, forest fires and loss of rural landscape. Payments for less favorable areas are very important tool to mitigate these risks and are implemented by the EU MS¹⁷⁰.

Adopting the Strategic Plan for Development of Agriculture and Rural Areas, Republika Srpska recognized the need for special treatment of less favorable areas; hence one of the objectives of this Plan is adoption of regulations which will define criteria to be used for identification of less favorable areas for agriculture. After this prerequisite is met, it is planned to introduce additional payments to agricultural holdings dealing with specific types of agricultural production in such areas.

FBiH Law on Agriculture has, somewhat differently compared to the categories and criteria defined by the provisions of Regulation (EC) 1257/1999, prescribed that the areas with more difficult conditions for agriculture relate to: hilly and mountainous regions (certain altitude)¹⁷¹ and areas of unfavorable hydrological and pedological characteristics. It is foreseen that areas with more difficult conditions for

¹⁷⁰ This issue was recognized in BiH back in 1985 when the Study on Demarcation of BiH Mountainous Region Using 10 Criteria was developed in order to implement selective agricultural policy measures in this region.

¹⁷¹ Less favorable areas indicate all land above 800 m a.s.l., all land between 600 and 800 m a.s.l. with average slope exceeding 16° and all land between 300 and 600 m a.s.l. with average slope exceeding 25°.

agriculture will be defined by the law. In line with this, FBiH should focus more intensely on analyzing rural areas and clearly define the criteria for demarcation of less favorable areas that will be subject to specific rural policy measures in order to stop their negative demographic trends (retain and/or bring population back) and preserve the environmental and landscape resources. When defining less favorable areas in BiH Federation, it is necessary to use criteria modeled upon the EU MS of similar geographical and climate characteristics and EU regulations in this area.

The regional project launched by SWG RD reviewed the prerequisites for demarcation of less favorable areas in BiH and noted that generally there are necessary climate and pedological data necessary to apply the methodology for defining ANC areas¹⁷². However, this is a very demanding task the implementation of which requires considerable material and human resources and time.

¹⁷² Source: Areas with Natural Constraints in South-East Europe: Assessment and Policy Recommendations, Ed. by Pandi Zdruli and Ordan Cukaliev, GIZ and SWG.

13. Agro-environmental conditions

According to the definition, the main sources of environmental pollution could be categorized in two main groups: (i) point source and (iii) nonpoint source (diffuse) pollution. In the previous period the efforts to control pollution in Bosnia and Hercegovina were mostly focused on point source pollution which is easy to identify and relatively simple to quantify. The examples of these types of pollution are effluents from urban waste water treatment facilities, effluents from industries and factories, and other sources which directly emit pollutants to environment.

In flat regions of the country, river valleys on alluvium deposits and in Karst fields with intensive crop farming and vegetable and fruit production there is a considerable entry of pollution into terrestrial ecosystems due to the use of larger quantities of chemicals and organic fertilizers among which the issue of nitrogen is of priority concern. In addition to pollution caused by the use of chemicals, the higher altitude and sloping regions also see erosion of different intensity which additionally impacts the removal of soil particles and the pollution of surface water bodies. Different types of soil and quantity and distribution of precipitation in certain parts of BiH contribute to the impact of agricultural activities on the state and quality of environment.

Transition from extensive to intensive livestock production aimed at provision of quantity and quality, and acceptable, relatively low prices of food of animal origin was, in addition to economic, also dictated by other assumptions of which most important are scientific upgrade and health and technological operational support. All this had, and still has, both positive and negative effects. Concentrating a large number of animals in relatively small space with the aim of attaining production goals was not possible to implement without a number of biotechnological and technological interventions which, among other things, had clear impacts on life cycles and overall status of animals. The needs for large quantities of food of animal origin have also been met by the use of a number of stimulating agents. Their use soon proved to be double-edged sword. Thus, the use of antibiotics and growth hormones in intensive livestock production, despite the increase in the number of animals, quantity of products and relative acceleration of their production, had negative repercussion to the health of people consuming such products. The biggest consequences were felt by the population of most developed countries where cheap animal products produced in this way were available in practically unlimited quantities. Along with health issues for humans, the innovative and intensive approach to livestock production resulted in a serious threat to terrestrial and marine environment, in particular in areas with highly concentrated livestock production. The environmental issues were caused by large quantities of different organic waste (animal carcasses, condemned viscera from slaughterhouses and processing facilities, etc.), large number of residues of different synthetic medicinal or stimulating agents, and other environmentally burdening matter in animal waste which in terms of its quantity is the biggest item of all phases of livestock production, much larger than the quantity of products for which specific animal species are kept in intensive production.

A large problem in environmental sector is unsatisfactory disposal of organic waste which is especially pronounced in livestock production. All large poultry facilities create a large quantity of organic ballast which, given the state in which BiH finds itself currently, is especially difficult to adequately dispose. The issue partly arises from the large quantities of produced animal bedding from broiler and laying hen intensive farming facilities which is a particularly pronounced problem in Sarajevo Canton, Zenica-Doboj and Tuzla Canton and Srbac region where a large number of poultry farms is concentrated on a small area with insufficient space for adequate disposal of produced animal waste. BiH still does not have a facility dealing with processing of the produced animal manure and production of either compost, i.e. humus or other renewable energy-generating products though large quantity of them are imported from neighboring countries, especially from Italy.

Non-adoption, lack of knowledge about and non-observance of Nitrate Directive¹⁷³ which precisely defines the quantity of nitrate per m² of agricultural land at annual level are just one of the problems BiH agriculture faces on a daily basis in this area.

Animal waste generated as a byproduct of food industry, primarily waste from slaughter facilities, and waste generated as a product of facilities for processing and production of agricultural products has not been adequately resolved in BiH yet¹⁷⁴.

13.1. Degradation of land and water management

According to legislation, protection of land from various types of degradation in BiH and FBiH is not regulated by a single regulation but is tackled through a number of sectoral regulations which regulate spatial planning, environmental and water protection, agricultural land, forests and forest lands, etc. This has been elaborated as an individual strategic component with relevant action plan in the FBiH Environmental Protection Strategy (2008-2018).

In RS land and water protection is defined by different regulations and strategic documents. The RS Plan for Protection, Use and Regulation of Land¹⁷⁵ classified all land in RS according to its risk of erosion; the document determined that 4.73% of land is at risk of erosion (according to USL methodology) and provided a number of measures to protect land against erosion. One of the objectives of the RS Integrated Water Management Strategy 2015-2024 is to protect water and achieve the status of planned, demanding quality classes in order to protect and improve environment and improve the state of biodiversity. Water quality assessment, based on survey results, is performed in accordance with the Decree on Water Classification and Categorization of Water Courses. RS Strategic Plan for Development of Agriculture and Rural Areas until 2020 defined the specific objective within the systematic support to development of agriculture – development of land monitoring system (fertility, pollution level, erosion, land conversion, etc.) as this is a reliable way for early detection of potentially harmful environmental impacts on land (pollution, degradation and destruction).

In addition to a considerable impact on agriculture, land degradation partially impacts some agricultural processes and activities. According to the available information, the use of mineral fertilizers saw a sharp drop in FBiH compared to the pre-war, and use of organic fertilizers is also reduced which is considered a nucleus for development of desertification processes. Namely, calculations showed that agricultural land in FBiH is not much overloaded with livestock (2.3 ha of meadows and pastures per 1 livestock unit on average).

Over the past years RS made considerable investments in training of personnel and equipping institutions to control organic and inorganic toxic substances in soil (residues of pesticides and heavy metals) while soil sampling and its analysis to the presence of residues is performed sporadically.

¹⁷³ Directive of the Council of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources

¹⁷⁴ There is no public pound registered in BiH which could dispose of animal waste generated as a byproduct of slaughterhouses and meat processing facilities, as well as dead and euthanized animals. This was a huge problem especially during floods that hit BiH in 2014 when a large number of animal carcasses had to be exported to Republic of Serbia in order to be safely disposed. There is only one privately owned pound registered in BiH which is part of Brovis dd Visoko poultry facility and which safely disposes of animal waste generated as a byproduct of slaughter and processing of chicken meat. The byproduct generated by the operations of this pound is an important product which found its export market in Turkey.

¹⁷⁵ RS Plan for Protection, Use and Regulation of Land as a component of the land-use planning process, Banja Luka Institute of Agriculture, Institute for Agropedology and Land, 2009

The main issues related to degradation and disturbance of land and loss of productive agricultural land are recognized in the First National Report on the Implementation of the United Nations Convention to Combat Desertification/Land Degradation for BiH, including: destruction of soil caused by exploitation of raw materials, landfills; construction of residential, industrial and other facilities; increase in soil acidity; erosion, landslides and deforestation; land degradation caused by war activities and contamination by mines. Additional issues include low level of awareness on the significance of soil and land for sustainable development and survival of humankind, low level of land use planning, etc.

Water management which, in accordance with the EU Framework Water Directive, includes water protection, use of water and protection against water, is regulated by the Law on Water and its implementing regulations in FBiH and RS. FBiH Water Management Strategy, which is an integral part of FBiH Environmental Protection Strategy, set the strategic objectives of water management with action plan for 10-year planning period.

Several projects were implemented in FBiH with the aim to promote good agricultural practices. These projects conducted analysis and provided training to agricultural producers in order to reduce environmental pollution. However, the number of producers and land covered by these projects is small and there is surely a need for further promotion and financial support for dissemination of good agricultural practices in agricultural production in BiH.

13.2. Waste management

BiH Federation: FBiH Law on Waste Management and its implementing regulations regulate the issues of management of all types of waste, apart from radioactive waste, waste materials emitted to atmosphere and wastewaters. FBiH Waste Management Plan (2012-2017) was developed based on FBiH Waste Management Strategy, which is an integral part of FBiH Environmental Protection Strategy, and which comprehensively covered the activities for this planning period. Though this Strategy included animal waste, it was not elaborated in details. On top of this, FBiH Law on Waste Management is not aligned with the Waste Directive No 98/2009, unlike RS which aligned its law. It should be noted that a catalogue of waste has been adopted at the BiH level.

Urban waste – According to the 2010 BiH Report on the State of Environment, 270 kg of waste is produced per capita annually. Total of 40% of collected waste is disposed in municipal unsanitary waste disposal sites, and there are 54 of these in FBiH. Total of 36% of produced waste is not disposed at all by municipal companies. In the situation of poor coverage by waste collection services it is to be expected to have a large number of unregulated and uncontrolled landfills. There are around 2,000 unregulated landfills in FBiH covering the size of almost 100 ha, except for Sarajevo Canton and Canton 10 where such waste disposal sites have not been observed in all municipalities. Currently there are only two sanitary landfills in FBiH (Sarajevo and Zenica), three such sites are under development, while 32 municipalities do not have a defined status or signed inter-municipal agreement for regional waste disposal.

Industrial waste – FBiH industry generates around 2.4 million tons of waste annually, with less than 0.5% of its volume being hazardous waste. Only 10% of generated industrial waste is adequately disposed while the rest is inadequately disposed on unprotected ground inside or outside the industrial facility, inadequately incinerated and even discharged to water courses¹⁷⁶. Reliable data on the quantities and categories of waste produced by industrial facilities are generally unavailable; however this is expected to change in future as these data will be required to approve plans and activities and issue environmental permits.

¹⁷⁶ Source: FBiH Report on the State of Environment for 2010

Medicinal waste – Total waste production from healthcare institutions in FBiH was 2.2 kg per person annually accounting for around 5,000 tons a year out of which 50% is hazardous material. Total production of waste from veterinary institutions is at 20 tons a year which includes: infectious waste, pathological waste, non-infectious veterinary waste, chemical waste, pharmaceutical and urban waste. It is not known whether there are data available on the number of registered drugs and what veterinary facilities discard as medicinal waste, e.g. vaccine bottles, drugs whose shelf life expired, vacutainers, needles, syringes, diagnostic material. In FBiH only two healthcare and two veterinary institutions are equipped to safely dispose of/destroy part of medical waste.

Agricultural and forest waste – According to the mentioned 2010 Report on the State of Environment, FBiH annually generates:

- around 12,000 tons of harvest residues, 70,000 tons of musty silage and hay, 500 tons of plant tissue waste created by removing plant mass from boundaries, canals, along the roads, etc., 180 tons of waste packaging from pesticides, and 1,230 tons of waste packaging and plastics (fertilizer and seed bags, etc.).
- around 4,800 tons of byproducts and animal waste ABP/AW¹⁷⁷ (livestock mortality and dead livestock due to *communicable diseases*), around 40 tons of dead fish, and around 4.6 million tons of produced manure of which around 40% (1.85 million tons) ends up as waste. Regulation 1069/2009 lays down animal and public health rules as regards animal byproducts and derived products of ABP. Within the Regulation 1069/2009, ABP may fall under one of the three categories. Treatment and use of ABP is regulated in each category.
- Throughout BiH a large number of dead animals are disposed inadequately, e.g. by burring or throwing them into watercourses. Similarly, slaughterhouse byproducts usually end up in local waste disposal sites without adequate treatment. All this creates conditions for spread of communicable diseases and environmental degradation. Spread of communicable diseases via animal material, animal carcasses, bowels or manure, i.e. inadequate disposal of ABP, represents a serious threat to the society and requires organized tackling of this problem.
- around 376,000 m³ of waste from the use of forests, which is biodegradable and remains in forest.

Management of this type of waste is at a very low level given that there is no adequate system for its disposal, in particular that of animal tissue which is both environmental and health problem, and which calls for urgency in finding an environmentally and sanitary acceptable solution.

Republika Srpska: The issue of waste management is addressed by a number of laws and secondary legislation (Waste Management Law, Environmental Protection Law, Law on Public Services and Utilities, Law on Municipal Police, Water Law, Law on Spatial Planning and Construction, etc.). Draft Waste Management Strategy 2016-2025¹⁷⁸ classifies waste into municipal (household), commercial and industrial waste. This Strategy references Directive 2008/98/EC which contains the main concepts, definitions and principles of waste management, and also lists a number of other EU regulations related to proper treatment of certain types of waste.

¹⁷⁷Byproducts of animal origin include: carcass of dead animal and carcasses after euthanasia or death due to communicable diseases which fall under category 2 of byproducts. At this moment it is not possible to assess the quantity of byproducts as there are no close to accurate data on the number of animals, and number of slaughtered animals. This is the reason this data is not correct because when using the only official data available – those from FBiH Institute of Statistics, and applying scientifically proven calculations, FBiH has considerably larger quantities of byproducts of animal origin. There is a lack of reliable data on the registered deaths as well as data on the number and category of slaughtered animals.

¹⁷⁸ Quantitative data on waste used in this document are taken from: RS Waste Management Strategy 2016-2025, RS Ministry of Spatial Planning, Civil Engineering and Ecology, 2016

It is estimated that there were 243 thousand tons of urban waste in RS in 2013, 468 tons of industrial waste, 2,865 tons of medical waste, 22 thousand tons of packaging waste, etc. (e.g. 22.,000 tons/year of old vehicles only). Waste from agriculture and forestry is estimated to 4,599,537 tons.

Urban waste which RS generates, 0.76 kg per capita daily, includes 3.8% of waste of animal origin. Urban waste recycling system largely does not exist; however there are some exceptions which are most often a result of specific projects. Urban waste is collected and disposed at regional or municipal landfills. In this regards, rural areas have been neglected since organized collection of urban waste from rural areas is in place in only 25% of cases. This is the reason it often ends up in rivers, forests and along the roads, and is a source of pollution of nature and disturbance of landscape.

According to the collected (incomplete) data and conducted analysis, it is estimated that RS generates around 459 thousand tons of **industrial non-hazardous waste**. The largest quantities of industrial waste are generated by production of base metals, followed by wood processing and similar activities, furniture manufacturing and food and beverages production. Most companies do not have environmental permit (61%), and are privately owned (around 92%). The most common way of disposing of industrial non-hazardous waste is depositing (56%) and the rest is delivered to authorized companies which process or recycle it. A specific category of waste is waste of animal origin from slaughterhouses, meat and fish processing facilities, and other facilities for production and breeding of animals and processed products (cold storages, warehouses, stables, etc.), shops, catering facilities, veterinary facilities as well as dead animals from urban areas¹⁷⁹. The quantity of this waste is estimated to 22,500 tons/year. Waste of animal origin, and not only industrial waste, implies the term 'byproduct'. This term is no longer in use as categorization of slaughterhouses into industrial and entrepreneurial no longer exists; slaughterhouses are categorized by the slaughter capacity, and we do not have these data. These data could be found with the RS Institute of Statistics; however, the methodology used for calculation of quantities is unclear. There is no mention of the category of byproducts but only cooling facilities, stables and catering waste as well as shops, and veterinary facilities and dead animals in public areas are put in correlation. It is not classified by the types of waste but rather by the place it is generated which is not relevant.

RS does not have a sufficiently well-organized system of management of waste of animal origin since there are no pounds or collection centers with cold storages for collection of this type of waste; this waste is disposed of on landfills without any prior treatment or is exported to neighboring countries. It is assumed that around 50% of total quantity of animal waste is not registered, i.e. the waste is buried without any control (private parcels, unregulated landfills, etc.).

Another category of waste is related to forest and agricultural activities. In RS waste from timber is estimated to 671 thousand tons and has been lately used for energy generation (wood chips and pellet); however most of it is still being decomposed naturally in forests. Waste from plant production (arable crop and fruit production) is estimated to 809 tons annually and that from livestock production to 3.12 million tons. Around 0.4% of total produced quantities is reported as waste from agriculture and forestry. Part of residues from arable farming is used in livestock production as animal bedding, part is left on fields and ploughed under, and smaller portion is used for energy generation. The biggest item of livestock production is excrements (animal feces and urine) which together with animal bedding create organic fertilizer used mostly in arable farming. There are some rare examples of energy generation from biogas.

¹⁷⁹ A feasibility study was developed in 2005 addressing integral solving of waste problem from farms and slaughterhouses in North-West BiH Region, funded by CARDS program.

13.3. Agro-environmental policy

FBiH Law on Environmental Protection¹⁸⁰ is the main legislative act defining and setting goals, principles, measures, responsibilities, documents, financing and supervision of environmental protection in BiH Federation. The administration in charge of environmental issues in FBiH has extremely fragmented and complex institutional infrastructure (three levels – Federation, Cantons, municipalities). In this situation, a lack of strong horizontal and vertical coordination led to largely ineffective and irrational environmental management in FBiH which lacks cost-effectiveness. In addition to line ministries dealing with environment, there are also expert institutions at FBiH level which address environmental issues. The existing institutions conduct expert activities in various areas of environment (FBiH Institute of Pedology, FBiH Institute of Geology, FBiH Administration for Land Surveying and Property Rights, Sava River Basin District Agency, Adriatic Sea River Basin District Agency, FBiH Institute of Hydrometeorology, FBiH Institute of Statistics), supervise and control activities which impact the state of environment (FBiH Administration for Inspection Activities) and initiate, plan and implement activities to protect people, tangible assets and environment from natural disasters and emergencies (FBiH Civil Protection Administration).

Similar institutional structure in charge of monitoring, supervising and implementing policies and measures in the area of agro-environmental policy is in place in Republika Srpska. The two key ministries are Ministry of Spatial Planning, Civil Engineering and Environment and Ministry of Agriculture, Forestry and Water Management, with important role of the RS Fund for Environmental Protection and Energy Efficiency. The key piece of legislation is the Law on Environmental Protection with a number of secondary legislation acts elaborating its implementation in specific areas¹⁸¹.

The Rulebook on spatial and technical conditions for housing of animals, facilities and equipment for livestock farming (RS Official Gazette, No 100/15) describes in detail the conditions of housing of important animal species being bred in RS. The Rulebook regulated spatial and technical conditions which need to be met by the housing facilities for bred animals, thermic features of the facilities and interior layout, facility safety in terms of water protection, basic and additional facility security, general requirements for livestock farming facilities, conditions in facilities for storage and management of manure and waste generated at the holding, conditions in feed storage facilities, conditions which need to be met by milking facilities and milking equipment, and obligations of legal entities.

There are no agro-environmental measures in BiH.

The rulebook on projects which require environmental impact assessment and on criteria for decision making on the obligation of conducting and scope of environmental impact assessment stipulates in details the conditions and size of agricultural and food projects which require assessment of their impact on environment (livestock number or daily processing capacity for specific inputs are used as threshold values) as a prerequisite to obtain construction permit and certificate of occupancy.

Analysis of environmental legislation suggests a lack of a number of legislative acts whereas passed legislation faces the issue of its incomplete alignment with the EU standards and regulations, and lack of alignment between the laws passed at different governmental levels. In addition to legislative there are also institutional problems in environmental sector, in particular regarding human resources, their numbers and qualifications.

¹⁸⁰ FBiH Official Gazette No 33/03 and 38/09

¹⁸¹ All primary and secondary legislation related to environmental protection can be found on the Ministry website - <http://www.vladars.net/sr-SP-Cyrl/Vlada/Ministarstva/mgr/PAO/Pages/Akti.aspx>

13.4. Biodiversity and animal and plant genetic resources

As at 2010 BiH had around 25,000 ha of protected zones, accounting for around 0.5% of its territory, and around 1% of forest areas, in respect of which BiH is ranked the lowest among the European countries.

Taking into account the interaction of all factors of biotope and biocenosis of FBiH area, it could be said with certainty that this part of BiH contains more than 90% of total number of identified species. Environmental heterogeneity of FBiH area caused high level of endemic lifeforms. It is composed of over 450 species and sub-species of vascular plants, several hundred species of invertebrate, 12 species of fish, 2 species of amphibians, 4 species of reptiles, and several species of birds and mammals. Abundance of flora, fauna and fungi in FBiH is reflected not only in the high number of represented forms but also in high level of diversification, testifying about very specific processes of genesis of lifeforms in this region. The analysis of spatial ecosystem biodiversity in the period between 2000 and 2006 and according to CLC classes in BiH (forest vegetation and other natural areas; wetlands – swamps; waterbodies) shows that there are no major changes of areas (and thus no significant functional changes) within natural ecosystems in BiH in the observed period.

Autochthonous animal breeds are invaluable as genetic abundance and genetic reservoir and are important part of genetic and cultural heritage. It is of paramount importance for BiH to preserve autochthonous breeds of Busa and Gatacko cattle, autochthonous Pramenka sheep with its strains (Dubska, Kupreška, Privorska, Hercegovča/Humska, Podvelež); followed by Balkan goat **Šiška**, Bosnian mountain horse and Herzegovina donkey, and dog breeds of Bosnian mountain sheep dog Tornjak and Bosnian Coarse-haired Hound – Barak, Posavac hound and Tricolor hound, domestic chicken Pogrmuša or Živičarka, and breeds of pigeons: Travnik short-beak pigeon, Sarajevo roller, Bihac roller and Zenica roller¹⁸². Unfortunately, for years now no efforts have been invested to acquire more knowledge and preserve these breeds. A measure which could support better awareness and preservation of autochthonous breeds of domestic animals is surely systematic state financial support to protection of autochthonous breeds of domestic animals, along with intensive R&D and development and adoption of programs for protection of autochthonous breeds with the accompanying database.

The same views are shared as regards plant genetic resources. In addition to their preservation as gene bank, it is necessary to support the existing *on-farm* and *ex-situ* collections which reflect agricultural crops which are generatively propagated (e.g. autochthonous fruit trees). Currently, there are numerous such collections in FBiH out of which the largest is the collection of autochthonous genotypes of apple and pear of Srebrenik fruit tree nursery in Špionica. *In-situ* collections are of particular importance for fodder, medicinal and aromatic herbs, and are an important component of preservation of plant genetic resources.

The RS Nature Protection Strategy of 2011 notes that the level of prominence of biodiversity in RS is scarce, observing that the situation is moving forward regarding ichthyology and ornithology. Based

¹⁸²In terms of legislation in RS, most of the mentioned breeds are protected under the Law on Livestock Farming (RS Official Gazette, No 44/15). This Law recognizes the following breeds, i.e. strains, as the indigenous (autochthonous) and protected breeds, i.e. strains of domestic animals: cattle: Gatacko cattle and Busa; sheep: Vlasic Pramenka, Podvelez or Herzegovina Pramenka and Kupres Pramenka; goats: domestic Balkan horned goat; horses: Bosnian hilly horse; pigs: Mangulica; and domestic chickens: native breed of chicken Živičarka – Pogrmuša.

on partial and sporadic data it has been noted that flora, microflora and fauna in RS are still extremely abundant, in particular compared to other European countries. The status of biological diversity is conditioned by physical and geographic conditions and intensity of anthropogenic influences. The impacts on biodiversity are different and vary from one region to another. Significant impacts on biodiversity are reflected in the vicinity of larger urban centers, where anthropogenic influences are more intensive. The most important adverse impacts on biodiversity in the area of agriculture are generated by: occupying new areas for agricultural production; increased use of plant protection agents and artificial fertilizers; introduction of new varieties of plants and breeds of animals (including GMO); meliorations, loss of wetland ecosystems, etc.

RS Institute for Genetic Resources was established in RS in 2009, and includes 2 sub-organizational units – Center for Biodiversity and Center for Sustainable Use of Genetic Resources. The Institute is part of the Banja Luka University and is located in the University campus which is a protected zone (28 ha) managed by the Institute. The Institute established a botanical garden with a collection of various plant species, which in addition to ex-situ conservation and protection of endangered plant species, has an educational function because of being situated within the University campus. The Institute for Genetic Resources includes the RS Bank of Plant Genes with seed (with around 1,000 novelties) and wild collections (with over 200 autochthonous varieties of fruit trees); and in cooperation with Cajnice municipality a collection plantation of autochthonous varieties of fruit trees was developed in this municipality. The Institute is a coordination institution for implementation of the RS Program for Preservation of Plant Genetic Resources. To date, the Institute implemented evaluation and genetic categorization of a number of types and varieties of fruits, vine, arable and vegetable crops. With the adoption of the RS Program for Preservation of Plant Genetic Resources in 2008 RS met its legal obligation and established a legal framework for preservation of biodiversity. In addition to this Program, in 2013 RS adopted the Program for Preservation of Forest Genetic Resources. Thus far the least work has been done regarding protection of animal genetic resources.

RS Strategic Plan for Development of Agriculture and Rural Areas 2016-2020 defined the specific objective (4.3) of sustainable agricultural production by implementing the support measures in areas with natural constraints¹⁸³; sustainable use and maintenance of natural meadows and pastures; specific support to organic and integrated agricultural production; and support to biodiversity protection measures and sustainable use of genetic resources, with defined implementers and identified funding sources.

All of the above imposes the need to integrate agro-environmental issues in the process of rural development planning. They should prevent disturbance of landscape and biodiversity, disappearance of animal and plant genetic resources (autochthonous varieties and breeds), loss of agricultural areas, and degradation of environment caused by the use of inadequate and traditional agricultural practices including inadequate disposal of manure and pig sludge, and high level of use of pesticides and mineral fertilizers in particular regarding intensive crops and growing crops on ploughland. The future measures which will be related to resolving agro-environmental issues in BiH Federation and Republika Srpska should be aligned with those used within the EU CAP, i.e. observing a number of EU standards and rules regulating this issue, and at the level of needed/possible budgetary and institutional capacities.

13.5. Products with protected geographical origin, indigenous and traditional products

Today, customer's demands and expectations regarding specific quality of products, its properties, and characteristics of products with a mark of certain quality are increasing, while specific importance is attributed to branding of agricultural and food products. Promotion of products with specific features could significantly contribute to rural economy, especially in areas with fewer opportunities

¹⁸³ A study has been developed recently

or in remote areas, improvement of income of farmers and retaining rural population in these areas. Protected products are recognizable on the market and attain higher prices compared to 'ordinary' agricultural and food products. The direct link between agricultural product and a relevant area brings added value to this area as it makes it recognizable and attractive for tourists.

The EU has three types of protected agricultural and food products - Protected Denomination of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Specialty Guaranteed (TSG).

Due to its specific geographical position, nature and climate conditions and also rich culture and tradition, BiH has a certain number of agricultural and food products with the potential for their protection.

Indigenous (original) products are those that are typical and with proven characteristics which arise from the natural environment and ability of producers in the region where it was produced. All production and processing phases have to take place in a geographical area the name of which is used by the products. The products that have the potential and conditions for protection of originality are those products that come from a specific region, specific place or country; which have special quality, reputation or other features attributed to its geographic origin, and whose production and/or processing and/or preparation takes place in this geographical area. Until now, no products from BiH have the mark of protection of originality; however some preparations are underway (e.g. Livno cheese).

Products with protected geographical indication have to be produced in the area whose mark they bear (at least one phase of production, processing or preparation has to be performed in geographical area the name of which the product bears). Only eight products with geographical indication have been protected in BiH so far (lace and crocheted doilies from Gračanica, chestnut honey from Cazin, early potato from Ljubuški, Sarajevo filigree, Sarajevo goldsmiths, Sarajevo copperware - Savat and Herzegovina honey and Kreševo shoed eggs). Geographical indication is a common property of a specific group of producers of a relevant area if they observe the established rules of production process.

The mark of traditional specialty of food implies protection of indigenous agricultural products which have specific and proven unique manner of production or processing which is passed down from one generation to another (the minimum period corresponding to one generation interval is 25 years). Traditional reputation mark emphasizes traditional character in the product composition, most often dishes from gastronomic offer, and is a confirmation of recognition of specific attributes of food. It is consisted of the name of foodstuff and indicated specificities regarding traditionally. It may be granted to products which are specific by their composition or manner of production, and products are traditional in a relevant area meaning that their recipes are passed down through generations.

The possibilities of protection (branding) of agricultural products in BiH are not sufficiently utilized. The reasons for this could be found in the process of launching protection procedure and in a lack of knowledge about the benefits of such marks. The protection process requires time, funding and an expert who would be leading the overall protection process and cooperating with competent institutions. It is also important that producers recognize the benefits they may have from protection.

BiH adopted the Law on Protection of Geographical Indication (BiH Official Gazette, No 53/10) which defined the need for development of its implementing regulations. Before passing this law, BiH adopted the Rulebook on originality marks and marks of geographical indication of food (BiH Official Gazette, No 27/10) and Rulebook on marks of traditional food reputation (BiH Official Gazette, No 62/10). In 2012 the Rulebook on appearance and manner of use of marks of protected denomination of origin, protected geographical indication and traditional specialty guaranteed (BiH Official Gazette, No 81/12) was adopted. At the same time, according to the provisions of BiH Law on Industrial Ownership (BiH Official Gazette, No 3/2002) it is possible to protect products with geographical indication.

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The lack of harmonization of competences between BiH Food Safety Agency and BiH Intellectual Property Institute is evident. The Agency is using one legal framework (its competences arise from the Food Law) while the Institute uses another (its competences arise from the Industrial Ownership Law and Law on Protection of Geographical Indication). MOFTER is working on amendments to the current regulations in order to avoid overlapping of competences.

14. Gender

Bosnia and Herzegovina is a signatory to all the important international conventions on gender equality and eliminating all forms of discrimination over women of which the most important is the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW). A specific article of this Convention is related to improvement of the position of rural women and it obligated BiH, as Convention signatory, to work to improve socio-economic situation of rural women, their access to resources, market and information and access to the basic infrastructure and public services. The most important local legal act which as *lex specialis* regulated gender equality as an individual human right is the Law on Gender Equality in BiH (BiH Official Gazette, No 32/10 – consolidated text) which promotes gender equality and forbids discrimination on the basis of sex and sexual orientation, and obligates all authorities at all levels to draft, adopt and implement programs of measures to implement the law in all areas. BiH has Gender Action Plan (currently for the period from 2013 to 2017) which has three strategic goals: 1) development, implementation and monitoring of the program of measures for advancement of gender equality in the governmental institutions, as per priority areas, 2) establishing and strengthening the system, mechanisms and instruments for realization of gender equality, and 3) establishment and strengthening of cooperation and partnership.

In some aspects of gender equality, BiH is the leader in South East Europe, as it was the first country in the region to adopt the Law on Gender Equality (2003) and established the first institutions in this area in BiH: gender centers in FBiH and RS and Agency for Gender Equality (2004). The centers deal with the issues of gender equality, i.e. monitoring and coordination of activities of various institutions and organizations, though this is often mistaken for their only task. As a result of presence of international community in BiH, a certain number of associations of women have been established owing to which activities on empowering women, economically and otherwise, were brought to the local level. Gender equality is often brought down to more rights to women, in particular in rural areas. Rural women are very heterogeneous group with different status and needs.

Operationalizing one of the measures foreseen in the RS Strategic Plan for Rural Development 2009-2015, RS Gender Center, in cooperation with the RS Ministry of Agriculture, Forestry and Water Management, prepared the Action Plan for Improvement of the Status of Rural Women which RS Assembly adopted in 2010. This Action Plan defined the following groups of measures for improvement of position of rural women: 1) improvement of economic position of rural women, 2) improvement of living conditions of rural women, 3) improvement of access to public services of rural women, 4) strengthening social position of rural women, and 5) raising awareness of population about the role, importance and contribution of rural women. The Action Plan for Improvement of the Status of Rural Women has been updated, and new Guidelines for New Medium-term Cycle 2017-2020 have been adopted. The general recommendation to all institutions is to continue with coherent application of the principles of gender equality, use gender differentiated indicators for monitoring of results and impacts of certain activities and measures, and in cooperation with other bodies to work on eliminating all normative and actual impediments for attainment of gender equality. In the case of the Ministry of Agriculture, Forestry and Water Management, it is suggested that it continues to apply and finance support measures to business activities of rural women and improve gender equality when providing extension services and training programs in rural areas.

In 2016 RS Gender Centre developed a Special Report on findings and recommendations of a survey of socio-economic gender inequalities in Republika Srpska which includes a piece of data that says that every fifth rural holding is managed by a woman. Though there are no legal impediments (the Law on Inheritance treats heirs equally regardless of gender) the tradition (not only in villages but also in cities) is that mobile and immobile assets acquired jointly is registered to male spouse; therefore women are owners of holdings mostly in cases when they do not have a husband. Due to this practice, women have a subjective sense of being less worthy. Owning certain production resources is a

prerequisite for generating income, and, in addition to formal ownership, the way in which jointly generated income is divided, i.e. priorities in meeting the collective or individual needs of family members, is also very important. The family situation in rural areas is characterized by a combination of patriarchal and modern expectations and lifestyles. Both women and men (regardless of the place where they live) are least satisfied with the economic aspects of life and are most satisfied with family life. People living in rural areas are most satisfied with the place of living, especially men. Women are less satisfied with economic aspects of life – employment, income and living standard. Regardless of the significant development in the way of thinking, cultural stereotypes are still present and , therefore, the statement ‘that it is good that women and men are equal in marriage, but is by rule better that men have the final saying’ was supported by 27.3% of adult women and 50% of adult men.

The existing support measures in the agriculture and rural development budget cannot be assessed as discriminating toward the needs of women; however the criteria for exercising the right to support are in most cases discouraging for women due to their difficult position: less mobility, poor access to resources, lack of information, poor involvement in producer organizations. There is no specific program within the Ministry which recognizes these limitations; hence changes of this situation cannot be expected in the long-run. The criteria to apply for funds are increasingly more focused on commercial producers with the aim to improve competitiveness of agricultural production. However, large number of producers, including women, does not meet the minimum production volume and expects less stringent criteria or other measures.

BiH Federation has no specific gender action plan and is directing its activities in accordance with the BiH Gender Action Plan 2013-2017.

The issues of gender equality are intertwined with the issues in agricultural and rural development sector. Rural women are more involved in performing agricultural tasks which are poorly paid or not paid at all while male labor works outside the holding and regularly generates monetary remuneration and other benefits (health and pension insurance). Also, women traditionally do housework which consumes substantial time during the day.

European Commission funded development of a study on BiH gender profile and it is the first ever such study for a country (potential) candidate for EU accession. This study, implemented in 2014, included abundant information about the state of regulations regarding gender equality in the EU and BiH, overview of the situation with gender equality in BiH (in various areas) and conclusions and recommendations, including proposal for future activities. The study suggested 19 potential projects in the area of strengthening gender equality of which some are related to agriculture and rural development: information technologies and gender in rural areas; gender sensitive promotion of healthy life for young men and women; women’s entrepreneurship in rural areas; mobile times for protection of health in underdeveloped (remote) areas; family farms and local development; etc.

Thus, International Labor Organization funded development of a study on Gender and Employment in Bosnia and Herzegovina which was completed in 2011. Among other things, the study notes that women work more hours a day than men, that there are certain stereotypes regarding professions which are ‘not for women’, that women are more tied to household due to care for children and elderly, that rural women have lower level of education than men, that women are less formally employed, but that they have more initiative for self-employment than men.

15. Donor support and lessons learnt

Due to the war events in Bosnia and Herzegovina in 1992-1995 period and substantial material destruction, the postwar period saw intensive presence of various donors. They had numerous interventions and large part of these were implemented in rural areas (demining, reconstruction of rural infrastructure and residential units) while donations were partially focused on rehabilitation of agriculture in BiH (providing cattle, agricultural machinery, greenhouses, seedlings, seeds, feed, etc.).

To determine the data on the scope and volume of thus far donor assistance in BiH is a mission impossible. Until 2000, local authorities did not even have partial records of this assistance, and cumulative information of total foreign donor assistance did not exist nor could it be consolidated. Over the last 10 years each convocation of BiH Parliamentary Assembly established a committee tasked to determine the extent of this assistance with the aim to identify local corruption in its implementation, and each time without success, and after the initial enthusiasm the work of the committee would cease. Furthermore, serious analyses of foreign donor policies and use of their assistance in BiH have not been conducted, except sporadically. Very similar situation is found as regards NGO sector funding by international donors; there is no consolidated information on the level of these funds or identified issues regarding their lack of transparency¹⁸⁴. BiH Ministry of Foreign Trade and Economic Relations implements certain activities to develop a database of current donor assistance; these activities are implemented at the level of working group whose members include representatives of relevant institutions at state and entity level. A progress is made in that MOFTER develops annual reports on international (donor and loan) assistance to agriculture, food and rural development, which contain the main data on specific donors/creditors and a list and value of projects; however part of donor assistance still remains unregistered.

European Union is the largest donor for postwar reconstruction and development of numerous sectors in BiH¹⁸⁵ including agricultural sector. Also, considerable EU donations have been focused on improving living conditions in rural areas and on environmental protection. EU donations were implemented within different programs (CARDS, PHARE, OBNOVA, etc.) while lately being implemented through the Instrument for pre-accession assistance (IPA) and European Instrument for Democracy and Human Rights (EIDHR). European Commission database includes 11 projects which EU funded in BiH agricultural sector between 2008 and 2016, total value of EUR 25 million. These projects are related to: introduction of quality control standards in agricultural production, market positioning; support to MAP sector; support to local economic development; strengthening capacities of CSOs; support to export-oriented agricultural companies; improvement and harmonization of policies for development of agriculture and rural areas in BiH; introduction and improvement of policies and regulations for animal disease control and strengthening human and laboratory capacities for food control and implementation of veterinary and phytosanitary standards, and technical and other support to institutions in BiH to find adequate responses to challenges and requirements of the process of BiH integration into the EU. The initial interventions were mostly focused on individual subsectors or specific narrow geographical areas, and recently on support to improvement of institutional and legal environment in BiH in the context of its harmonization with the EU acquis. Despite good objectives and engagement of a number of experts for specific areas and issues, the end results of EU funded projects in BiH are often modest due to not being able to find rational answers to complex administrative structure in BiH, which was the price paid for the end of civil war in BiH. It is undisputed that BiH, if it wants to be an EU MS, has to fully transpose the EU acquis; while rigid

¹⁸⁴ Donors in BiH – Support to Development of NGO Sector, lessons (un)learned, Initiative for Better and Humane Inclusion and BiH Foundation for Social Inclusion, Sarajevo, 2013.

¹⁸⁵ Since 1996, the EU donated EUR 3.5 billion to BiH (according to: http://europa.ba/?page_id=558, accessed on: March 25, 2015).

position of the EU and stubbornness of local political decision makers result in prolonging the status quo and carrying over the same objectives from one EU project to another.

Certain assistance, mostly technical or at expert level, is provided by UNDP, FAO, SWG RRR and some other international and regional organizations. Also, the EU provides technical assistance to BiH focused on specific issues through TAIEX, TWINNING and BTSF program.

In addition to the mentioned international institutions, development of agricultural sector is, directly or indirectly, supported through donations of **bilateral donors**, i.e. governments and government agencies of a number of countries (Japan, USA, Sweden, Spain, Italy, Germany, Netherlands, Switzerland, Czech, China, Kuwait, Saudi Arabia, Turkey, Slovenia, etc.).

USA and Sweden have funded 3 agricultural projects in BiH through USAID and SIDA: LAMP, FARMA and FARMA II. These projects were focused on increasing knowledge and skills of agricultural producers, their integration into the value chains, improvement of their competitiveness and increase of the marketability level of specific agricultural products in BiH. These projects mostly worked with the private sector (producers and processors), largely contributed to improving the state of play in certain subsectors and to partial adaptation to the conditions of EU environment, with bigger or smaller level of coordination between project activities and government policies.

Other bilateral donors are mostly partially focused on tackling specific problem or addressing specific need and implementation of such projects is easier and more successful. However, there is a lack of substantial coordination between interventions of various donors, which would enable larger synergy of international community activities in BiH in general, and in particular in the agriculture and rural areas.

Various international and local NGOs operating completely autonomously (by finding additional funding for their interventions from various sources) whose assistance sometimes brings additional problems instead of solutions (distribution of suspicious and inadequate seedling material and seed, import of contaminated livestock, provision of incompetent recommendations and advices, etc.) are a story of their own. Attempts to record and coordinate interventions of various NGOs were largely unsuccessful as this conflicted with the wish of some donors to independently direct and control their donations.

Over the past years all these and other unmentioned donor interventions had considerable contribution to improvement of agriculture in BiH but their effects could have been certainly larger.

In addition to donor, there were also programs and projects focused on rehabilitation of rural areas and agriculture based on BiH taking a loan from international financial institutions (World Bank, IFAD, OFID, etc.)

Based on **World Bank** loans, 3 agricultural projects were implemented in BiH: Emergency Farm Reconstruction Project, Scale Commercial Agriculture Project, and Agriculture and Rural Development Project, while Irrigation Development Project is ongoing. In addition to this, there have been other World Bank projects which partially addressed rural development (e.g. Floods Recovery Emergency Project, Drina Flood Protection Project, Sustainable Forest and Landscape Management Project, Forest and Mountain Protected Areas Project, Forest Development & Conservation Project, Forestry Project, Emergency Landmine Clearance Project, Emergency Housing Repair Project, Emergency Public Works & Employment Project) or have been indirectly important for development of agriculture (Avian Influenza Preparedness Project, Land Registration Project, Local Initiative Microfinance Projects, Local Development Project, Reconstruction Assistance to Republika Srpska Project). The first two WB projects (EFRP and SSCADP) were focused on rehabilitation of livestock numbers, agricultural machinery, irrigation system and provision of extension services and loans for agriculture, while the third project (ARDP) dealt with strengthening institutional capacities of the state and Entity level institutions in agriculture and rural development with the aim to accelerate BiH accession to the EU.

The first two projects could be assessed as successful while the third (ARDP) had only scratched the surface of the needed institutional reform.

International Fund for Agricultural Development (IFAD) has been present in BiH with its loan-based projects from the end of civil war. Five IFAD projects were completed in BiH to date (Emergency Farm Reconstruction Project, Small Farm Reconstruction Project, Livestock and Rural Development Project, Rural Enterprise Enhancement Project, Rural Livelihoods Development Project) while Rural Business Development Project and Rural Competitiveness Development Project are ongoing, and development of another project is planned. Over the past 10 years all IFAD projects in BiH are co-funded by OPEC from its OPEC Fund for International Development. IFAD projects are focused on poverty reduction and promotion of gender equality. IFAD projects gave certain contribution to development of agriculture in BiH but have not dealt more seriously with the institutional reforms in agricultural sector (apart from unsuccessful attempt to establish savings and loan cooperatives). The main components of all thus far interventions included provision of (commodity or cash) loans and reconstruction or rural infrastructure. Lessons learned from implementation of these projects are that partial interventions generate partial results; hence subsequent IFAD projects moved from standard support to reconstruction and increase of production resources to integration of all necessary interventions into a single project (organization of producers, trainings, loan support, market infrastructure, buyout and other interventions that jointly generate synergy effect). All IFAD projects, except the last one, had territorial focus on a certain number of poorer municipalities in RS and FBiH.

16. SWOT analysis

S - Strengths	W - Weaknesses
Natural resources	
<ul style="list-style-type: none"> ▪ Favorable geostrategic position of BiH; ▪ Different agro-climate zones, facilitating diverse agricultural production; ▪ Available water resources for irrigation; ▪ Presence of forest and uncultivated agricultural areas abundant in forest, wild, medicinal and aromatic herbs (possibility of generating additional income); ▪ Relatively well preserved nature and unpolluted environment; ▪ Favorable environmental conditions for development of rural tourism; 	<ul style="list-style-type: none"> ▪ Insufficient utilization of natural resources (agriculture, tourism, entrepreneurship aspects); ▪ Inefficiency of the system of management of land, forest and water resources; ▪ Frequent damages on crops and plantations as a consequence of natural disasters (droughts, floods, hail, frost); ▪ Disorganized land registries and cadasters; ▪ Insufficiently developed awareness on the need for environmental protection and biodiversity conservation; ▪ Pronounced issues of waste disposal; ▪ Mine fields; ▪ No LPIS (Land Parcel Information System);
Agricultural production	
<ul style="list-style-type: none"> ▪ Substantial areas of uncultivated land; ▪ Substantial grassland areas suitable for expansion of livestock production; ▪ Existence of tradition in agriculture; ▪ Sound knowledge of agricultural production technology; ▪ Improved assortment in plant production and breed composition in animal production; ▪ Increase in the number and market share of large commercial producers; ▪ Pronounced trend of increase in the number of registered farms; ▪ Enhancement of competitiveness in some sectors of agriculture (wine, berries, fish, vegetables); ▪ Growing awareness about the existence of standards in production and the need to introduce them in practice; ▪ Preserved autochthonous breeds of domestic animals and varieties of fruits and grapes; 	<ul style="list-style-type: none"> ▪ Pronounced fragmentation of land property; ▪ Low share of irrigated area in the total arable areas; ▪ Substantial presence of small-scale producers; ▪ Small share of commercial producers; ▪ Low level of specialization and marketability of production; ▪ Low yields lagging behind surrounding countries and EU averages; ▪ Low added value of most agricultural products; ▪ Poor technical and technological equipment level of a large number of farms; ▪ Insufficiently utilized and outdated agricultural mechanization; ▪ Yield instability and high price oscillations; ▪ Low productivity in all sectors of agricultural production; ▪ Insufficient production of local seed and planting material; ▪ Planting material is of uneven quality (pronounced presence of uncertified material); ▪ Inadequate assortment/low share of modern varieties;

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	<ul style="list-style-type: none"> ▪ Poor genetic potential of dairy cows; ▪ Low level of organization and needed post-harvest/picking infrastructure; ▪ Inadequate on-farm storage; ▪ High seasonal surpluses; ▪ Low level of farmers' knowledge about technologies, marketing and management; ▪ Poor and inadequate organization of farmers (lack of functionality and inefficiency of cooperatives and associations of farmers); ▪ Poor image of agriculture as a line of business;
Food industry	
<ul style="list-style-type: none"> ▪ Existence of capacities to receive and process raw materials of agricultural origin; ▪ Existence of successful, export-oriented companies; ▪ Increased awareness about the importance of introducing standards in production; 	<ul style="list-style-type: none"> ▪ Food industry is technologically outdated, inefficient and noncompetitive; ▪ Low level of utilization of capacities in food industry; ▪ Large dependence on imports of inputs (in particular of meat and milling and bakery industry); ▪ Poor vertical and horizontal integration; ▪ Traditional assortment of products and insufficient customer needs surveys;
Socio-demographic factors	
<ul style="list-style-type: none"> ▪ Relatively cheap labor force; ▪ Diversity and attractiveness of rural environment; ▪ Growing motivation for cooperation and coordination; ▪ Self-employment opportunities in agriculture; 	<ul style="list-style-type: none"> ▪ Lack of labor force (for harvesting and other seasonal works) in some regions; ▪ Unfavorable age, education and social structure of rural population; ▪ Migrations of working and educated population from rural areas; ▪
Market and competitiveness	
<ul style="list-style-type: none"> ▪ 	<ul style="list-style-type: none"> ▪ Insufficiently developed agricultural and food value chain; ▪ Uncertain and unstable buyout; ▪ Insufficient information from the market/undeveloped market information system; ▪ Low awareness of the need for horizontal and vertical linking of producers; ▪ Large dependence on imports of inputs and raw materials; ▪ High input prices;

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	<ul style="list-style-type: none"> ▪ Generally low level of price competitiveness of local agricultural production; ▪ Unfavorable foreign trade balance of large number of agricultural and food products (deficit); ▪ Uneven coverage of storage and processing capacities; ▪ Poor horizontal and vertical integration; ▪ Low level of adaptation to market requirements; ▪ Poor accessibility of public services;
<p>Political, legal and institutional environment</p>	
<ul style="list-style-type: none"> ▪ Existence of strategic documents for development of agriculture and rural areas (in both Entities); ▪ Existence of scientific and educational institutions for knowledge transfer; ▪ Existence of internationally recognized certification body for certification of organic production (OK); ▪ Strengthening awareness on the importance of institutional building; ▪ Increasing number of regulations in the context of approximation to the EU acquis; 	<ul style="list-style-type: none"> ▪ Issues with the use of state-owned agricultural land; ▪ Unregulated field of land policy; ▪ Low level of standardization of production processes; ▪ Unsatisfactory level of application of hygiene and environmental standards; ▪ Low level of certification (Global GAP, IP, IPM, IFC, BRC, PGI, PDO, etc.); ▪ Incomplete accreditation system; ▪ Inadequate agricultural statistics; ▪ Undeveloped information and analytical system (ACIS) for control and analysis of agricultural policy; ▪ Unreliable data on available land areas, manner of their use and livestock numbers; ▪ Dysfunctional system of extension services and expert assistance; ▪ Outdated and too fragmented system of subsidies for agriculture; ▪ Poor organization of agricultural producers; ▪ Lack of demarcation of less favorable areas for agricultural production (ANC); ▪ Institutional and legislative framework is not harmonized with the EU practice and standards.
<p>Financing agriculture</p>	
<ul style="list-style-type: none"> ▪ 	<ul style="list-style-type: none"> ▪ Lower subsidy levels for agriculture compared to the EU and most countries in the region; ▪ Lack of own capital; ▪ Unfavorable conditions of external financing; ▪ Poor representation of agricultural insurance;

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O - Opportunities	T - Threats
Natural resources	
<ul style="list-style-type: none"> ▪ Commitment of FBiH MAWMF and RS MAWMF to invest in irrigation systems (use of WB credit lines and those of other international organizations); ▪ Investing in renewable energy sources and clean technologies; ▪ Existence of large number of governmental and non-governmental organizations addressing the issues of natural resources; ▪ Climate changes recognized as important challenge for defining strategic commitments, mechanisms of action and concrete measures; 	<ul style="list-style-type: none"> ▪ Global climate changes; ▪ Inadequate and insufficient regulations dealing with environmental and natural resource issues; ▪ Endangering biodiversity due to insufficient and inadequate protection;
Agricultural production	
<ul style="list-style-type: none"> ▪ Improvement of skills and knowledge; ▪ Improvement of production technology; ▪ Technical and technological modernization of agricultural production; ▪ Intensification of agricultural production; Diversification of activities of agricultural holdings; ▪ Considerable interest in organic production; 	<ul style="list-style-type: none"> ▪ High dependence of agricultural producers on direct budgetary support; ▪ Undeveloped land market; ▪ Outstanding issue of land restitution; ▪ Regional presence of communicable diseases and pests; ▪ Negative trends in livestock numbers and size of sown plowland;
Food industry	
<ul style="list-style-type: none"> ▪ Strengthening of food industry and increasing need for inputs; 	<ul style="list-style-type: none"> ▪
Socio-demographic factors	
<ul style="list-style-type: none"> ▪ Substantial interest for rural tourism and its other forms; ▪ Possibility of diverse year-round tourism offer of rural areas; 	<ul style="list-style-type: none"> ▪ Pronounced migration processes and continuation of depopulation of rural areas (elderly households, young and educated population is leaving rural areas); ▪ Poorly developed physical, social and service infrastructure in rural areas; ▪ Uneven regional development; ▪ Education system not adjusted to the needs of modern economy (rural development); ▪ Poor image and lack of understanding of the term 'rural'; ▪ Unfavorable status of agricultural producers (no formal employment, mostly with no health or pension insurance);
Market and competitiveness	

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<ul style="list-style-type: none"> ▪ Increase in demand for food at global level; ▪ Increase in sales of locally produced food based on import substitution; ▪ Larger market-orientation of agricultural producers; ▪ Establishment of efficient system of buyout and distribution of agricultural products, ▪ Contract farming; ▪ Access to regional markets through CEFTA; ▪ Better supply of raw materials; ▪ Trend of increased demand for traditional, autochthonous products and products with geographical indication; ▪ Strengthening complementary branches of industry (tourism and catering); ▪ Development of entrepreneurship in rural areas; 	<ul style="list-style-type: none"> ▪ Global economic crisis; ▪ Accelerated process of transposition of EU regulations in the area of food production and trade; ▪ Trade orientation towards importing food; ▪ Loyalty of local consumers towards products of local origin at low level; ▪ Instability of input prices, raw materials most expensive in the region; ▪ Low level of protection of local production; ▪ Presence of gray economy;
<p>Political, legal and institutional environment</p>	
<ul style="list-style-type: none"> ▪ Strategic documents for agriculture and rural development in BiH Entities and commitment to EU integration; ▪ Better forecast and reporting service; ▪ EU and other integration processes; ▪ Additional EU funds for pre-accession adjustment and strengthening of agricultural sector; ▪ Better quality and accessibility of extension services; ▪ Application of local production protection mechanisms; ▪ Scientific researches in the interest of agriculture and translating their results into practice. 	<ul style="list-style-type: none"> ▪ Complex administrative structure of BiH; ▪ Political instability and poor business environment; ▪ Pronounced trend of reducing support to rural development; ▪ Inconsistency and instability of budgetary transfers in implementation of agricultural policy measures; ▪ Insufficient courage of current authorities for serious reforms in agricultural policy; ▪ Further fragmentation of agricultural land; ▪ Political and economic instability of the country; ▪ Poor image of BiH due to the last war, political instability and economic underdevelopment; ▪ Undeveloped and unreliable information system in agriculture and insufficient logistics support (forecast services, registers, cadaster, etc.); ▪ Liberal foreign trade regime; ▪ Poor control of food imports; ▪ Inadequate business environment; ▪ Agricultural and other development policies are insufficiently harmonized with the EU acquis; ▪ Standstill in EU integration processes; ▪ Lack of funds for development-oriented scientific and research projects;

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	<ul style="list-style-type: none"> ▪ Inadequate border control regarding food import; ▪ Poor economic situation in the country and reduced purchasing power of population; ▪ Insufficient protection of cultural, historical and natural heritage;
<p>Financing of agriculture</p>	
<ul style="list-style-type: none"> ▪ Readiness of agricultural producers to use loans; ▪ Agriculture still among the leading BiH industry branches supported by international organizations; 	<ul style="list-style-type: none"> ▪ Credit financing and other sources of funding unadjusted to the specificities of agriculture; ▪ Insufficient budgetary support for agriculture; ▪ Territorially/Entity level uneven budgetary support and unequal position of agricultural producers; ▪ Lack of transparency of support measures, complex application procedures, and undeveloped monitoring of spending (inefficient); ▪ Decreased interest and presence of donors and foreign investors; ▪ Limitation of local sources for development of rural areas; ▪ Lack of legislative acts to establish savings and credit organizations (FBiH);

A P P E N D I C E S

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Table P-1 Structure of agricultural land in FBiH, RS, BD and BiH (2006-2015 period)

(in 000 ha)

Year	Agricultural areas	Arable areas					Pastures	Wetlands, reeds and fishponds
		Total	Plowed fields and gardens	Orchards	Vineyards	Meadows		
BiH Federation								
2006.	1.139	719	409	43	4	263	418	2
2007.	1.132	703	400	43	4	257	427	2
2008.	1.155	712	400	43	5	264	441	2
2009.	1.137	692	391	43	5	254	442	2
2010.	1.138	701	398	44	5	254	434	3
2011.	1.141	696	390	44	5	257	442	3
2012.	1.145	719	396	43	5	275	424	2
2013.	1.151	722	402	44	5	271	427	2
2014.	1.149	719	401	45	5	268	428	2
2015.	1.181	747	428	45	5	269	432	2
Republika Srpska								
2006.	1.004	834	596	50	0	188	166	4
2007.	995	827	596	49	0	182	164	4
2008.	963	813	587	49	0	177	148	2
2009.	987	817	584	51	0	182	168	2
2010.	984	821	584	51	0	184	161	2
2011.	981	816	581	51	0	183	162	2
2012.	982	818	582	52	0	184	163	1
2013.	984	819	582	53	0	184	163	2
2014.	982	817	580	53	0	183	164	2
2015.	983	816	577	52	0	187	166	1

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Brčko District								
2006.	35	34	30	3	0	1	1	0
2007.	35	34	30	3	0	1	1	0
2008.	35	34	30	3	0	1	1	0
2009.	36	35	31	3	0	1	1	0
2010.	35	34	30	3	0	1	1	0
2011.	35	34	30	3	0	1	1	0
2012.	35	34	30	3	0	1	1	0
2013.	35	34	30	3	0	1	1	0
2014.	35	34	29	4	0	1	1	0
2015.	36	35	30	4	0	1	1	0
Bosnia and Herzegovina								
2006.	2178	1587	1035	96	4	452	585	6
2007.	2162	1564	1026	95	4	440	592	6
2008.	2153	1559	1017	95	5	442	590	4
2009.	2160	1544	1006	97	5	437	611	4
2010.	2157	1556	1012	98	5	439	596	5
2011.	2157	1546	1001	98	5	441	605	5
2012.	2162	1571	1008	98	5	460	588	3
2013.	2170	1575	1014	100	5	456	591	4
2014.	2166	1570	1010	102	5	452	593	4
2015.	2200	1598	1035	101	5	457	599	3

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016; BD: BiH Agency for Statistics

Table P-2 Structure of plowland according to the manner of use in FBiH, RS, BD and BiH
(2006-2015 period)

(in 000 ha)

Year	Sown areas			

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	Plowed fields and gardens	Total	Cereals	Industrial crops	Vegetables	Fodder crops	Nurseries, flowers and ornamental plants	Fallow land and uncultivated plowed fields
BiH Federation								
2006.	409	197	83	2	45	67	2	210
2007.	404	193	82	2	45	64	2	209
2008.	400	198	87	2	45	64	2	200
2009.	391	192	85	2	43	62	2	197
2010.	398	189	82	2	42	63	2	206
2011.	390	196	84	2	44	66	2	192
2012.	396	195	86	2	44	63	2	199
2013.	402	195	87	2	43	63	2	205
2014.	401	189	81	2	43	63	3	209
2015.	428	200	88	3	43	63	3	225
Republika Srpska								
2006.	596	348	225	8	37	78	0,5	248
2007.	596	352	226	8	37	80	0,3	244
2008.	587	349	225	5	37	82	0,4	238
2009.	584	323	216	4	34	69	0,5	261
2010.	584	312	201	5	34	72	0,4	272
2011.	581	318	209	5	34	70	0,4	262
2012.	582	317	209	5	34	70	0,4	265
2013.	582	310	209	5	31	65	0,4	271
2014.	580	301	200	6	30	66	0,3	279
2015.	577	306	203	6	31	66	0,2	271
Brčko District								
2006.	30	13	10	1	1	1	0	17

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2007.	30	13	10	1	1	1	0	17
2008.	30	13	10	1	1	1	0	17
2009.	31	14	11	1	1	1	0	17
2010.	30	14	11	1	1	1	0	16
2011.	30	14	11	1	1	1	0	16
2012.	30	13	10	1	1	1	0	17
2013.	30	13	10	1	1	1	0	17
2014.	29	13	10	1	1	1	0	16
2015.	30	13	10	1	1	1	0	17
Bosnia and Herzegovina								
2006.	1035	558	318	11	83	146	2,5	475
2007.	1030	558	318	11	83	145	2,3	470
2008.	1017	560	322	8	83	147	2,4	455
2009.	1006	529	312	7	78	132	2,5	475
2010.	1012	515	294	8	77	136	2,4	494
2011.	1001	528	304	8	79	137	2,4	470
2012.	1008	525	305	8	79	134	2,4	481
2013.	1014	518	306	8	75	129	2,4	493
2014.	1010	503	291	9	74	130	3,3	504
2015.	1035	519	301	10	75	130	3,2	513

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016; BD: BiH Agency for Statistics

Table P-3 Harvested area, total production and average yield of maize (grain), wheat, barley, oat and rye in FBiH, RS, BD and BiH (2006-2015 period)

(area in ha, yield in tons, average yield in t/ha)

Maize (grain)	FBiH	Area	48.355	47.154	50.023	48.685	46.714	48.620	48.558	49.317	43.811	47.665
		Yield	226.018	176.227	231.533	239.605	203.552	203.293	140.061	227.686	179.852	187.800
		Average	4,7	3,7	4,6	4,9	4,4	4,2	2,9	4,6	4,1	3,9
	RS	Area	142.534	144.432	148.536	134.737	136.895	142.273	142.742	135.143	120.901	138.824
		Yield	740.149	434.593	744.338	695.562	600.919	538.496	378.714	550.254	584.765	561.238

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	BD	Average	5,2	3,0	5,0	5,2	4,4	3,8	2,7	4,1	4,8	4,0	
		Area	5.355	5.844	5.707	5.266	5.143	5.077	5.204	5.094	5.236	7.218	
		Yield	27.683	42.524	28.488	27.754	48.905	22.330	20.657	20.560	33.870	36.663	
	BIH	Average	5,2	7,3	5,0	5,3	9,5	4,4	4,0	4,0	6,5	5,1	
		Area	196.244	197.430	204.266	188.688	188.752	195.970	196.504	189.554	169.948	193.707	
		Yield	993.850	653.344	1.004.359	962.921	853.376	764.119	539.432	798.500	798.487	785.701	
	Wheat	FBIH	Average	5,1	3,3	4,9	5,1	4,5	3,9	2,7	4,2	4,7	4,1
			Area	20.015	19.622	19.604	19.011	17.282	17.836	18.866	19.230	18.251	19.770
			Yield	65.532	71.682	75.157	74.992	50.406	67.783	68.854	76.524	56.145	71.925
RS		Average	3,3	3,7	3,8	3,9	2,9	3,8	3,6	4	3,1	3,6	
		Area	49.611	50.646	41.159	45.030	33.641	36.834	38.136	44.534	38.219	38.897	
		Yield	153.948	172.625	150.904	165.978	84.647	131.422	146.587	179.922	106.777	127.140	
BD		Average	3,1	3,4	3,7	3,7	2,5	3,6	3,8	4,0	2,8	3,3	
		Area	3.722	3.700	3.629	3.731	3.700	3.730	3.711	3.866	2.640	3.400	
		Yield	12.868	12.805	14.472	14.878	10.359	10.799	9.696	8.706	7.133	13.950	
BIH	Average	3,5	3,5	4,0	4,0	2,8	2,9	2,6	2,3	2,7	4,1		
	Area	73.348	73.968	64.392	67.772	54.623	58.400	60.713	67.630	59.110	62.067		
	Yield	232.348	257.112	240.533	255.848	145.412	210.004	225.137	265.152	170.055	213.015		
Barley	FBIH	Average	3,2	3,5	3,7	3,8	2,7	3,6	3,7	3,9	2,9	3,5	
		Area	8.867	8.660	9.520	8.278	8.012	7.622	8.591	8.128	7.855	8.885	
		Yield	23.701	22.348	27.032	23.492	20.046	21.780	23.408	25.510	21.196	25.299	
	RS	Average	2,7	2,6	2,8	2,8	2,5	2,9	2,7	3,1	2,7	2,8	
		Area	12.386	11.338	13.203	13.494	11.814	12.408	11.150	11.776	10.226	10.965	
		Yield	37.494	36.161	48.809	51.420	31.580	42.123	40.653	43.080	27.015	36.494	
	BD	Average	3,0	3,2	3,7	3,8	2,7	3,4	3,6	3,7	2,6	3,3	
		Area	700	600	700	699	690	715	712	774	600	700	
		Yield	2240	2244	1980	2310	2300	2400	2250	2550	2150	2000	
BIH	Average	3,2	3,7	2,8	3,3	3,3	3,4	3,2	3,3	3,6	2,9		
	Area	21.953	20.598	23.423	22.471	20.516	20.745	20.453	20.678	18.681	20.550		
	Yield	63.435	60.753	77.821	77.222	53.926	66.303	66.311	71.140	50.361	63.793		
Oat	FBIH	Average	2,9	2,9	3,3	3,4	2,6	3,2	3,2	3,4	2,7	3,1	
		Area	3.132	2.999	3.680	3.444	2.658	2.790	3.048	3.260	3.481	3.194	
		Yield	7.899	8.123	10.573	9.979	5.824	7.447	7.868	8.865	7.866	8.125	
	RS	Average	2,5	2,7	2,9	2,9	2,2	2,7	2,6	2,7	2,3	2,5	
		Area	13.935	11.898	11.478	9.338	7.050	6.994	7.024	6.370	5.741	5.893	
		Yield	32.843	29.903	29.560	23.879	13.495	19.030	18.609	18.796	11.247	15.510	
	BD	Average	2,7	2,5	2,6	2,6	1,9	2,7	2,6	2,9	1,9	2,6	
		Area	332	270	258	258	250	223	208	208	246	200	
		Yield	730	490	768	774	524	529	339	458	482	400	
BIH	Average	2,2	1,8	3,0	3,0	2,1	2,4	1,6	2,2	2,0	2,0		
	Area	17.399	15.167	15.416	13.040	9.958	10.007	10.280	9.838	9.468	9.287		

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		Yield	41.472	38.516	40.901	34.632	19.843	27.006	26.816	28.119	19.595	24.035
		Average	2,4	2,5	2,7	2,7	2,0	2,7	2,6	2,9	2,1	2,6
Rye	FBiH	Area	1.449	1.297	1.628	1.354	1.378	1.583	1.893	1.981	1.801	2.148
		Yield	4.231	4.282	5.418	4.723	4.003	5.533	6.089	7.324	5.509	6.852
		Average	2,9	3,3	3,3	3,5	2,9	3,5	3,2	3,7	3,1	3,2
	RS	Area	2.476	1.864	2.095	2.509	1.569	1.712	1.563	1.723	1.527	1.613
		Yield	6.366	4.575	5.669	7.463	3.421	4.112	4.659	4.739	3.836	3.644
		Average	2,6	2,5	2,7	2,9	2,2	2,4	2,9	2,8	2,5	2,3
	BD	Area										
		Yield										
		Average										
	BiH	Area	3.925	3.161	3.723	3.863	2.947	3.295	3.456	3.704	3.328	3.761
		Yield	10.597	8.857	11.087	12.186	7.424	9.645	10.748	12.063	9.345	10.496
		Average	2,7	2,8	3,0	3,2	2,5	2,9	3,1	3,3	2,8	2,8

Table P-4 Harvested area, total production and average yield of soya, tobacco, sunflower and oilseed rape in FBiH, RS, BD and BiH (2006-2015 period)

(area in ha, yield in tons, average yield in t/ha)

			Year									
			2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Soya	FBiH	Area	874	1.027	985	879	894	1.060	1.558	1.456	512	2.000
		Yield	2.198	1.465	2.059	2.336	2.007	1.990	2.313	3.437	1.239	2.297
		Average	2,5	1,4	2,1	2,7	2,2	1,9	1,5	2,4	2,4	1,1
	RS	Area	5.264	4.124	2.942	2.626	2.876	2.659	3.494	2.753	2.641	3.903
		Yield	10.198	6.160	5.883	5.310	5.484	4.531	4.005	4.105	5.753	5.780
		Average	1,9	1,5	2,0	2,0	1,9	1,7	1,1	1,5	2,2	1,5
	BD	Area	217	265	260	297	267	165	273	265	1.033	1.465
		Yield	446	459	470	547	516	227	390	422	2.028	2.420
		Average	2,1	1,7	1,8	1,8	1,9	1,4	1,4	1,6	2,0	1,7
	BiH	Area	6.355	5.416	4.187	3.802	4.037	3.884	5.325	4.474	4.186	7.368
		Yield	12.842	8.084	8.412	8.193	8.007	6.748	6.708	7.964	9.020	10.497
		Average	2,0	1,5	2,0	2,2	2,0	1,7	1,3	1,8	2,2	1,4
Tobacco	FBiH	Area	940	893	814	601	573	571	595	553	536	559
		Yield	1.095	996	869	613	479	595	373	489	418	568
		Average	1,2	1,1	1,1	1,0	0,8	1,0	0,6	0,9	0,8	1,0
	RS	Area	1.448	1.323	1.095	913	808	805	870	874	1.008	1.137
		Yield	2.704	2.065	2.038	1.611	1.230	1.096	1.001	1.203	1.317	1.628
		Average	1,9	1,6	1,9	1,8	1,5	1,4	1,2	1,4	1,3	1,4
	BD	Area	37	105	100	100	80	80	80	80	3	0
		Yield	57	204	191	200	145	144	120	120	5	0
		Average	1,5	1,9	1,9	2,0	1,8	1,8	1,5	1,5	1,5	-

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	BiH	Area	2.425	2.321	2.009	1.614	1.461	1.456	1.545	1.507	1.547	1.696	
		Yield	3.856	3.265	3.098	2.424	1.854	1.835	1.494	1.812	1.740	2.196	
		Average	1,6	1,4	1,5	1,5	1,3	1,3	1,0	1,2	1,1	1,3	
Sunflower	FBiH	Area	356	226	250	206	441						
		Yield	374	165	292	182	366						
		Average	1,1	0,7	1,1	0,9	0,8						
	RS	Area	296	176	165	156	396	241	304	160	111	341	
		Yield	264	85	125	103	303	380	115	168	177	320	
		Average	0,9	0,5	0,8	0,7	0,8	1,6	0,4	1,0	1,6	0,9	
	BD	Area	50	50	50	51	51	50	40	45	49	51	
		Yield	45	42	42	72	48	78	23	46	73	48	
		Average	0,9	0,8	0,8	1,4	0,9	1,6	0,6	1,0	1,5	0,9	
	BiH	Area	702	452	465	413	888	291	344	205	160	392	
		Yield	683	292	459	357	717	458	138	214	250	368	
		Average	1,0	0,6	1,0	0,9	0,8	1,6	0,4	1,0	1,6	0,9	
	Oilseed rape	FBiH	Area										
			Yield										
			Average										
RS		Area	888	1.428	703	520	489	622	165	682	883	838	
		Yield	2.011	3.656	1.612	1.432	942	1.305	337	1.642	1.785	1.752	
		Average	2,3	2,5	2,3	2,8	1,9	2,1	2,0	2,4	2,0	2,1	
BD		Area	134	150	150	160	150	150	150	150	105	170	
		Yield	116	269	380	403	225	225	225	215	262	475	
		Average	0,9	1,8	2,5	2,5	1,5	1,5	1,5	1,4	2,5	2,8	
BiH		Area	1.022	1.578	853	680	639	772	315	832	988	1.008	
		Yield	2.127	3.925	1.992	1.835	1.167	1.530	562	1.857	2.047	2.227	
		Average	2,1	2,5	2,3	2,7	1,8	2,0	1,8	2,2	2,1	2,2	

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016; BD: BiH Agency for Statistics

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Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016; BD: BiH Agency for Statistics

Table P-6 Harvested area, total production and average yield of clover, alfalfa and maize for silage in FBiH, RS, BD and BiH (2006-2015 period)

(area in ha, yield in tons, average yield in t/ha)

			Year									
			2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Clover	FBiH	Area	14.228	12.902	12.750	12.628	12.958	12.622	11.202	11.980	11.305	11.542
		Yield	61.633	46.501	52.391	52.801	48.541	45.610	33.171	42.422	38.404	40.939
		Average	4,3	3,6	4,1	4,2	3,7	3,6	3,0	3,5	3,4	3,5
	RS	Area	37.445	37.958	37.733	29.658	29.867	29.851	28.947	24.064	24.037	24.280
		Yield	159.233	86.793	113.260	83.996	80.920	65.390	56.032	65.228	78.926	72.993
		Average	4,3	2,3	3,1	2,8	2,7	2,2	1,9	2,7	3,3	3,0
	BD	Area	400	400	399	400	350	350	350	330	350	300
		Yield	2200	1800	1800	1800	1575	1575	1575	1300	1500	1050
		Average	5,5	4,5	4,5	4,5	4,5	4,5	4,5	3,9	4,3	3,5
	BiH	Area	52.073	51.260	50.882	42.686	43.175	42.823	40.499	36.374	35.692	36.122
		Yield	223.066	135.094	167.451	138.597	131.036	112.575	90.778	108.950	118.830	114.982
		Average	4,3	2,6	3,3	3,2	3,0	2,6	2,2	3,0	3,3	3,2
Alfalfa	FBiH	Area	14.591	13.510	12.983	12.939	13.680	13.127	11.298	11.619	11.023	11.250
		Yield	68.198	55.676	60.092	63.318	55.579	51.051	33.171	44.235	39.701	42.435
		Average	4,7	4,1	4,6	4,9	4,1	3,9	3,2	3,8	3,6	3,8
	RS	Area	23.509	23.781	24.458	19.831	19.887	20.058	19.688	18.169	17.230	18.033
		Yield	115.293	66.202	84.785	69.221	63.931	54.378	48.339	59.143	66.200	64.193
		Average	4,9	2,8	3,5	3,5	3,2	2,7	2,5	3,3	3,8	3,5
	BD	Area	200	200	200	210	191	180	180	165	180	185
		Yield	1.100	900	900	950	767	800	850	631	800	850
		Average	5,5	4,5	4,5	4,5	4,0	4,4	4,7	3,8	4,4	4,6
	BiH	Area	38.300	37.491	37.641	32.980	33.758	33.365	31.166	29.953	28.433	29.468
		Yield	184.591	122.778	145.777	133.489	120.277	106.229	82.360	104.009	106.701	107.478
		Average	4,8	3,3	3,9	4,0	3,6	3,2	2,6	3,5	3,8	3,6
Maize for silage	FBiH	Area	14.321	15.341	16.385	16.717	16.563	18.408	19.135	18.812	20.310	21.320
		Yield	303.574	254.760	313.038	340.081	321.607	338.660	287.456	354.090	347.650	342.699
		Average	21,2	16,6	19,1	20,3	19,4	18,4	15,0	18,8	17,1	16,1

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	RS	Area	3.140	3.748	3.791	4.453	5.964	5.808	6.928	7.931	8.774	10.645
		Yield	65.460	56.162	61.971	128.848	116.102	98.431	90.867	122.048	231.843	188.235
		Average	20,8	15,0	16,3	28,9	19,5	16,9	13,1	15,4	26,4	17,6
	BD	Area	100	100	100	125	125	130	130	132	128	135
		Yield	1.200	900	900	950	1.100	1.150	1.100	1.140	1.050	1.200
		Average	12,0	9,0	9,0	7,6	8,8	8,8	8,5	8,6	8,2	8,9
	BiH	Area	17.561	19.189	20.276	21.295	22.652	24.346	26.193	26.875	29.212	32.100
		Yield	370.234	311.822	375.909	469.879	438.809	438.241	379.423	477.278	580.543	532.134
		Average	21,1	16,3	18,5	22,1	19,4	18,0	14,5	17,8	19,9	16,6

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016; BD: BiH Agency for Statistics

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Table P-7 Number of fruit-bearing trees, total production and average yield of plums, apples and pears in FBiH, RS, BD and BiH (2006-2015 period)

(number of trees in 000, yield in tons, average yield in kg/fruit-bearing trees)

			Year									
			2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
Plum	FBiH	Trees	4.860	4.987	5.275	5.398	5.516	5.557	5.563	5.722	5.626	5.908
		Yield	37.950	45.276	35.043	53.434	56.556	57.232	35.312	83.942	26.818	45.685
		Average	7,8	9,1	6,7	9,9	10,3	10,3	6,3	14,7	4,7	7,7
	RS	Trees	5.574	5.626	5.681	5.706	5.800	5.822	5.929	6.014	6.095	6.080
		Yield	74.184	81.731	85.740	90.193	89.806	89.315	65.193	133.581	43.258	67.270
		Average	13,3	14,5	15,1	15,8	15,5	15,3	11	22,2	7,1	11,1
	BD	Trees	370	390	400	410	400	400	420	400	375	411
		Yield	11.100	11.700	11.840	12.140	11.200	10.957	10.500	9.375	3.999	10.500
		Average	30,0	30,0	29,6	29,6	28,0	27,4	25,0	23,4	10,7	25,6
	BiH	Trees	10.804	11.003	11.356	11.514	11.716	11.779	11.912	12.136	12.096	12.399
		Yield	123.234	138.707	132.623	155.767	157.562	157.504	111.005	226.898	74.075	123.455
		Average	11,4	12,6	11,7	13,5	13,4	13,4	9,3	18,7	6,1	10,0
Apple	FBiH	Trees	1.748	1.903	2.085	2.305	2.472	2.653	2.722	2.856	2.965	3.279
		Yield	20.604	19.572	21.057	26.492	26.032	29.000	18.181	32.652	16.852	41.929
		Average	11,8	10,3	10,1	11,5	10,5	10,9	6,7	11,4	5,7	12,8
	RS	Trees	1.945	2.034	2.083	2.229	2.264	2.556	2.912	3.316	3.487	3.334
		Yield	36.945	40.815	38.861	44.325	45.038	45.745	33.737	51.977	27.514	47.938
		Average	19,1	19,6	18,7	19,9	19,9	17,9	11,6	15,7	7,9	14,4
	BD	Trees	32	48	50	76	77	76	78	80	81	82
		Yield	544	576	500	760	770	780	780	800	750	800
		Average	17,0	12,0	10,0	10,0	10,0	10,3	10,0	10,0	9,3	9,8
	BiH	Trees	3.725	3.985	4.218	4.610	4.813	5.285	5.712	6.252	6.533	6.695
		Yield	58.093	60.963	60.418	71.577	71.840	49.425	52.698	85.429	45.116	90.667
		Average	15,6	15,3	14,3	15,5	14,9	9,4	9,2	13,7	6,9	13,5
Pear	FBiH	Trees	847	967	1.008	1.069	1.106	1.175	1.147	1.195	1.237	1.261
		Yield	7.875	7.457	8.280	9.890	9.053	9.963	5.846	11.554	5.181	11.719
		Average	9,3	7,7	8,2	9,3	8,2	8,5	5,1	9,7	4,2	9,3

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	RS	Trees	812	810	798	974	990	1.070	1.234	1.348	1.318	1.302
		Yield	15.275	13.734	13.486	13.879	12.944	17.410	11.258	20.207	8.483	16.015
		Average	18,8	16,8	16,8	14,2	13,1	16,3	9,1	15	6,4	12,3
	BD	Trees	35	37	40	45	50	52	52	53	53	52
		Yield	875	925	960	1.035	1.100	1.150	1.150	1.200	900	1.200
		Average	25,0	25,0	24,0	23,0	22,0	22,1	22,1	22,6	17,0	23,1
	BiH	Trees	1.694	1.814	1.846	2.088	2.146	2.297	2.433	2.596	2.608	2.615
		Yield	24.025	22.116	22.726	24.804	23.097	28.523	18.254	32.961	14.564	28.934
		Average	14,2	12,2	12,3	11,9	10,8	12,4	7,5	12,7	5,6	11,1

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016; BD: BiH Agency for Statistics

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Table P-8 Number of fruit-bearing vine, total production and average yield of grapes in FBiH, RS, BD and BiH
(2006-2015 period)

(number of vines in 000, yield in tons, average yield in kg/vine)

			Year									
			2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
Grape	FBiH	Fruit-bearing vines	10.037	10.426	11.122	9.854	9.802	10.063	12.075	11.959	12.140	13.474
		Yield	19.990	18.735	21.868	22.003	19.970	18.568	22.973	29.109	24.830	31.813
		Average	2,0	1,8	2,0	2,2	2,0	1,8	1,9	2,4	2,0	2,4
	RS	Fruit-bearing vines	756	871	892	1.204	1.501	1.508	1.587	1.566	1.581	1.544
		Yield	1.511	1.835	2.044	3.483	3.181	3.033	2.958	2.691	1.391	2.917
		Average	2,0	2,1	2,3	2,9	2,1	2,0	1,9	1,7	0,9	1,9
	BD	Fruit-bearing vines										
		Yield										
		Average										
	BiH	Fruit-bearing vines	10.793	11.297	12.014	11.058	11.303	11.571	13.662	13.525	13.721	15.018
		Yield	21.501	20.570	23.912	25.486	23.151	21.601	25.931	31.800	26.221	34.730
		Average	2,0	1,8	2,0	2,3	2,0	1,9	1,9	2,4	1,9	2,3

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016

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Table P-9 Harvested area, total production and average yield of strawberries and raspberries in FBiH, RS, BD and BiH (2006-2015 period)

(area in ha, yield in tons, average yield in t/ha)

			Year									
			2006	2007.	2008	2009	2010.	2011.	2012	2013.	2014.	2015.
Strawberry	FBiH	Area	586	642	704	749	718	638	649	709	728	821
		Yield	5.88 9	8.349	4.86 6	4.74 3	7.655	6.379	5.92 1	6.863	5.775	6.483
		Average	10,0	13,0	6,9	6,3	10,7	10,0	9,1	9,7	7,9	7,9
	RS	Area	646	499	629	586	461	471	566	464	412	367
		Yield	1.79 4	1.968	2.50 9	4.50 7	2.370	2.165	2.27 4	2.350	2.243	2.368
		Average	2,8	3,9	3,9	7,7	5,1	4,6	4,0	5,1	5,4	6,4
	BD	Area	65	65	65	65	65	65	70	70	70	71
		Yield	553	553	553	553	555	560	600	590	610	620
		Average	8,5	8,5	8,5	8,6	8,5	8,6	8,6	8,4	8,7	8,7
	BiH	Area	1.29 7	1.206	1.39 8	1.40 0	1.244	1.174	1.28 5	1.243	1.210	1.259
		Yield	8.23 6	10.87 0	7.92 8	9.80 3	21.75 7	9.104	8.79 5	20.26 9	8.628	9.471
		Average	6,4	9,0	5,7	7,0	17,5	7,8	6,8	16,3	7,1	7,5
Raspberry	FBiH	Area	265	277	260	367	340	428	441	520	674	1029
		Yield	1.38 9	1.936	1.44 3	2.17 1	2.775	3.520	2.33 4	4.474	6.115	9.055
		Average	5,2	7,0	5,6	5,9	8,2	8,2	5,3	8,6	9,1	8,8
	RS	Area	628	616	648	664	754	772	769	741	712	633
		Yield	4975	5.359	5.97 0	6.31 6	5.129	5.905	4.63 1	4.602	4.457	4.536
		Average	7,9	8,7	9,2	9,5	6,8	7,6	6,0	6,2	6,3	7,2
	BD	Area	10	11	12	12	12	13	13	13	14	16
		Yield	88	70	70	70	75	80	80	85	90	100
		Average	8,8	6,4	5,8	5,8	6,3	6,2	6,2	6,5	6,4	6,3
	BiH	Area	903	904	920	1.04 3	1.106	1.213	1.22 3	1.274	1.400	1.678

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		Yield	6.45 2	7.365	7.48 3	8.55 7	7.979	25.03 9	7.04 5	9.161	10.66 2	13.69 1
		Average	7,1	8,1	8,1	8,2	7,2	20,6	5,8	7,2	7,6	8,2

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016; BD: BiH Agency for Statistics

Table P-10 Number of livestock in FBiH, RS and BiH (2006-2015 period)

(area in ha, yield in tons, average yield in t/ha)

Year	Cattle		Pigs		Sheep		Goats	Horses		Poultry	Hives
	Total	Dairy cows	Total	Sows and gilts	Total	Breeding ewes		Total	Mare and fillies		
BiH Federation											
2006.	233	158	94	14	542	416	45	10	3	5.385	168
2007.	226	150	91	18	550	422	44	10	3	6.098	176
2008.	226	150	93	11	534	409	45	8	2	6.503	186
2009.	222	148	95	8	534	410	45	8	1	8.368	199
2010.	220	146	88	7	519	406	40	7	1	8.498	205
2011.	213	140	87	8	519	406	40	6	1	8.788	208
2012.	215	138	92	8	517	401	41	6	1	9.447	208
2013.	217	136	89	9	524	403	41	6	1	13.298	215
2014.	215	135	88	9	532	406	44	6	1	10.279	219
2015.	216	136	89	9	525	404	42	6	1	9.818	229
Republika Srpska											
2006.	275	152	596	113	460	327	31	16	4	7.346	113
2007.	236	152	416	107	481	358	26	16	4	8.191	134
2008.	227	145	384	81	493	333	24	14	6	8.882	146
2009.	229	142	409	89	516	365	25	13	5	9.573	147
2010.	235	124	466	71	523	339	24	12	4	12.304	160
2011.	236	120	483	72	499	313	27	12	5	9.653	165
2012.	225	110	442	60	491	295	27	12	6	9.666	166
2013.	225	109	433	64	491	286	28	11	5	11.161	169
2014.	223	109	435	61	487	272	29	11	5	10.096	165
2015.	229	108	452	61	486	272	30	11	5	11.011	164
Bosnia and Herzegovina											
2006.	515	313	710	130		744		26		13.300	283

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2007.	468	307	535	127		781		25		15.000	311
2008.	459	297	502	96		744		23		16.185	334
2009.	458	293	529	100		778		21		18.741	347
2010.	462	273	590	82		747		19		21.802	367
2011.	455	264	577	81		720		19		18.703	382
2012.	445	251	539	69		694		18		19.401	384
2013.	447	248	530	78		602		18		24.736	393
2014.	444	246	533	75		593		17		20.664	392
2015.	455	247	564	77		592		17		22.248	393

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016; BD: BiH Agency for Statistics

Table P-11 Number of dairy livestock units, total production and average yield of cow, sheep and goat milk in FBiH, RS, BD and BiH (2006-2015 period)

(number of dairy livestock units in 000, yield in million liters, average yield in l/livestock unit)

			Year									
			2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
Cow milk	FBiH	Livestock units	158	150	150	148	146	140	138	136	135	136
		Production	312	313	322	321	317	315	319	330	349	352
		Average	1.975	2.087	2.147	2.169	2.171	2.250	2.312	2.426	2.585	2.588
	RS	Livestock units	152	152	145	142	124	120	110	109	109	108
		Production	341	401	405	405	368	345	327	329	310	317
		Average	2.243	2.638	2.793	2.852	2.968	2.875	2.973	3.018	2.844	2.935
	BD	Livestock units	3	4	3	3	3	4	3	3	3	3
		Production	9	10	10	8	8	7	7	8	8	8
		Average										
	BiH	Livestock units	313	307	297	293	273	264	251	248	246	247
		Production	662	724	737	734	693	667	653	667	673	674
		Average	2.178	2.429	2.559	2.578	2.615	2.603	2.678	2.770	2.814	2.814
Sheep milk	FBiH	Livestock units	250	256	239	227	234	231	234	230	224	222
		Production	12	13	12	11	11	11	11	11	12	11
		Average	49	51	49	48	47	48	47	47	51	50
	RS	Livestock units	98	87	62	58	77	63	54	53	52	53
		Production	7	7	7	7	7	6	4	4	4	4
		Average	73	79	105	114	90	99	79	78	81	79
	BD	Livestock units										

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		Production										
		Average										
	BiH	Livestock units										
		Production										
		Livestock units										
	Goat milk	FBiH	Livestock units									
Production			4	4	4	4	4					
Average												
RS		Livestock units	17	15	13	12	13	13	12	11	11	11
		Production	3	2	4	3	3	3	2	2	2	2
		Average	155	146	281	273	256	198	199	230	210	201
BD		Livestock units										
		Production										
		Average										
BiH		Livestock units										
		Production										
		Livestock units										

Source: FBiH - FBiH Institute of Statistics, RS - RS Statistical Yearbook 2016 (for cows) and data upon inquiry (for sheep and goats); BD: BiH Agency for Statistics

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Table P-12 Number of laying hens, total production and average yield of eggs in FBiH, RS, BD and BiH

(2006-2015 period)

(number of laying hens u 000, production in million units, average yield unit/lying hen)

			Year									
			2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
Eggs	FBiH	Number of laying hens	1.575	1.331	1.458	1.574	1.515	1.455	1.482	1.692	1.719	1.888
		Production	256	201	201	235	239	220	247	278	276	302
		Average	163	151	138	149	158	151	155	164	160	160
	RS	Number of laying hens	1.721	2.424	2.245	2.327	2.112	2.132	1.987	2.058	2.127	2.035
		Production	311	468	664	540	446	382	397	416	427	408
		Average	181	193	169	232	211	180	200	202	200	200
	BD	Number of laying hens										
		Production										
		Average										
	BiH	Number of laying hens	3.518	3.891	16.185	18.741	3.877	4.288	4.360	6.675	5.602	5.352
		Production	580	678	873	786	694	610	681	702	702	722
		Average	165	174	54	42	179	142	156	105	125	135

Source: FBiH - FBiH Institute of Statistics, RS: Data received upon inquiry; BD: BiH Agency for Statistics

Table P-13 Number of hives, total production and average yield of honey in FBiH, RS, BD and BiH

(2006-2015 period)

(number of hives in 000, production in tons, average yield in kg/hive)

			Year									
			2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
Honey	FBiH	Number of hives	168	176	186	199	205	208	208	215	219	229
		Production	1.602	1.538	1.444	1.870	1.695	1.630	1.901	1.991	1.556	2.862
		Average	9,5	8,8	7,8	9,4	8,3	7,9	9,1	9,3	7,1	12,5
	RS	Number of hives										

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		Production											
		Average											
	BD	Number of hives											
		Production	15	45	45	40							
		Average											
	BiH	Number of hives	283	311	334	347	367	382	384	393	392	393	
		Production	3.017	2.773	2.571	3.261	3.340	3.059	3.107	3.644	2.678	4.926	
		Average	10,7	8,9	7,7	9,4	9,1	8,0	8,1	9,3	6,8	12,5	

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook 2016; BD: BiH Agency for Statistics

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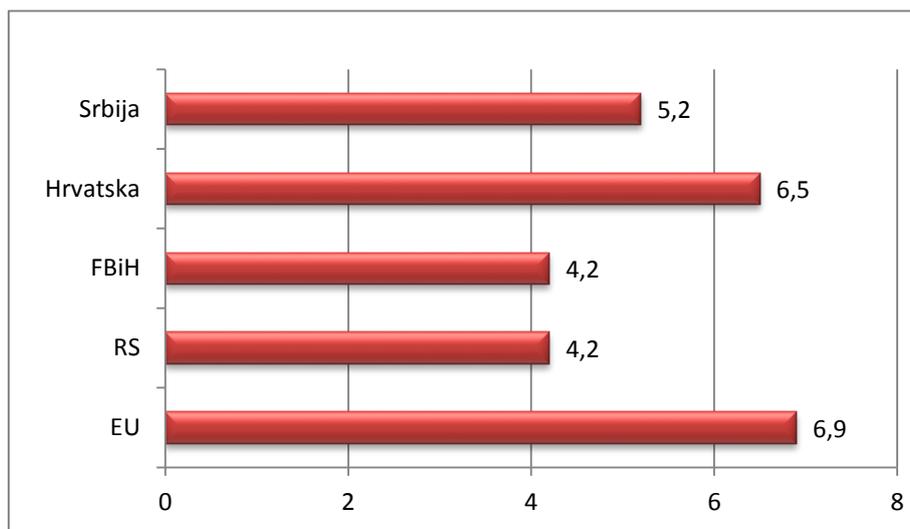
Table P-14 Livestock slaughter in FBiH and RS (2006-2015 period)

	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
Cattle										
FBiH										
Number of slaughtered livestock (in 000)	109	116	124	112	113	104	103	78	56	84
Production in tons	16.145	19.047	20.967	17.465	16.856	16.257	17.639	12.577	8.262	20.079
RS										
Number of slaughtered livestock (in 000)	26	25	29	33	38	35	30	23	15	13
Production in tons	4.393	4.542	5.135	5.738	6.374	6.027	5.176	4.082	3.028	2.641
Pigs										
FBiH										
Number of slaughtered livestock (in 000)	72	67	62	67	75	86	82	36	28	26
Production in tons	4.531	4.330	3.786	4.413	5.089	6.142	5.856	2.822	2.430	1.697
RS										
Number of slaughtered livestock (in 000)	65	69	69	77	114	144	135	110	103	95
Production in tons	4.444	4.521	4.622	5.247	8.158	10.393	9.624	7.320	7.211	6.721
Sheep										
FBiH										
Number of slaughtered livestock (in 000)	99	96	88	90	116	121	117	80	83	77
Production in tons	1.765	1.586	1.505	1.443	1.776	2.048	1.995	1.193	1.237	1.172
RS										
Number of slaughtered livestock	7	7	6	9	14	17	17	16	15	12

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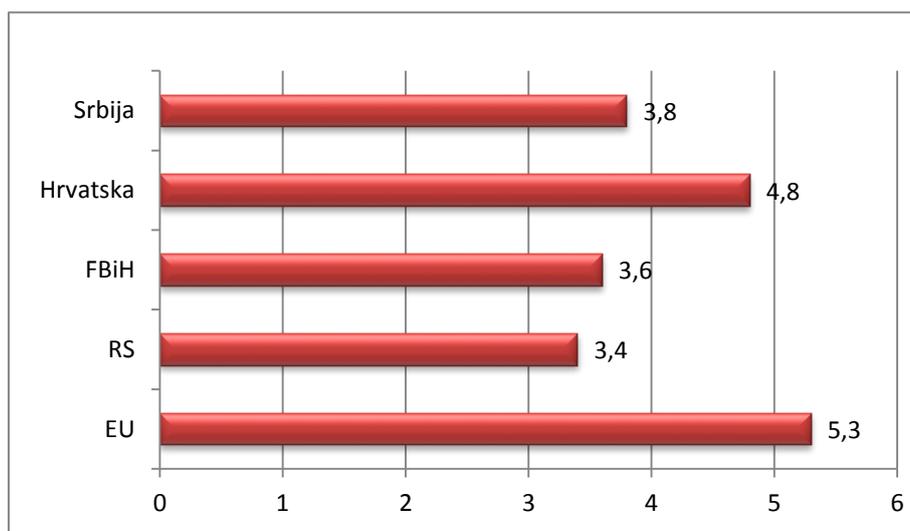
(in 000)										
Production in tons	118	123	115	148	224	282	276	273	247	196
Poultry										
FBiH										
Number of slaughtered livestock (in 000)	8.365	11.657	15.038	16.652	18.255	24.632	30.417	20.980	21.590	25.090
Production in tons	11.273	15.488	20.254	22.148	25.037	33.576	42.673	29.970	32.067	37.292
RS										
Number of slaughtered livestock (in 000)	2.141	3.111	6.120	7.545	8.510	7.938	7.345	7.188	6.602	7.052
Production in tons	3.119	3.880	8.354	10.721	12.160	11.900	11.227	11.399	11.300	11.392

Source: FBiH - FBiH Institute of Statistics, RS: RS Statistical Yearbook;



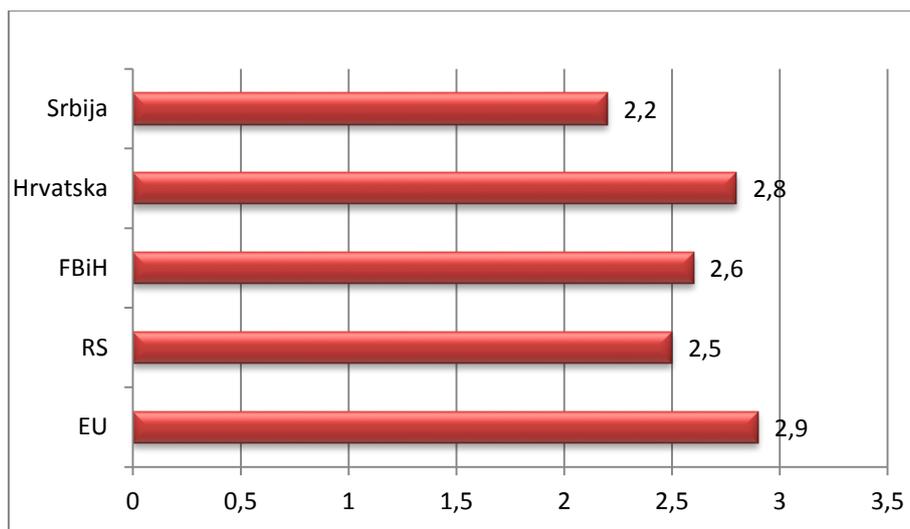
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-1 Average yields of maize (2006-14) (t/ha)



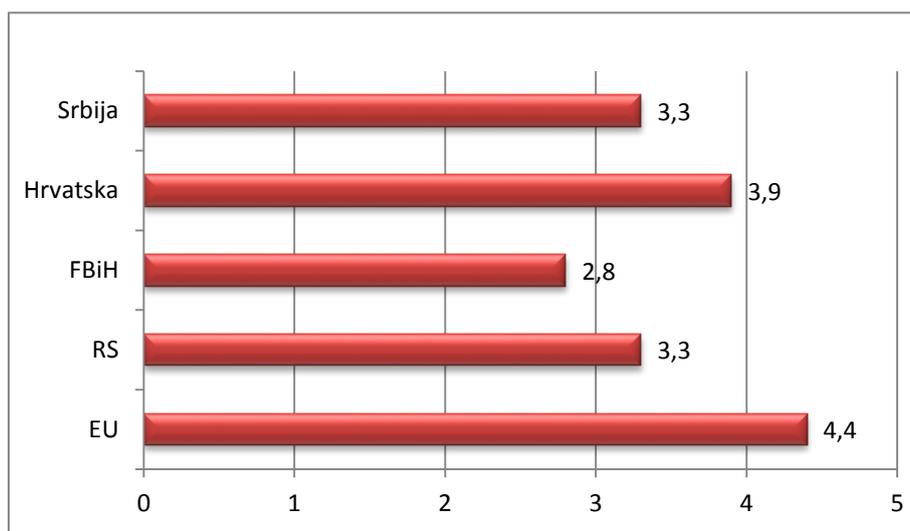
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-2 Average yields of wheat (2006-14) (t/ha)



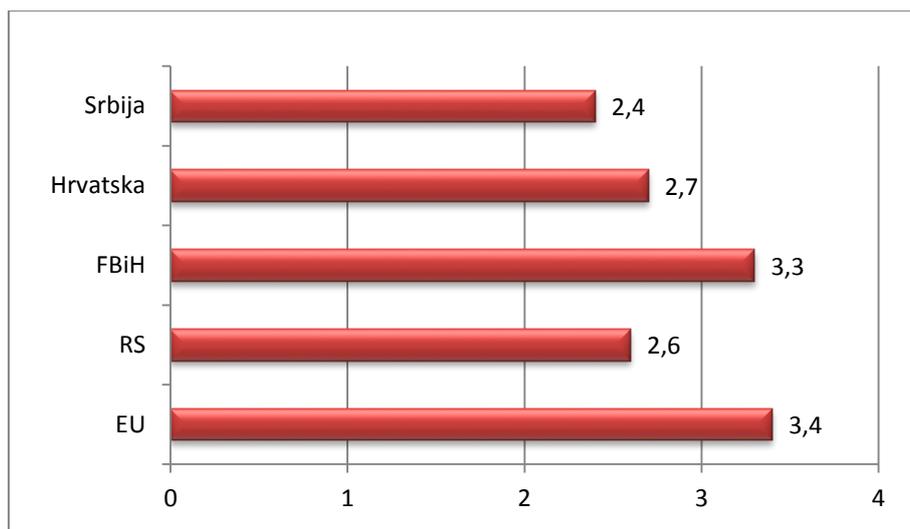
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-3 Average yields of oat (2006-14) (t/ha)



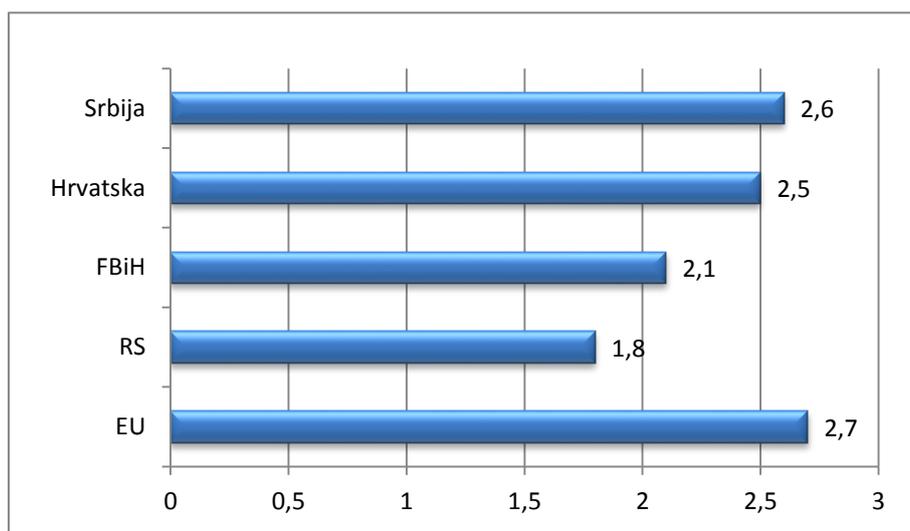
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-4 Average yields of barley (2006-14) (t/ha)



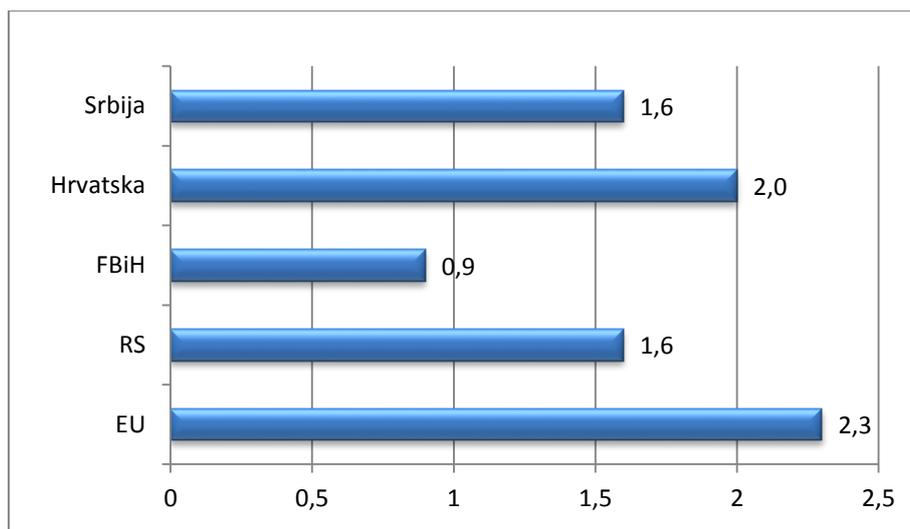
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-5 Average yields of rye (2006-14) (t/ha)



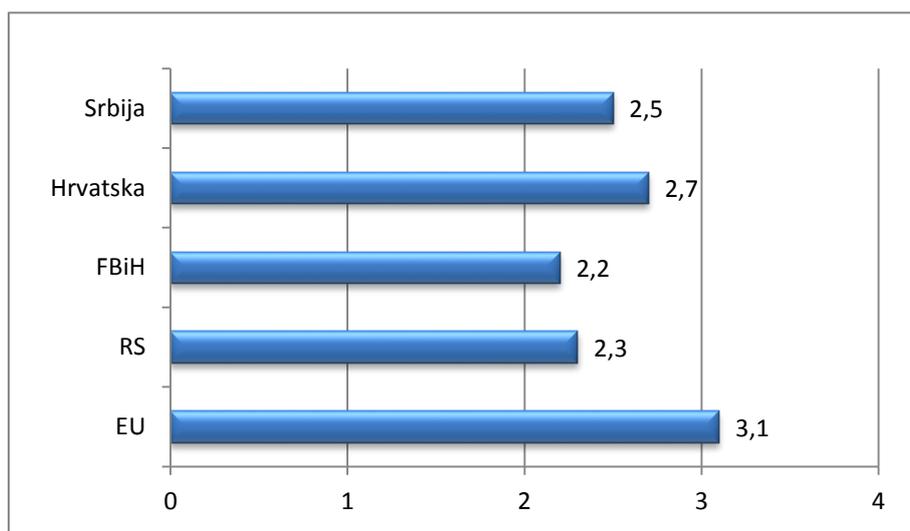
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-6 Average yields of soya (2006-14) (t/ha)



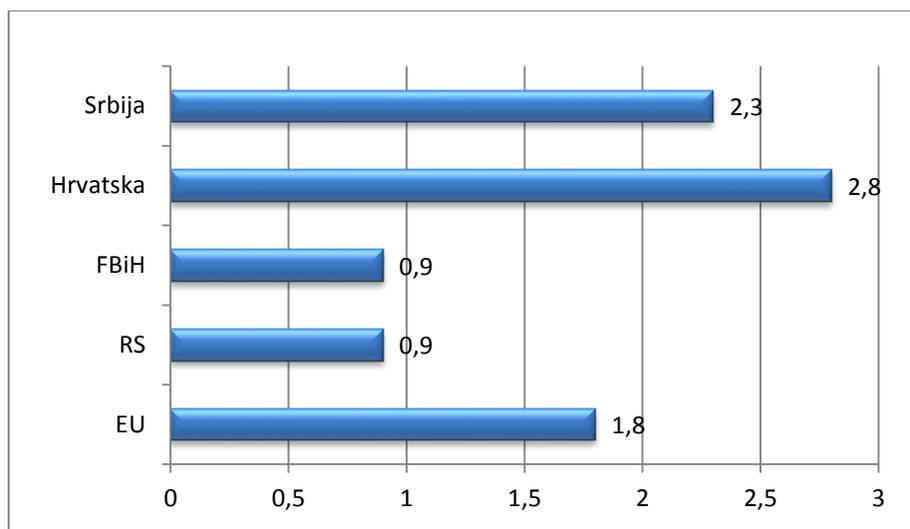
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-7 Average yields of tobacco (2006-14) (t/ha)



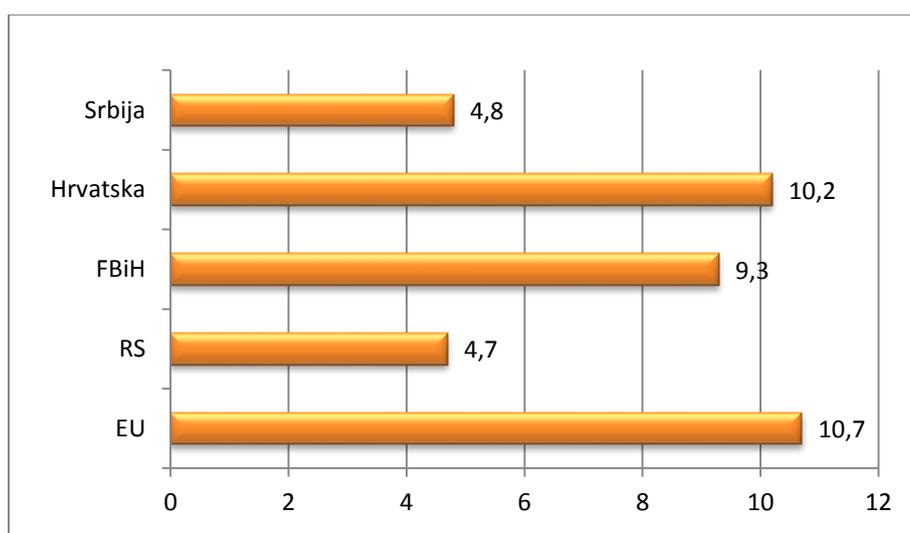
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-8 Average yields of oilseed rape (2006-14) (t/ha)



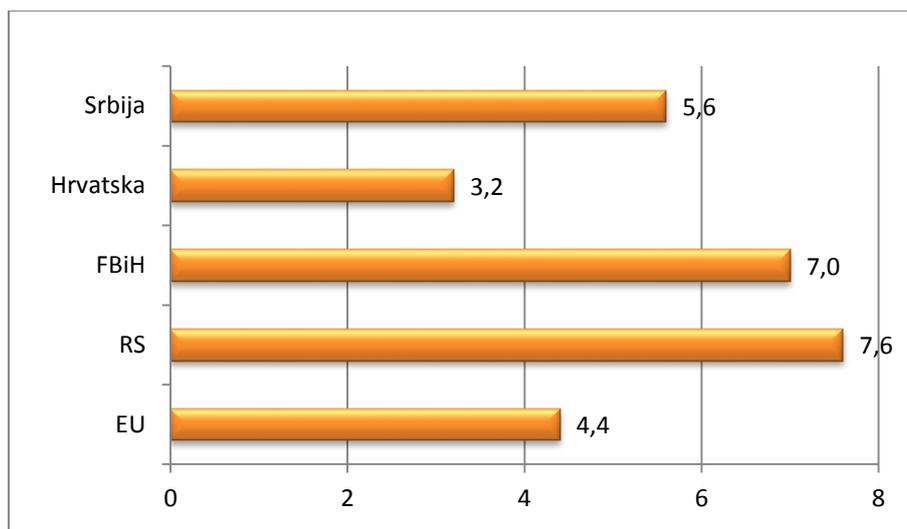
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-9 Average yields of sunflower (2006-14) (t/ha)



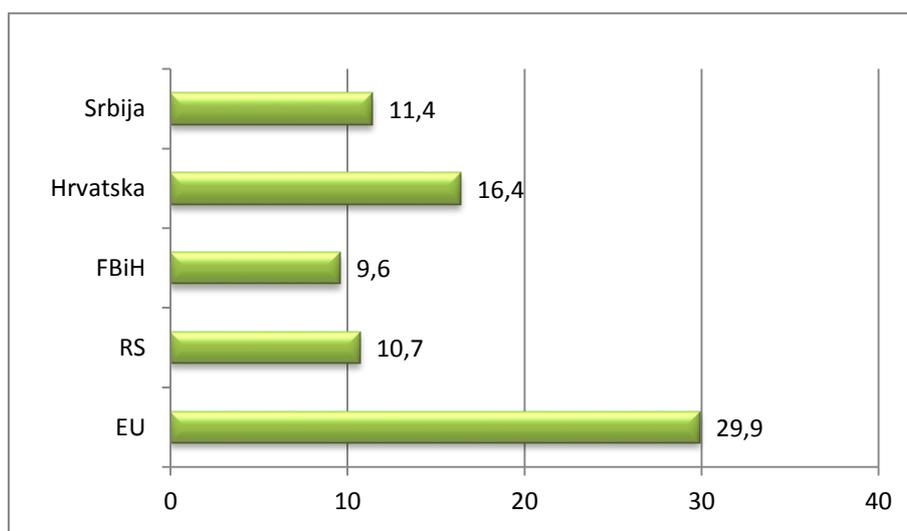
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-10 Average yields of strawberry (2006-14) (t/ha)



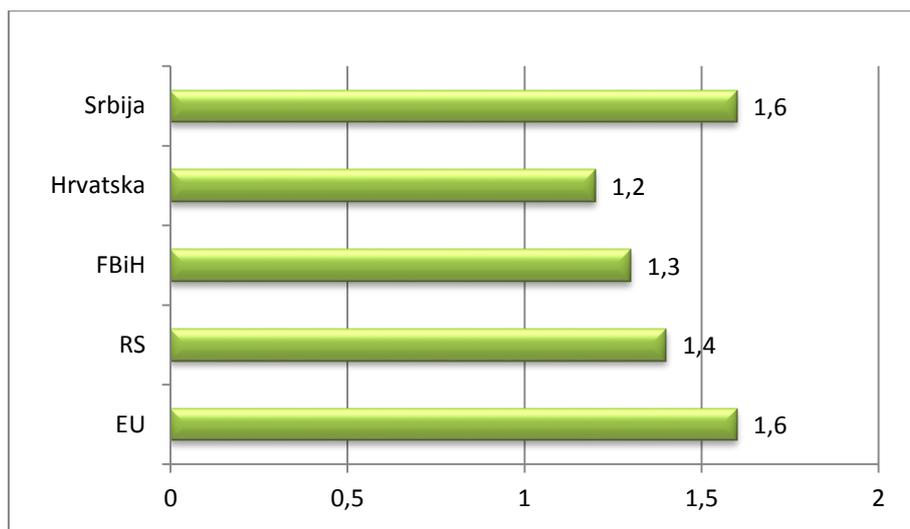
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-11 Average yields of raspberries (2006-14) (t/ha)



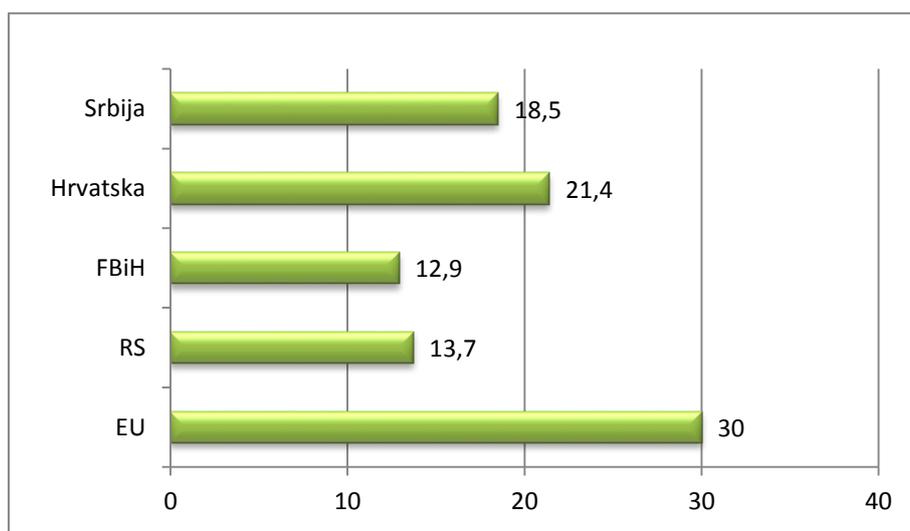
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-12 Average yields of potato (2006-14) (t/ha)



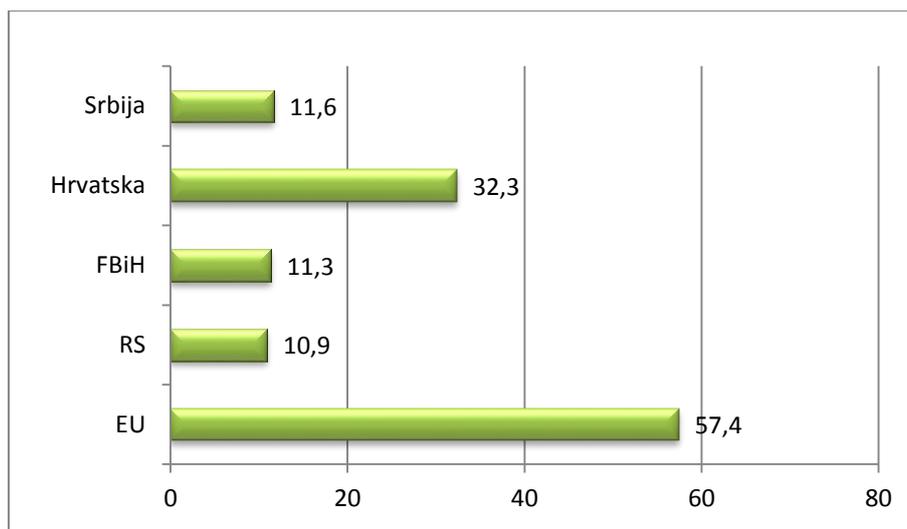
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-13 Average yields of beans (2006-14) (t/ha)



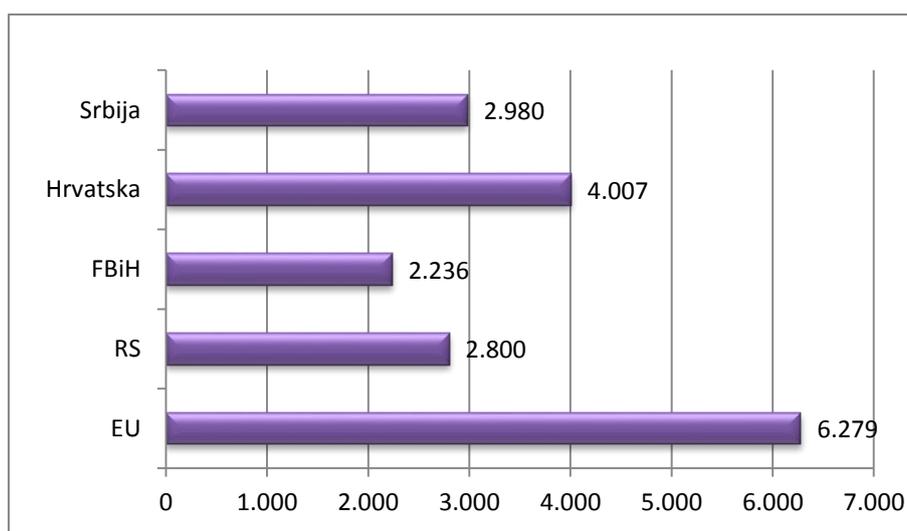
Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-14 Average yields of brassicaceae (cabbage and kale) (2006-14) (t/ha)



Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P -15. Average yields of tomato (2006-14) (t/ha)



Source: FAOSTAT, FBiH Institute of Statistics and RS Institute of Statistics

Chart P-16 Average yields of cow milk (2006-14) (kg/livestock unit)

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Table P-15 Overview of the size of forests and forest land in Bosnia and Herzegovina,
(2006-2015 period)

(in 000 ha)

Forest and forest land (state-owned forests) category	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
High forests with natural regeneration	955,0	974,1	977,6	981,6	949,5	948,4	945,9	946,3	951,6	963,2
High degraded forests	41,6	40,1	42,9	41,8	41,0	40,1	39,7	39,0	37,6	35,5
Forest plantations with and without estimated growing stock	125,3	126,2	127,8	125,9	121,7	123,6	125,1	124,7	121,7	118,3
Total for high forests	1.121,9	1.140,5	1.148,3	1.149,3	1.112,2	1.112,2	1.110,6	1.110,0	1.110,9	1.117,0
Coppice forests	434,5	427,1	452,1	456,8	435,2	433,9	433,2	428,9	457,1	472,1
Total for forests	1.556,4	1.567,6	1.600,4	1.606,1	1.547,4	1.546,1	1.543,9	1.538,8	1.568,0	1.589,1
Bare lands capable of afforestation	390,7	393,4	393,9	395,2	388,1	388,2	388,0	385,0	346,3	335,0
Bare lands incapable of afforestation	167,9	177,3	165,8	154,2	157,8	162,4	165,6	175,0	182,9	176,4
Total for management	2.115,0	2.138,3	2.160,2	2.155,4	2.093,3	2.096,6	2.097,5	2.098,9	2.097,2	2.100,5
Areas under mines (in all categories in FBiH)	129,5	127,1	130,9	128,2	129,8	129,5	130,6	130,7	132,7	132,7
Total for forests and forest land (state-owned)	2.244,5	2.265,4	2.291,1	2.283,7	2.223,0	2.226,1	2.228,1	2.229,5	2.229,9	2.233,2
Forests and forest land (state-owned)	555,2	555,2	555,2	555,2	555,2	555,2	571,1	571,1	571,4	571,4
Total for forests and forest land	2.799,8	2.820,7	2.846,3	2.838,9	2.778,3	2.781,3	2.799,2	2.800,7	2.801,4	2.804,7
	Structure in % (Total for forests and forest land = 100)									
High forests with natural regeneration	34,1	34,5	34,3	34,6	34,2	34,1	33,8	33,8	34,0	34,3
High degraded forests	1,5	1,4	1,5	1,5	1,5	1,4	1,4	1,4	1,3	1,3
Forest plantations with and without estimated growing stock	4,5	4,5	4,5	4,4	4,4	4,4	4,5	4,5	4,3	4,2
Total for high forests	40,1	40,4	40,3	40,5	40,0	40,0	39,7	39,6	39,7	39,8
Coppice forests	15,5	15,1	15,9	16,1	15,7	15,6	15,5	15,3	16,3	16,8

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Total for forests	55,6	55,6	56,2	56,6	55,7	55,6	55,2	54,9	56,0	56,7
Bare lands capable of afforestation	14,0	13,9	13,8	13,9	14,0	14,0	13,9	13,7	12,4	11,9
Bare lands incapable of afforestation	6,0	6,3	5,8	5,4	5,7	5,8	5,9	6,3	6,5	6,3
Total for management	75,5	75,8	75,9	75,9	75,3	75,4	74,9	74,9	74,9	74,9
Areas under mines (in all categories in FBiH)	4,6	4,5	4,6	4,5	4,7	4,7	4,7	4,7	4,7	4,7
Total for forests and forest land (state-owned)	80,2	80,3	80,5	80,4	80,0	80,0	79,6	79,6	79,6	79,6
Forests and forest land (private ownership)	19,8	19,7	19,5	19,6	20,0	20,0	20,4	20,4	20,4	20,4
Total for forests and forest land	100,0									

Source: BiH Agency for Statistics

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Table P-16 Foreign trade in agricultural and food products in Bosnia and Herzegovina - export (2006-2015 period)

(in BAM million)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
03	15.1	17.3	18.0	18.6	19.3	19.8	19.7	19.3	19.4	19.7
04	38.4	43.3	56.0	65.4	83.4	87.4	83.6	88.7	74.4	65.0
05	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.7	0.3	0.3
06	0.6	0.6	0.0	0.0	1.6	3.0	3.0	3.0	3.0	4.0
07	15.0	18.0	15.4	30.3	30.5	37.6	35.5	39.3	39.7	39.5
08	33.7	34.4	37.7	44.0	45.6	47.4	39.4	53.0	63.6	103.0
09	4.4	4.5	6.4	6.6	9.0	5.7	7.3	9.0	9.0	11.6
10	0.0	1.0	3.0	0.6	30.4	5.3	4.6	30.3	36.6	34.4
11	3.7	3.3	3.4	4.0	3.3	5.4	6.3	6.0	7.7	10.3
12	3.5	4.3	6.4	4.8	5.7	6.6	5.0	8.4	8.5	7.1
13	0.0	0.6	3.3	0.0	0.0	0.0	0.0	0.0	0.4	0.3
14	0.3	0.3	0.3	0.0	0.3	0.0	0.0	0.4	0.4	0.4
15	33.7	37.3	47.5	44.4	55.3	64.4	75.0	83.5	83.3	110.6
16	15.0	34.0	38.3	45.6	43.4	30.3	45.4	49.6	49.3	59.0
17	35.0	33.6	35.4	33.3	54.0	115.4	111.0	95.0	95.7	13.7
18	11.5	11.3	11.4	13.3	16.0	14.7	30.0	35.0	33.3	37.4
19	35.4	30.5	38.4	30.5	37.0	43.4	53.4	57.4	59.0	64.0
20	34.0	33.0	35.3	33.0	40.6	30.3	44.0	49.5	47.5	45.4
21	18.0	15.4	34.0	46.0	48.0	38.4	48.3	33.3	38.4	36.0
22	18.0	34.4	35.6	34.7	34.4	44.4	34.6	44.0	43.4	44.4
23	0.0	10.3	10.4	14.5	30.5	46.4	7.0	18.4	30.3	34.5
24	11.3	0.0	13.0	33.3	38.0	48.6	0.7	33.0	46.0	33.4
Total	330.3	336.4	434.5	466.0	563.7	634.3	630.7	605.4	664.7	840.4
01	0.4	0.3	0.6	0.4	4.4	4.4	0.0	0.0	0.0	0.4
02	0.7	0.0	1.1	1.0	3.4	3.7	3.0	3.4	3.0	4.0
03	5.6	5.4	4.7	4.3	3.0	3.0	3.7	3.6	3.0	3.6
04	44.4	43.6	43.4	44.0	44.7	44.4	45.4	43.4	40.7	7.7
05	0.3	0.3	0.3	0.4	0.0	0.4	0.4	0.4	0.0	0.0
06	0.3	0.3	0.3	0.3	0.3	0.5	0.6	0.6	0.6	0.6
07	5.0	5.6	3.6	4.4	5.4	4.4	4.4	4.4	4.3	3.6
08	0.4	7.3	6.5	0.0	0.4	7.6	6.3	7.7	8.6	13.3
09	4.5	4.3	4.4	4.4	4.4	0.0	4.3	4.3	4.3	4.4
10	0.3	0.5	0.5	0.4	5.0	0.0	0.7	3.0	5.5	4.4
11	4.0	0.7	0.0	0.4	0.4	0.0	4.0	4.0	4.3	4.3
12	4.3	4.3	4.4	4.0	4.0	4.4	0.0	4.3	4.4	0.0
13	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.4	11.4	11.3	0.5	0.0	0.0	13.3	13.5	14.4	14.4
16	5.0	6.5	0.0	0.0	7.7	6.3	7.3	5.0	7.3	5.0
17	0.6	18.0	0.3	7.4	0.7	18.6	18.5	13.5	5.4	5.3
18	4.3	3.4	3.6	3.0	3.0	3.4	3.3	3.0	3.5	3.3
19	0.4	0.4	0.0	0.5	6.7	7.0	0.6	0.3	0.0	7.7
20	0.4	7.4	6.0	5.4	3.5	3.3	3.3	3.3	3.7	4.0
21	3.7	4.6	5.0	3.4	3.3	3.3	3.0	3.4	4.6	4.3
22	6.0	6.0	6.0	6.0	6.4	6.6	5.6	6.4	6.5	5.3
23	3.0	3.0	4.6	3.4	3.6	3.6	4.3	3.6	3.4	3.0
24	4.3	3.0	3.0	4.0	3.7	3.0	4.6	3.3	3.5	3.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Database of BiH Foreign Trade Chamber

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Table P-17 Foreign trade in agricultural and food products
in Bosnia and Herzegovina - import (2006-2015 period)

(in BAM million)

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
01	1000	571	1000	000	000	000	000	000	000	1000
02	610	654	1010	1160	1050	1000	1010	1010	000	054
03	015	014	055	004	000	017	014	000	050	004
04	1050	1010	1077	1010	1510	1004	1704	1500	1110	1000
05	111	00	10	00	00	10	17	01	10	10
06	110	170	000	000	100	151	110	100	157	174
07	504	554	500	510	514	000	507	700	710	755
08	1010	1010	1100	1005	1010	070	1100	1100	1005	1174
09	714	770	700	700	704	1000	1170	000	054	1050
10	1100	0010	0000	1100	1000	0507	0000	0100	0500	0110
11	004	510	700	110	100	014	504	504	100	100
12	000	075	1010	700	004	700	007	704	014	000
13	10	10	01	10	10	00	11	10	00	07
14	004	00	00	01	01	00	00	00	01	00
15	004	000	1055	1114	1004	1105	1715	1000	1500	1070
16	007	000	000	1000	1050	1000	1000	1100	000	004
17	1010	1010	1114	1114	1070	0010	0015	1000	1070	1004
18	1000	1105	1054	1000	1050	1075	1004	1004	1005	1154
19	1005	1010	1574	1505	1500	1047	1070	1714	1774	1704
20	110	104	510	107	105	100	500	500	010	705
21	1057	1054	1070	1004	1055	0000	0107	0000	0100	0000
22	0010	0050	0000	0050	0000	0014	0115	0004	0100	0004
23	005	1007	1500	1100	1500	1005	1070	1005	1010	1010
24	1004	1000	1510	1100	1104	1015	1175	000	017	007
Total	10005	00100	00000							
01	01	00	10	10	07	05	05	00	01	07
02	00	00	10	10	10	10	17	07	00	00
03	11	10	10	00	00	00	00	00	00	10
04	55	55	50	57	04	00	04	50	50	10
05	01	01	01	01	01	01	01	01	01	01
06	00	00	00	00	07	00	05	00	00	00
07	07	05	00	00	00	00	04	07	07	00
08	51	17	11	10	10	00	11	11	17	51
09	00	05	00	00	00	10	10	00	05	07
10	70	100	00	00	77	04	05	77	00	05
11	11	05	00	17	10	00	00	04	10	17
12	01	01	00	00	10	07	04	00	00	05
13	01	01	01	00	00	00	00	01	01	01
14	00	00	00	00	00	00	00	00	00	00
15	17	11	10	17	10	50	00	00	55	50
16	10	10	00	15	10	10	10	11	05	01
17	70	04	55	00	70	05	70	71	50	10
18	50	50	10	50	51	10	10	10	51	51
19	00	50	04	04	04	50	00	00	05	00
20	04	04	00	00	00	10	10	00	01	05
21	70	70	70	04	70	75	70	77	00	70
22	100	101	101	100	117	110	110	111	111	110
23	10	50	50	00	04	50	07	71	71	07
24	00	00	00	00	50	10	10	00	00	00
Total	1000									

Source: Database of BiH Foreign Trade Chamber

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Table P-18 Foreign trade balance of agricultural and food products
in Bosnia and Herzegovina - import (2006-2015 period)

(in BAM million)

Tariff	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
01	-40,5	-56,1	-105,6	-96,6	-84,5	-90,0	-92,7	-70,2	-59,8	-102,3
02	-62,4	-62,4	-99,7	-107,8	-92,3	-110,1	-112,4	-167,8	-206,9	-155,4
03	-6,5	-3,9	-5,6	-2,5	-4,5	-3,3	-7,3	-5,2	-6,9	-6,6
04	-75,5	-79,0	-80,8	-69,8	-68,1	-81,8	-76,9	-70,1	-70,9	-67,4
05	-0,6	-1,4	-1,1	-1,4	-2,0	-1,2	-0,9	-1,4	-1,7	-1,5
06	-14,3	-17,2	-20,1	-20,1	-15,1	-12,5	-11,0	-12,3	-11,9	-12,3
07	-36,6	-36,4	-43,9	-34,4	-23,9	-33,1	-34,2	-44,4	-45,4	-45,0
08	-81,9	-80,2	-85,3	-67,7	-58,5	-50,5	-74,6	-59,4	-64,9	-44,1
09	-70,0	-72,6	-72,1	-64,0	-65,1	-103,7	-110,5	-89,9	-86,2	-94,0
10	-149,0	-219,2	-226,2	-139,1	-161,9	-245,5	-233,5	-190,4	-213,7	-209,6
11	-23,7	-52,2	-72,9	-39,5	-41,5	-56,3	-49,8	-49,7	-41,0	-38,6
12	-36,4	-63,2	-95,2	-65,9	-93,5	-67,3	-81,0	-71,1	-71,9	-92,1
13	-1,0	-0,6	1,2	-1,0	-1,0	-0,8	-1,3	-1,6	-1,9	-2,5
14	-0,2	0,0	-0,1	-0,4	-0,2	-0,6	-0,9	-0,2	-0,3	-0,1
15	-67,5	-59,1	-78,0	-66,7	-48,1	-85,1	-95,7	-69,7	-57,3	-48,7
16	-76,9	-67,3	-60,3	-61,2	-62,4	-70,0	-75,1	-71,6	-48,6	-39,5
17	-108,5	-100,7	-105,7	-108,2	-133,2	-146,3	-89,6	-106,7	-102,1	-86,7
18	-91,3	-99,2	-114,3	-109,9	-109,1	-112,9	-109,5	-107,3	-116,3	-118,0
19	-95,1	-100,5	-118,7	-113,0	-118,9	-118,3	-114,8	-114,1	-118,1	-107,6
20	-19,4	-22,3	-26,5	-22,9	-28,9	-28,0	-39,9	-40,4	-47,1	-55,1
21	-142,8	-160,0	-176,0	-176,4	-177,6	-185,2	-192,5	-186,0	-188,2	-191,4
22	-245,8	-274,2	-294,7	-273,6	-255,2	-260,1	-277,0	-261,5	-267,9	-276,1
23	-85,5	-118,5	-133,8	-133,8	-136,3	-146,1	-180,0	-175,5	-173,8	-167,3
24	-122,0	-128,5	-141,2	-124,6	-121,5	-116,0	-107,8	-74,1	-65,0	-60,6
Total	-	-	-	-	-	-	-	-	-	-
	1.653,7	1.874,9	2.156,8	1.900,3	1.903,4	2.124,6	2.168,7	2.040,5	2.067,7	2.022,5

Source: Database of BiH Foreign Trade Chamber

Table P-19 Share of agricultural and food products in total foreign trade of Bosnia and Herzegovina
(2006-2015 period)

(in BAM million)

Description	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
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Total import of goods	2.640	3.035	3.432	2.828	3.628	4.204	4.018	4.285	4.439	4.595
Total export of goods	5.823	7.106	8.330	6.317	6.962	7.938	7.799	7.756	8.283	8.105
Trade balance	-3.183	-4.071	-4.899	-3.489	-3.334	-3.734	-3.781	-3.471	-3.844	-3.510
Export of AFP	270,2	336,1	424,5	466,0	563,7	621,2	620,7	685,4	661,7	840,1
Share in total export	5,2	5,7	6,3	8,4	7,9	7,6	7,9	8,2	7,6	9,4
Import of AFP	1923,5	2210,6	2580,8	2365,8	2466,7	2745,4	2788,9	2725,4	2728,9	2862,1
Share in total import	16,9	15,9	15,8	19,2	18,1	17,7	18,3	18,0	16,8	18,1
Trade balance of AFP	-1653,7	-1874,9	-2156,8	-1900,3	-1903,4	-2124,6	-2168,7	-2040,5	-2067,7	-2022,5
Level of import to export ratio of AFP	14,0	15,2	16,4	19,7	22,9	22,6	22,3	25,1	24,2	29,4

Source: Database of BiH Foreign Trade Chamber

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Table P-20 Structure of foreign trade in agricultural and food products per groups of countries
(2006-2015 period)

(in BAM million)

Countries	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
EXPORT										
Total	270,3	336,2	424,6	466,1	563,9	621,4	620,8	685,6	661,8	840,2
EU - 27/28	69,2	82,5	90,0	109,5	144,5	140,2	118,8	339,1	250,0	256,5
<i>Of which</i>										
- Croatia								172,3	103,0	92,4
- Italy	19,6	25,6	24,4	26,0	29,1	26,6	39,5	42,4	36,7	37,6
- Austria	12,3	12,3	20,3	19,2	43,8	27,4	10,7	16,4	16,0	16,2
- Germany	6,8	7,0	8,6	15,6	19,4	14,7	15,6	29,5	32,4	32,4
- Sweden	5,1	5,3	6,6	8,6	8,4	9,6	7,4	8,9	11,5	12,9
- Slovenia	13,7	15,8	15,1	20,5	26,8	37,7	25,9	28,9	20,4	22,2
- Hungary	1,2	6,3	0,8	2,7	2,3	5,1	4,2	4,2	3,7	5,3
Western Balkans	189,3	239,8	295,5	325,5	362,8	452,2	478,1	271,3	271,7	290,0
<i>Of which</i>										
- Croatia	91,7	125,2	157,6	156,5	175,4	201,5	212,7	-	-	-
- Serbia	82,1	65,5	94,2	96,8	98,8	95,1	89,3	111,7	125,6	127,9
- Macedonia	14,9	14,1	14,3	22,3	20,9	48,5	60,7	48,1	46,5	57,6
- Montenegro	0,0	0,0	26,0	25,0	29,5	34,0	39,9	63,4	61,8	53,6
- Albania	0,6	0,6	3,5	2,7	16,0	28,2	28,6	9,4	6,4	8,8
Other countries	11,7	13,9	39,1	31,1	56,5	28,9	23,9	75,3	140,1	293,7
<i>Of which</i>										
- Turkey	0,6	3,1	5,1	17,8	27,2	2,0	6,0	48,2	114,4	229,2
- USA	4,5	4,5	4,5	4,1	3,5	3,3	5,1	5,1	4,8	6,4
- Switzerland	2,3	2,5	2,3	2,7	4,3	3,3	4,3	5,5	5,7	6,9
IMPORT										
Total	1923,9	2211,1	2581,3	2366,4	2467,3	2746,0	2789,6	2726,0	2729,6	2862,7
EU - 27/28	741,3	769,2	960,3	834,9	907,5	1096,2	1116,3	1833,8	1773,3	1820,4
<i>Of which</i>										
- Croatia								780,7	640,1	642,9
- Italy	87,8	96,4	116,0	96,2	100,7	108,7	115,6	119,6	130,7	142,5
- Austria	84,7	105,4	133,2	142,6	189,9	275,8	243,8	92,8	98,0	92,0

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- Germany	75,1	75,9	87,2	83,1	93,7	100,7	103,7	132,3	126,3	127,6
- Slovenia	195,4	217,5	232,7	209,5	208,9	205,4	220,1	228,0	229,9	247,8
- Hungary	155,3	131,8	232,9	140,6	150,4	177,0	205,5	187,3	197,7	167,2
- Romania	22,5	11,0	14,3	11,7	25,4	53,2	37,1	44,3	54,9	51,5
Western Balkans	1029,7	1281,9	1418,8	1355,0	1410,0	1495,8	1520,7	748,3	810,9	887,2
<i>Of which</i>										
- Croatia	590,9	733,6	776,1	728,5	724,6	786,8	799,6	-	-	-
- Serbia	398,2	430,7	555,7	531,6	593,4	620,0	636,4	661,7	728,6	804,2
- Macedonia	40,7	41,7	55,2	61,2	64,9	61,8	61,2	64,0	62,9	57,1
- Montenegro	0,0	0,0	31,8	29,5	26,6	24,3	17,3	14,7	15,5	16,3
- Albania	0,0	0,0	0,0	0,2	0,2	1,6	1,6	2,7	1,7	6,3
Other countries	152,9	160,0	202,2	176,4	149,8	153,9	152,5	144,0	145,4	155,1
<i>Of which</i>										
- Turkey	42,6	46,2	55,5	53,0	48,7	54,0	54,7	56,0	56,5	52,8
- USA	17,2	21,1	11,9	12,5	9,8	13,7	14,1	7,3	7,8	13,9
- Switzerland	22,9	25,0	25,8	24,1	5,3	8,0	5,8	4,0	4,4	1,7

Source: Database of BiH Foreign Trade Chamber

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Table P-21 Structure of foreign trade in agricultural and food products per countries of the region
(2006-2015 period)

(in BAM million)

Description	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
Export										
EU-27/28	69,2	82,5	90,0	109,5	144,5	140,2	118,8	339,1	250,0	256,5
Western Balkans	189,3	239,8	295,5	325,5	362,8	452,2	478,1	271,3	271,7	290,0
Other countries	11,7	13,9	39,1	31,1	56,5	28,9	23,9	75,3	140,1	293,7
Total	270,3	336,2	424,6	466,1	563,9	621,4	620,8	685,6	661,8	840,2
Import										
EU-27/28	741,3	769,2	960,3	834,9	907,5	1096,2	1116,3	1833,8	1773,3	1820,4
Western Balkans	1.029,7	1.281,9	1.418,8	1.355,0	1.410,0	1.495,8	1.520,7	748,3	810,9	887,2
Other countries	152,9	160,0	202,2	176,4	149,8	153,9	152,5	144,0	145,4	155,1
Total (import)	1.923,9	2.211,1	2.581,3	2.366,4	2.467,3	2.746,0	2.789,6	2.726,0	2.729,6	2.862,7
Structure in % (Total = 100)										
Export										
EU-27/28	25,6	24,5	21,2	23,5	25,6	22,6	19,1	49,5	37,8	30,5
Western Balkans	70,0	71,3	69,6	69,8	64,3	72,8	77,0	39,6	41,1	34,5
Other countries	4,3	4,1	9,2	6,7	10,0	4,7	3,9	11,0	21,2	35,0
Total (export)	100,0									
Import										
EU-27/28	38,5	34,8	37,2	35,3	36,8	39,9	40,0	67,3	65,0	63,6
Western Balkans	53,5	58,0	55,0	57,3	57,1	54,5	54,5	27,4	29,7	31,0
Other countries	7,9	7,2	7,8	7,5	6,1	5,6	5,5	5,3	5,3	5,4
Total (import)	100,0									

Source: Database of BiH Foreign Trade Chamber

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Table P-22 Structure of direct support to producers, BiH Federation, Republika Srpska, Brčko District and Bosnia and Herzegovina (2006-2015 period)

(in BAM million)

Administrative unit/Group of measures	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
BiH Federation										
Direct payments based on output	18,0	18,0	24,5	20,2	23,3	26,3	19,5	23,8	29,6	39,3
Direct payments per ha/livestock unit	8,3	13,7	21,0	22,2	27,9	31,2	20,3	37,9	22,2	25,8
Support to variable inputs	0,6	0,4	0,9	0,4	0,4	1,7	1,8	2,1	2,9	0,2
Other direct support to producers	0,1	0,0	0,0	0,0	0,0	0,2	4,2	0,0	1,6	0,0
Total for direct support	27,1	32,0	46,5	42,8	51,7	59,4	45,8	63,8	56,3	65,4
Republika Srpska										
Direct payments based on output	15,9	26,2	21,2	31,9	18,5	15,0	30,6	28,2	30,8	29,9
Direct payments per ha/livestock unit	6,5	18,4	25,1	4,5	4,7	1,6	5,4	5,2	6,2	4,9
Support to variable inputs	5,6	0,5	0,0	19,1	0,0	25,1	7,3	8,2	5,3	5,3
Other direct support to producers	0,0	0,5	0,2	2,7	2,0	7,8	0,0	0,0	0,0	0,0
Total for direct support	28,0	45,5	46,6	58,1	25,3	49,5	43,2	41,5	42,3	40,1
Brčko District										
Direct payments based on output	5,1	3,0	2,6	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Direct payments per ha/livestock unit	0,0	1,4	1,7	5,4	4,5	4,0	5,8	5,9	3,4	5,2
Support to variable inputs	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Other direct support to producers	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for direct support	5,1	4,4	4,3	5,4	4,5	4,0	5,8	5,9	3,4	5,2
Bosnia and Herzegovina										
Direct payments based on output	39,0	47,2	48,3	52,1	41,9	41,4	50,1	51,9	60,4	69,2
Direct payments per ha/livestock unit	14,8	33,5	47,8	32,1	37,2	36,7	31,4	49,0	31,7	35,9
Support to variable inputs	6,2	0,9	0,9	19,5	0,4	26,7	9,1	10,3	8,2	5,5
Other direct support to producers	0,1	0,5	0,3	2,7	2,0	8,0	4,2	0,0	1,6	0,0
Total for direct support	60,2	82,0	97,3	106,3	81,5	112,8	94,8	111,3	101,9	110,7
Structure in % (Total = 100)										
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Direct payments based on output	66,6	56,0	52,7	47,2	45,2	44,4	42,5	37,2	52,5	60,2
Direct payments per ha/livestock unit	30,7	42,8	45,2	51,9	54,0	52,5	44,3	59,4	39,4	39,5
Support to variable inputs	2,3	1,2	2,0	0,9	0,8	2,8	4,0	3,4	5,2	0,4
Other direct support to producers	0,5	0,0	0,1	0,0	0,0	0,3	9,2	0,0	2,9	0,0
Total for direct support	100,0									
Republika Srpska										
Direct payments based on output	56,7	57,4	45,6	54,8	73,2	30,4	70,8	67,8	72,9	74,6
Direct payments per ha/livestock unit	23,3	40,3	53,9	7,7	18,7	3,3	12,4	12,5	14,6	12,3
Support to variable inputs	20,0	1,1	0,0	32,8	0,0	50,7	16,8	19,7	12,5	13,2
Other direct support to producers	0,0	1,1	0,5	4,6	8,0	15,7	0,0	0,0	0,0	0,0
Total for direct support	100,0									
Brčko District										
Direct payments based on output	100,0	68,3	60,6	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Direct payments per ha/livestock unit	0,0	31,7	39,4	100,0	100,0	100,0	100,0	100,0	100,0	99,8
Support to variable inputs	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,2
Other direct support to producers	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for direct support	100,0									
Bosnia and Herzegovina										
Direct payments based on output	64,8	57,5	49,6	49,0	51,4	36,7	52,8	46,7	59,2	62,6
Direct payments per ha/livestock unit	24,6	40,8	49,1	30,2	45,6	32,6	33,2	44,1	31,1	32,5
Support to variable inputs	10,3	1,1	1,0	18,3	0,5	23,7	9,6	9,3	8,1	5,0
Other direct support to producers	0,2	0,6	0,3	2,5	2,5	7,1	4,5	0,0	1,6	0,0
Total for direct support	100,0									

Source: APM database of FAO/JRC/SWG project

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Table P-23 Overview of structural and rural development measures, BiH Federation, Republika Srpska, Brčko District and Bosnia and Herzegovina (2006-2015 period)

(in BAM million)

Administrative unit/ Group of measures	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
BiH Federation										
Axis 1 - Improvement of competitiveness	5,5	19,6	25,5	22,4	16,5	7,7	35,1	1,7	11,1	2,3
Axis 2 - Improvement of environmental protection	0,0	1,4	1,0	0,0	0,0	0,0	0,1	0,0	0,0	0,0
Axis 3 - Support to rural economy	0,0	1,2	1,5	1,1	2,7	0,0	0,1	0,0	0,0	0,1
Total for support to rural development	5,5	22,2	28,1	23,6	19,2	7,8	35,3	1,7	11,2	2,3
Republika Srpska										
Axis 1 - Improvement of competitiveness	12,6	9,8	10,2	7,0	21,1	6,3	19,4	9,3	6,4	2,9
Axis 2 - Improvement of environmental protection	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,1
Axis 3 - Support to rural economy	0,7	5,4	6,9	6,1	18,7	1,3	2,4	1,6	0,1	0,0
Total for support to rural development	13,3	15,2	17,2	13,1	39,8	7,7	21,8	10,9	6,6	2,9
Brčko District										
Axis 1 - Improvement of competitiveness	0,3	0,4	0,2	0,7	0,5	0,6	0,7	0,7	0,2	0,4
Axis 2 - Improvement of environmental protection	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Axis 3 - Support to rural economy	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for support to rural development	0,3	0,4	0,2	0,7	0,5	0,6	0,7	0,7	0,2	0,4
Bosnia and Herzegovina										
Axis 1 - Improvement of competitiveness	18,4	29,8	36,0	30,1	38,1	14,6	55,3	11,7	17,8	5,5
Axis 2 - Improvement of environmental protection	0,0	1,4	1,0	0,0	0,0	0,0	0,1	0,0	0,0	0,1
Axis 3 - Support to rural economy	0,7	6,5	8,5	7,2	21,5	1,3	2,5	1,6	0,1	0,1
Total for support to rural development	19,1	37,7	45,5	37,3	59,5	16,0	57,9	13,3	18,0	5,6
Structure in % (Total = 100)										

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BiH Federation										
Axis 1 - Improvement of competitiveness	99,7	88,4	91,0	95,1	85,6	99,4	99,4	100,0	99,7	97,7
Axis 2 - Improvement of environmental protection	0,3	6,3	3,6	0,1	0,1	0,6	0,3	0,0	0,0	0,0
Axis 3 - Support to rural economy	0,0	5,3	5,4	4,8	14,3	0,0	0,4	0,0	0,3	2,3
Total for support to rural development	100,0									
Republika Srpska										
Axis 1 - Improvement of competitiveness	95,0	64,7	59,6	53,2	52,9	82,5	88,9	85,0	97,7	98,0
Axis 2 - Improvement of environmental protection	0,0	0,0	0,0	0,2	0,0	0,0	0,0	0,0	0,8	2,0
Axis 3 - Support to rural economy	5,0	35,3	40,4	46,6	47,1	17,5	11,1	15,0	1,5	0,0
Total for support to rural development	100,0									
Brčko District										
Axis 1 - Improvement of competitiveness	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Axis 2 - Improvement of environmental protection	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Axis 3 - Support to rural economy	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for support to rural development	100,0									
Bosnia and Herzegovina										
Axis 1 - Improvement of competitiveness	96,5	78,9	79,2	80,5	63,9	91,3	95,4	87,8	99,0	98,0
Axis 2 - Improvement of environmental protection	0,1	3,7	2,2	0,1	0,0	0,3	0,2	0,0	0,3	1,0
Axis 3 - Support to rural economy	3,5	17,3	18,6	19,4	36,0	8,4	4,4	12,2	0,8	1,0
Total for support to rural development	100,0									

Source: APM database of FAO/JRC/SWG project

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Table P-24 Overview of general measures in agriculture, BiH Federation, Republika Srpska, Brčko District and Bosnia and Herzegovina (2006-2015 period)

(in BAM million)

Administrative unit/ Group of measures	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.	2014.	2015.
BiH Federation										
Research, development, extension services	0,8	2,0	2,3	1,2	1,3	0,7	0,9	2,5	0,5	0,4
Food safety and quality control	1,1	2,3	2,5	0,8	0,5	0,1	0,1	0,0	0,1	0,0
Other general measures in agriculture	0,1	0,1	0,6	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for general measures in agriculture	2,0	4,4	5,5	2,1	1,8	0,8	1,0	2,5	0,5	0,4
Republika Srpska										
Research, development, extension services	0,6	1,8	1,5	2,2	1,3	2,1	2,6	2,4	3,0	4,2
Food safety and quality control	4,2	5,7	10,1	6,2	6,8	1,4	2,4	2,1	2,3	1,5
Other general measures in agriculture	0,3	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for general measures in agriculture	5,1	7,5	11,6	8,5	8,2	3,5	5,0	4,5	5,3	5,6
Brčko District										
Research, development, extension services	0,0	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Food safety and quality control	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Other general measures in agriculture	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for general measures in agriculture	0,0	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Bosnia and Herzegovina										
Research, development, extension services	1,4	3,9	3,9	3,4	2,6	2,8	3,5	4,8	3,4	4,5
Food safety and quality control	5,3	8,0	12,6	7,1	7,4	1,5	2,4	2,2	2,4	1,5
Other general measures in agriculture	0,4	0,1	0,6	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for general measures in agriculture	7,1	12,1	17,1	10,5	9,9	4,3	6,0	7,0	5,8	6,1
Structure in % (Total = 100)										

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BiH Federation										
Research, development, extension services	38,4	45,7	42,4	59,1	69,8	90,2	93,2	98,3	89,5	89,6
Food safety and quality control	55,2	51,8	45,8	40,9	30,2	9,8	6,8	1,7	10,5	10,4
Other general measures in agriculture	6,4	2,5	11,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for general measures in agriculture	100,0									
Republika Srpska										
Research, development, extension services	11,9	23,6	13,1	26,2	16,1	61,0	52,2	52,4	56,0	73,6
Food safety and quality control	82,2	76,4	86,9	73,8	83,9	39,0	47,8	47,6	44,0	26,4
Other general measures in agriculture	5,9	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for general measures in agriculture	100,0									
Brčko District										
Research, development, extension services	0,0	100,0	100,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Food safety and quality control	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Other general measures in agriculture	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for general measures in agriculture	0,0	100,0	100,0	0,0						
Bosnia and Herzegovina										
Research, development, extension services	19,4	32,7	22,7	32,7	25,7	66,2	59,0	68,9	59,0	74,7
Food safety and quality control	74,6	66,4	73,5	67,3	74,3	33,8	41,0	31,1	41,0	25,3
Other general measures in agriculture	6,0	0,9	3,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total for general measures in agriculture	100,0									

Source: APM database of FAO/JRC/SWG project

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Table P-25 Division of FBiH territory to urban and rural areas (2015)

	Municipality/city	Size km ²	Population	Population density people/km ²
1	Novo Sarajevo	9,9	73.862	7460,8
2	Novi Grad	47,2	126.708	2684,5
3	Centar	33	68.487	2075,4
4	Stari Grad	51,4	41.595	809,2
5	Doboj - Jug	10,2	4.932	483,5
6	Tuzla	294	131.684	447,9
7	Ilidža	143,4	63.599	443,5
8	Vogošća	71,7	26.847	374,4
9	Tešanj	155,9	48.772	312,8
10	Teočak	29	7.299	251,7
11	Doboj - Istok	41	10.167	248,0
12	Gračanica	216	52.701	244,0
13	Zenica	558,5	126.871	227,2
14	Gradačac	218	45.875	210,4
15	Živinice	291	56.232	193,2
16	Breza	72,9	13.634	187,0
17	Kalesija	201	35.990	179,1
18	Cazin	356	63.028	177,0
19	Visoko	230,8	39.982	173,2
20	Srebrenik	248	41.906	169,0
21	Vitez	159	25.294	159,1
22	Orašje	121,8	18.988	155,9
	Over 150 inhabitants per km²	3.559.7	1.124.453	315,9

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23	Lukavac	337	50.316	149,3
24	Velika Kladuša	331	47.354	143,1
25	Bužim	129	18.081	140,2
26	Banovići	185	25.922	140,1
27	Usora	49,8	6.838	137,3
28	Kiseljak	165	20.442	123,9
29	Goraže	248,8	29.613	119,0
30	Kakanj	377	42.950	113,9
31	Žepče	282,3	31.015	109,9
32	Sapna	118	12.629	107,0
33	Novi Travnik	242	24.952	103,1
34	Bugojno	361	37.115	102,8
35	Travnik	529	54.332	102,7
36	Busovača	158	15.949	100,9
	100 -150 inhabitants per km²	3.512,9	417.508	118,8
37	Domaljevac Šamac	44,4	4.415	99,4
38	Čelić	140	13.575	97,0
39	Grad Mostar	1175	112.347	95,6
40	Odžak	158,4	14.972	94,5
41	Maglaj	252	23.202	92,1
42	Čapljina	256	22.483	87,8
43	Čitluk	181	15.857	87,6
44	Hadžići	273,3	23.129	84,6
45	Ljubuški	292,7	23.320	79,7
46	Jajce	339	23.945	70,6
47	Grude	220,8	15.456	70,0

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48	Bihać	900	61.724	68,6
49	Široki Brijeg	387,6	26.497	68,4
50	Zavidovići	556	37.495	67,4
51	Ilijaš	308,6	20.097	65,1
52	Sanski Most	781	43.270	55,4
53	Ključ	358	18.870	52,7
	50 -100 inhabitants per km²	6.623,8	500.654	75,6
54	Bosanska Krupa	561	27.972	49,9
55	Gornji Vakuf - Uskoplje	402	18.474	46,0
56	Stolac	286	12.898	45,1
57	Kladanj	331	14.470	43,7
58	Donji Vakuf	320	13.728	42,9
59	Jablanica	301	11.493	38,2
60	Fojnica	306	11.455	37,4
61	Kreševo	149	5.403	36,3
62	Posušje	461,1	16.036	34,8
63	Prozor	477	15.498	32,5
64	Livno	994	31.422	31,6
65	Olovo	407,8	11.365	27,9
66	Tomislavgrad	967,4	26.378	27,3
67	Vareš	390,1	9.676	24,8
68	Konjic	1169	27.141	23,2
69	Neum	225	4.335	19,3
70	Drvar	589,3	10.409	17,7
71	Pale	86,4	1.057	12,2
72	Dobretići	59	625	10,6

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73	Foča	169,4	1.671	9,9
74	Bosanski Petrovac	709	6.731	9,5
75	Trnovo	338,4	2.529	7,5
76	Kupres	569,8	3.243	5,7
77	Ravno	331	1.419	4,3
78	Glamoč	1033,6	4.355	4,2
79	Bosansko Grahovo	780	1.950	2,5
	Less than 50 inhabitants per km²	12.413,3	291.733	23,5
	BiH Federation	26.109,7	2.334.348	89,4

Table P 28: Division of RS territory to urban and rural areas (2013)

	Municipality/city	Size km ²	Population	Population density people/km ²
1.	Istočna Ilidža	28	14.437	515,61
2.	Istočno Novo Sarajevo	37	10.401	281,11
	Over 150 inhabitants per km²	65	24.838	382,12
3.	Banja Luka	1.232	180.053	146,15
4.	Zvornik	379	54.407	143,55
5.	Bijeljina	734	103.874	141,52
6.	Doboj	628	68.514	109,10
	100-150 inhabitants per km²	2.973	406.848	136,85
7.	Prijedor	834	80.916	97,02
8.	Šamac	175	16.308	93,19
9.	Laktaši	387	34.210	88,40
10.	Ugljevik	172	15.118	87,90
11.	Modriča	297	24.490	82,46

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12.	Kostajnica	70	5.645	80,64
13.	Vukosavlje	55	4.363	79,33
14.	Donji Žabar	49	3.669	74,88
15.	Osmaci	81	5.546	68,47
16.	Brod	234	15.720	67,18
17.	Gradiška	762	49.196	64,56
18.	Bratunac	293	18.651	63,66
19.	Prnjavor	631	34.357	54,45
20.	Novi Grad	484	25.240	52,15
21.	Lopare	291	14.689	50,48
22.	Derвента	516	25.922	50,24
	50-100 inhabitants per km²	5331	374040	70,16
23.	Vlasenica	247	10.657	43,15
24.	Teslić	872	37.236	42,70
25.	Pale	491	20.359	41,46
26.	Kozarska Dubica	499	20.681	41,44
27.	Čelinac	365	15.117	41,42
28.	Srbac	447	16.933	37,88
29.	Milići	287	10.445	36,39
30.	Šekovići	195	6.323	32,43
31.	Kotor Varoš	574	18.361	31,99
32.	Trebinje	905	28.239	31,20
33.	Kneževo	330	9.368	28,39
34.	Mrkonjić Grad	663	15.926	24,02
35.	Pelagićevo	190	4.358	22,94
36.	Novo Goražde	128	2.915	22,77

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37.	Petrovo	279	6.317	22,64
38.	Višegrad	448	10.118	22,58
39.	Srebrenica	527	11.698	22,20
40.	Rudo	344	7.578	22,03
41.	Šipovo	530	9.969	18,81
42.	Krupa na Uni	83	1.560	18,80
43.	Trnovo	113	1.983	17,55
44.	Čajniče	275	4.679	17,01
45.	Bileća	633	10.607	16,76
46.	Sokolac	723	11.620	16,07
47.	Jezero	65	1.039	15,98
48.	Foča	1.121	17.580	15,68
49.	Rogatica	664	10.302	15,52
50.	Istočni Stari Grad	77	1.116	14,49
51.	Nevesinje	923	12.542	13,59
52.	Oštra Luka	204	2.705	13,26
53.	Gacko	736	8.710	11,83
54.	Ribnik	496	5.851	11,80
55.	Ljubinje	326	3.319	10,18
56.	Han Pijesak	342	3.445	10,07
57.	Berkovići	256	2.041	7,97
58.	Kupres	45	293	6,51
59.	Kalinovik	732	1.962	2,68
60.	Petrovac	145	354	2,44
61.	Istočni Mostar	87	244	2,80
62.	Istočni Drvar	74	66	0,89

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	0 to 50 inhabitants per km²	16441	364616	22,18
	Total for RS	24.810	1.170.342	47,17