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AGRICULTURAL SECTOR POLICY NOTE FOR BOSNIA AND HERZEGOVINA
Trade and Integration Policy Note

Poverty Reduction and Economic Management Unit
Europe and Central Asia Region

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Agricultural Sector Policy Note for Bosnia and Herzegovina

Trade and Integration Policy Notes

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CURRENCY AND EQUIVALENT UNITS

(Exchange Rate Effective May 2010)

Currency Unit = Convertible Mark (KM)

KM 1.322 = US$ 1.00

KM 1.95 = EUR 1.00

Government Fiscal Year

January 1-December 31

Weights and Measures

Metric System

ACRONYMS AND ABBREVIATIONS

BD	Brcko District
BH	Bosnia and Herzegovina
CAP	Common Agricultural Policy
DRC	Domestic Resource Cost
ERP	Effective Rate of Protection
EU	European Union
FBH	Federation of Bosnia and Herzegovina
HACCP	Hazard Analysis and Critical Control Points
IACS	Integrated Administration and Control System
IPA	Instrument for Pre-Accession
IPARD	Instrument for Pre-Accession Rural Development
KM	Convertible Mark
LPIS	Land Identification Parcel System
MFTER	Ministry of Foreign Trade and Economic Relations
Mun	Municipality
NRP	Nominal Rate of Protection
RS	Republika Srpska
VAT	Value Added Tax
WB	World Bank

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EXECUTIVE SUMMARY

Background

i. **Favorable climate conditions and relatively low factor prices give the agriculture sector in Bosnia and Herzegovina (BH) a clear comparative advantage over other countries**. The agricultural season in BH begins earlier than in most European countries, shipping costs are relatively low, and land and labor prices are more favorable than in other southern European countries. As a result, the country's agriculture sector should be well positioned to compete on the export markets. Estimates of domestic resource cost (DRC) suggest highly efficient use of resources in the production of a number of crops, as compared with the opportunity cost of these resources. With yields well below the EU-27 average, BH's agriculture sector shows significant growth potential.

ii. **With 20.6 percent of all employed in BH, agriculture remains an important sector for employment, despite a decline in the working-age population in rural areas**. According to a 2008 labor force survey, approximately 2.7 percent of the formal workforce and as much as 43 percent of the informal workforce is being absorbed by the sector. Still, many of those who returned to rural areas following the war are very young or elderly, leaving the most economically active segment of the population—and the segment most likely to have the capacity and creditworthiness to develop viable commercial farming enterprises—underrepresented in farming.

iii. **Yet the agri-food sector is shrinking as a share of gross domestic product (GDP), and BH's agri-food trade deficit was growing in recent years**. Changing consumer preferences have contributed to the development of new market segments that BH's domestic producers have been unable to capture. The agri-food sector in BH represented 15.1 percent of GDP in 1999, dropping to 9.8 percent in 2007. Instead, foreign products are taking an increasing share of the domestic market. Both exports and imports of agri-food products have risen, with imports growing faster than exports. As a result, the agri-food trade deficit has increased by over 10 percent between 2003 and 2007.

Constraints

iv. **BH's agriculture sector faces a broad range of constraints in input and output markets**. The nominal and effective rates of protection for a variety of products show that farmers in BH pay more for their inputs and receive less for their outputs relative to their equivalents in neighboring markets. Low output prices are a result of market failures such as low bargaining power, the lack of post-harvest facilities for storage and packaging, fragmented supply chains, costly logistics, and limited access to affordable finance. High input prices result largely from reliance on a few dominant input traders in combination with highly regulated import markets. This situation dampens productivity as well as competitiveness, as limited access to modern inputs makes it more difficult for farmers to export their produce and to participate in modern supply chains.

v. **Institutional constraints also prevent the BH agri-food sector from reaching its full potential**. Despite access to the EU market through preferential trade agreements, BH is not

reaping the full benefits of this favorable treatment due to the absence of EU-compliant food safety institutions andan EU-compliant regulatory framework. These institutional gaps cause problems for BH farmers and food processors, since even if they do implement private standards, a broad range of products is banned from EU markets until these public institutions are in place.

vi. **Public spending in BH's agriculture sector is relatively low, and funds are not targeted toward areas that generate the most growth**. On average, agricultural spending is around 6–8 percent of total public spending in developed countries, and 3–5 percent in developing countries; in BH, agricultural spending amounted to only about 2 percent of total public spending in 2007. Experience from other countries shows that investment in public goods—such as research and extension services, market infrastructure, and natural resource management—yield much higher returns than do subsidies, especially direct production subsidies. Currently, however, 60 percent of BH's agricultural expenditures go to production subsidies, while only a small share of the already limited budget is allocated to services.

vii. **Fragmented land ownership and poorly functioning land markets also pose constraints for farmers in BH**. The average BH farm is 2 hectares, subdivided into 6–8 plots. The fragmentation of land hampers productivity and investment in irrigation and equipment. While small farms in general can be at least as efficient as large farms, farms as small as this often experience difficulties in accessing profitable markets and participating in supply chains due to the limited quantities that they are able to produce. This situation is further complicated by an incomplete land registry and rigid land transaction processes, making land registration and land transactions costly and time consuming.

viii. **Over the next decades, climate change is expected to have an increasingly intense impact on agriculture in BH, and the current institutional set-up is not prepared to support the sector in adapting to these changes**. Climate change is expected to lead to higher temperatures in BH, along with reduced and more variable precipitation. In order for the sector to successfully adapt to these changes, supportive institutions must be in place. Given a legacy of environmental mismanagement and the collapse of agricultural services, BH has an "adaptation deficit" that will grow with the projected climate change. These issues increase the threat to agriculture from climate risks, undermine the sector's sustainability, and reduce its ability to take advantage of opportunities that may emerge.

Areas for Reform

ix. **BH's agriculture sector is at a turning point**. The role of the agri-food sector needs to be defined, either remaining primarily as a source of subsistence for a relatively poor rural population, or evolving into a more competitive sector that can substitute for imports and expand exports. Today's sector tends to support the former, and **developing a more competitive agriculture sector would require a significant shift in agricultural expenditures and policies**. Regardless, given the country's European Union (EU) accession aspirations, certain reforms will be necessary sooner rather than later. All of this will require improved management of public expenditures.

x. **It is critical that public resources be allocated carefully to areas where they best generate growth**. This means increasing public spending on services like food safety services, research, and education, where experience shows that public expenditures contribute most to growth. It also means shifting from direct price and output subsidies to investment subsidies. These adjustments would better align public expenditures in BH with the EU Instrument for Pre-Accession Assistance for Rural Development (IPARD) framework.

xi. **Significant resources should also be focused on developing public institutions**. Effective food safety institutions and a related regulatory framework play a central role in a modern agri-food sector and will be of increasing importance as BH approaches EU accession and as neighboring countries obtain membership. As consumer preferences change, food safety will also become increasingly important on the domestic market.

xii. **Additionally, it will be important for BH to develop well-functioning land institutions, so that the land market can operate more efficiently and thus enable business development**. Needed land reforms include clear titles and ownership of land, as well as well-functioning land registration and cadastre systems. In order to facilitate land consolidation, voluntary, market-based land consolidation or "re-parceling" programs could be piloted based on the experiences of other countries in the region.

xiii. **Better-functioning input markets are necessary to help BH farmers' access competitive inputs**. Adopting the EU Common Catalogue for Agricultural Plant Species, while maintaining a system to test common plant varieties and provide information and recommendations to farmers, would help to formalize markets, improve access to seeds and seedlings, and provide quality assurance. Improved access to fertilizers and pest management would also be important to help increase yields. Current rigid import regulations and procedures should be eased, within the limits of safety and hygiene, and in line with existing EU regulations, including the Nitrates Directive and other "good agricultural practices" applied in EU countries.

xiv. **Finally, BH should integrate climate change adaptation and environmental sustainability into agricultural policies, programs, and investments**. To succeed in agriculture, producers and governments will have to adapt, and the way to start is to focus on reducing agriculture's vulnerability to current climate variability. For example, improving water and soil management, and investing in improved research, extension, and weather forecasting are "win-win" measures because they will generate a positive rate of return under today's conditions, and will become even more important facing climate change. It is also recommended that BH develop a Climate Change Adaptation Strategy and Action Plan for the agriculture sector to guide the work on adaptation in the coming years.

I. Agriculture's Role in the Economy of Bosnia and Herzegovina

1. **The agriculture sector is a small but important part of the economy**. Agriculture's share in BH's economy decreased from 15.1 percent in 1999 to 9.8 percent in 2007, while the services and industry sectors now take up 63.9 percent and 26.2 percent of the economy, respectively (up from 57.2 percent and down from 27.7 percent, respectively, in 1999).[1] Although agri-food sector growth has been positive, it has lagged in comparison to overall economic growth. Agricultural GDP grew by 0.8 percent per year, on average, between 2000 and 2007, compared to overall GDP growth of 5.4 percent.[2]

2. **Agriculture sector employment still absorbs a large share of the economically active population**. In November 2008, officially recorded employment in the agri-food sector amounted to 2.7 percent of total employment.[3] However, this figure significantly underestimates the actual share of the labor force that is active in the sector. The 2008 Labor Force Survey, which follows International Labor Organization standards for defining employment levels, estimates that the agriculture sector accounts for as much as 20.6 percent of employment in BH, compared to 47 percent in the services sector and 32.5 percent in the industry sector.[4] Similarly, while 41.2 percent of the labor force was officially registered as unemployed in November 2008, actual unemployment is much lower.[5] The 2008 Labor Force Survey points to an unemployment rate of 23.4 percent, suggesting the existence of a large informal economy in BH.[6] A 2004 World Bank sponsored Living Standards Measurement Survey (LSMS) found that subsistence agriculture plays an important role as a social buffer in this informal economy. It estimated that the agriculture sector accounts for 43 percent of working-age people employed in the informal economy in BH; the rest are more or less equally divided between the industrial and service sectors.

3. **The population of BH is declining, and the rural population is becoming older, on average, as young people migrate to urban areas**. The working-age population is projected to fall from 3.3 million in 2009 to 3.2 million in 2025 and 2.7 million in 2050.[7] Many people who have returned to rural areas following the war are very young or elderly, leaving the most economically active segment of the population underrepresented in farming.[8] This is the group that would normally have the capacity and creditworthiness to develop viable commercial farming enterprises.

4. **Poverty remains a largely rural phenomenon**. Just over half (53.1 percent) of the total population of BH (2007) and close to 80 percent of the poor reside in rural areas.[9] In 2004, poverty rate was 22% and 11.3% in rural and urban areas respectively. During the

[1] World Bank Development Data Platform, 2009.
[2] World Bank Development Data Platform, 2009.
[3] Agency for Statistics of BH, 2008c.
[4] Agency for Statistics of BH, 2008b.
[5] Agency for Statistics of BH, 2008d.
[6] Agency for Statistics of BH, 2008b.
[7] Working-age population includes all people of 15 years of age or older . World Bank Population Projections Database, 2009.
[8] The most economically active sector of the population in BH is ages 25–49. European Commission, 2006.
[9] World Bank, 2007b.

recent period of strong growth, poverty in BH dropped from 17.7% in 2004 to 14.0% in 2007. However, as poverty rates have declined by roughly the same order of magnitude in rural and urban areas, poverty remains a largely rural phenomena: in 2007, poverty amounted to 17.8% in rural areas and 8.2% in urban areas. This discrepancy is largely the result of slow growth in the agricultural and non-farm rural sectors, and rapid growth in higher-wage sectors in urban areas. In addition to being older, rural inhabitants tend to have less education and live in larger households than do urban inhabitants, and both of these characteristics are correlated with poverty.

5. **Despite the significance of agriculture sector employment, BH retains a considerable agri-food trade deficit**. While the overall trade deficit has remained essentially flat, ranging from 41.3 percent of GDP in 2002 to 40.8 percent of GDP in 2008, the agri-food trade deficit decreased from 11.9 percent of GDP to 8.8 percent of GDP over the same period.[10] In 2009, the agri-food trade deficit was further reduced to 5.4% of GDP. BH trades agri-food products most intensively with neighboring countries. In 2007, 56.7 percent of BH's agri-food exports went to Croatia and Serbia, and 44.8 percent of its agri-food imports originated from these two countries.[11]

6. **Agricultural yields and labor productivity remain low**. Strong economic growth since the transition in BH has not translated into higher agricultural yields or improved agricultural labor productivity. Yields per hectare have remained virtually stagnant. In 2006, vegetable yields in BH were one-fifth of those in the EU Member States of Southern Europe (Portugal, Spain, Italy, and Greece), which have similar geographic and climate conditions.[12] Significant gaps in yield levels can be observed for other product categories as well, including fruit, beef, and cow's milk Agricultural labor productivity levels are also lower in BH, where, agricultural value-added per worker in 2005 was US$ 10,051 (at constant 2000 prices) as compared to US$ 14,755 in Southern Europe.[13]

II. Opportunities for Agriculture in BH

7. **The agri-food sector has good growth potential due to growing demand and a number of comparative advantages**. Like other countries in the Western Balkans region, BH has seen annual GDP growth above 5 percent over the last decade. Higher incomes lead to changing consumer preferences. Consumers are reallocating their food budget toward higher-value foods such as fruits, vegetables, and animal products; thus, the market for these products is growing. Relatively high international food prices mean that markets for agricultural products are increasingly valuable. Moreover, BH's agri-food sector has potential comparative advantages due to favorable prices for land and labor, ample labor supply as a result of low overall employment, good climate, and a strategic location for producing high-value products for domestic and wealthy Western European markets.

8. **Agricultural land and labor are relatively cheap, especially compared with Southern Europe**. Systematic data on the price of agricultural land are limited. Anecdotal

[10] Central Bank of BH Statistics (CBBH)
[11] Agency for Statistics of BH, 2008a.
[12] FAOSTAT Database, 2009.
[13] World Bank Development Data Platform, 2009.

evidence suggests that agricultural land in BH is less expensive than land with a similar climate and growing season in Southern Europe, but more expensive than land with a similar temperate climate in Hungary and Poland (Table 1). These differences may be due in part to underdeveloped land markets and fragmentation in BH. Data on average gross monthly labor costs for industry and services suggest that labor costs in BH are about 20 percent of those in Southern Europe and almost half of those in Croatia, Hungary, and Poland, though higher than elsewhere in the Western Balkan region. Agricultural wages tend to be lower than average wages in BH, partly because of the large amount of informal and household labor going into primary production.

Table 1: Cost of Land and Labor across Countries, 2005

Country	Cost of Agricultural Land (€ per hectare)	Gross Labor Costs (€ per month)
Western Balkans		
Albania	7,000	161
BH	2,500	420
Macedonia, FYR	2,775	343
Serbia and Montenegro[a]	5,000	316
Eastern Europe		
Bulgaria	1,207	161
Croatia	3,600	841
Hungary	1,500	638
Poland	1,700[b]	586
Southern Europe		
Greece	8,765	1,984[c]
Italy	14,266[d]	2,904[e]
Portugal	—	1,557[e]
Spain	16,489	2,135[e]

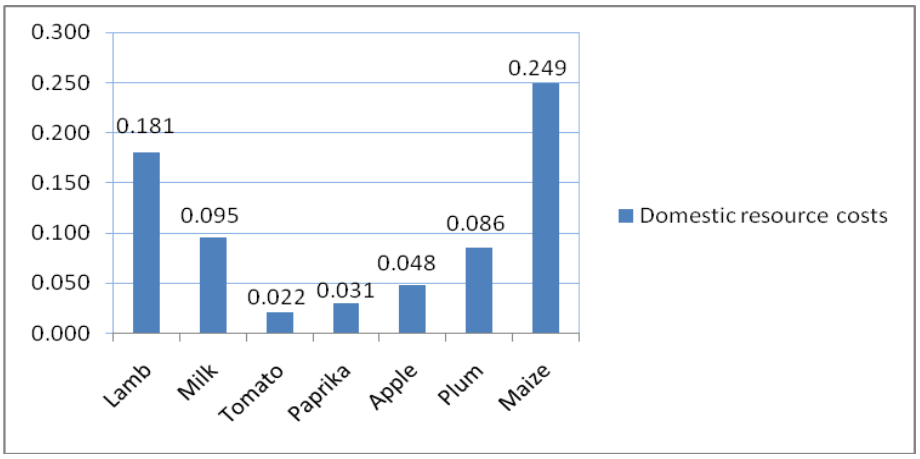
Source: Agricultural land data: for Albania, Sallaku and Shehu 2005; for BH, World Bank staff estimates; for Macedonia, FAOSTAT 2008; for Serbia and Montenegro, *The Financial Times* 2008; for Bulgaria, *SEE News* 2008; for Croatia, Lukas 2005; for Hungary, Popp and Stauder 2003; for Poland, Central European Land Knowledge Center 2005; for Greece, Italy, and Spain, Eurostat 2008. Labor costs: for Western Balkans and Eastern Europe, World Bank 2007c; for Southern Europe, Eurostat 2008.
— is not available. a. Data are for Vojvodina only. b. Data are for 2004. c. Data are for 2003. d. Data are for 2001. e. Data are for 2002.

9. **Estimates of Domestic Resource Costs (DRC) confirm the potential comparative advantage of domestically produced agricultural products**. The DRC compares the opportunity cost of domestic production to the value-added it generates, in order to evaluate whether resources are used optimally, or if it would be better to use domestic resources in other types of production.[14] DRC values below 1.0 indicate that the economic (opportunity) cost of domestic land, labor, and capital resources used in the production of a commodity are less than the value they add. Value-added is evaluated using international prices for outputs and inputs, adjusted for transport and similar costs. Box 1 provides background information on the products that are important for BH, whose DRCs are estimated here: maize, plum, apple, paprika, tomato, milk, and lamb. The DRC calculations

[14] Tsakok, 1990.

illustrated in Figure 1 are all significantly below 1.0, revealing that all products are characterized by efficiency in the use of domestic resources, and implying that BH has a potential international comparative advantage in their production.

Figure 1: Domestic Resource Cost for Selected Products [15]



Source: World Bank staff estimates.

Box 1: Background on the Products Selected for Market Analysis

This policy note analyzes the input and output markets for seven products in order to better understand the implications of different policies in BH and what costs or benefits they bring to farmers. This box presents a short background on these products:

Milk is at the center of BH's agriculture sector, both in terms of size and tradition, and is an important source of income in rural areas. The sector receives substantial state support in the form of direct subsidies and a minimum price guarantee. Dairy products are exported (there is a ban of export for products of animal origin. Only fish can be exported in the limited quantity of 60 t. BiH requested increase to 4,000 t)and dairy production is considered to have good growth potential.

Lamb meat is one of the agricultural products in which BH is self-sufficient. BH has suitable agri-environmental conditions for the production of lamb. The sector has a strong tradition in the country and is important for the rural economy. It is also a recognized product on the regional market and therefore important from a marketing perspective, especially for the tourism industry.

Plum and apple production benefits from good climate conditions in BH. More than 60 percent of all fruit trees are plum or apple. These products perform well on export markets and offer potential for developing related processing industries.

Tomatoes and paprika provide important income opportunities in rural areas. BH's climate is beneficial for the production of these vegetables, and export opportunities may thus exist for these products. At the same time, the production of tomatoes and paprika benefits from direct state support.

Maize is an important crop for livestock production and for the provision of stable rural incomes. While the production of maize may have the potential to substitute imports, it also benefits from direct state agricultural support.

[15] BH's currency, the Convertible Mark (KM), is pegged to the euro, where 1 € = 1.96 KM.

10. **Climate conditions offer natural advantages in bringing agricultural products to the market earlier and longer**. The Western Balkans region is warm and has a longer growing season than the rest of Europe. Analysis of daily minimum temperature data over the period 1993–2007 reveals more frost-free days (with a daily minimum temperature above 0° C) than in the Eastern Balkans and parts of Southern Europe. Similarly, the first planting date falls early in the southern part of the Western Balkans, similar to that in Portugal and Spain.[16] Whereas the central and northern parts of BH have a more continental climate, in Herzegovina the planting season can start as early as the beginning of March. This is especially important for lucrative early-season vegetable and fruit production.[17] BH also has relatively abundant freshwater supplies, with an average per-capita availability of 9,067 cubic meters—higher than the world average of 6,778 cu. m. per capita, but somewhat lower than the Europe and Central Asia (ECA) average of 11,473 cu. m.[18] Rainfall is highly seasonal, with a dry summer period from June through August.

Table 2: Climate and Location Can Be Important Agricultural Advantages

Climatological station and country	Number of Frost-free Days[a]	First Planting Date[a]	Shipping Cost to Paris[b] (2008 US$)
Sarajevo, BH	269	April 12	—
Tirana, Albania	339	February 9	5,457
Skopje, Macedonia	281	April 8	4,603
Belgrade, Serbia	307	March 28	5,632
Athens, Greece	363	January 18	7,403
Lisbon, Portugal	365	All year	3,372
Madrid, Spain	341	March 3	3,472
Rome, Italy	352	March 8	—
Sofia, Bulgaria	252	April 10	8,256
Bucharest, Romania	252	April 16	8,020
Budapest, Hungary	270	April 12	8,115
Ljubljana, Slovenia	257	April 14	7,675
Zagreb, Croatia	276	April 10	7,982

Source: Ramasamy 2008; shipping costs are World Bank staff estimates.
Note: The first planting date is estimated by an algorithm by R.L. Snyder, et al. (2005), based on the assumption that planting is less risky after the first date with 50 percent or less probability of having a frost event (screen daily minimum temperature of less than 0° C). The listed station in each country was selected based on the availability of complete and continuous data on minimum temperature.
— is not available. a. Average for 1993–2007. b. Cost to ship a 40-foot container of Class I goods.

11. **BH's geographic location in the heart of Europe yields advantages in shipping costs to high-value markets in Western Europe**. BH ranks better than its neighbors on the Trading Across Borders sub-index of the *Doing Business* rankings, at 63th out of 183 countries (only

[16] Snyder, et al., 2005.
[17] These data are for capital cities, which are not always located in prime agricultural areas, and generally underestimate the first planting date and the length of the growing season. The first planting date is estimated solely using daily minimum temperature and in the regions with strong influence from the Mediterranean Sea; the growing season is more often limited by low summer precipitation than by temperature.
[18] World Bank, *World Development Indicators 2008*.

Romania ranks better among the countries in the region).[19] In addition to satisfying growing demand in domestic and regional markets, BH may also have opportunities to export agricultural products to wealthy Western European markets. The cost of shipping a container of processed food from the Western Balkans to Paris is about US$ 5,000—more than from Portugal or Spain, but significantly less than from Bucharest or Sofia.[20]

12. **These endowments could give BH a comparative advantage in labor-intensive products that can exploit the long growing season**. Such products include early- and late-season fruits and vegetables. About 66 percent of the territory of BH is considered mountainous or hilly. In general, the country's geography does not lend itself well to large-scale cereal production, with the exception of the plains in the northern part of the country. Only 20 percent of the total land area is arable land.[21] High availability of grassland and pastures, however, suggests the potential for successful livestock and dairy production. The country is also well placed to take advantage of consumer trends toward organic produce and niche products (due to availability of labor) or possibly food with a relatively low carbon footprint due to BH's proximity to the EU market.[22]

III. Key Challenges Facing the Agri-Food Sector

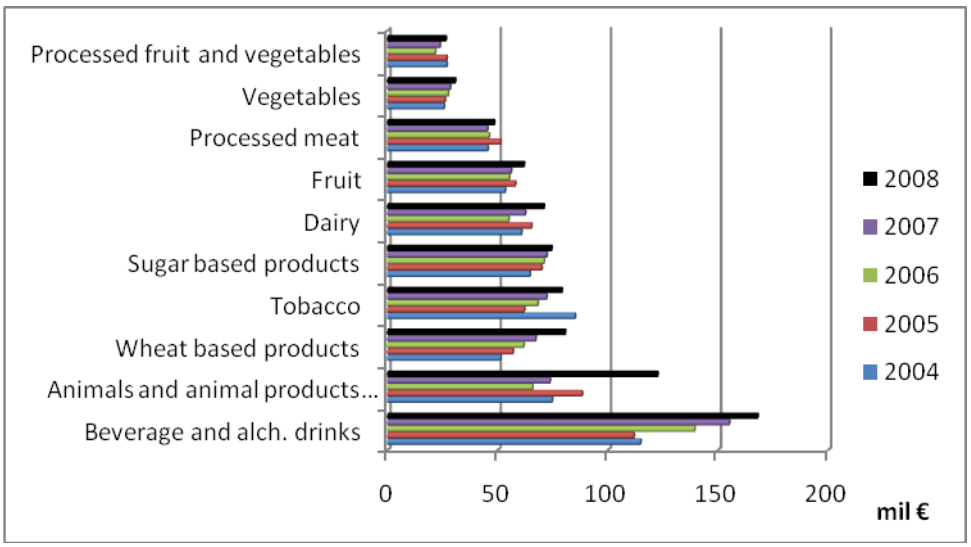
13. **Agricultural trade liberalization will create a more competitive business environment**. In addition to its application for World Trade Organization (WTO) membership in May 1999, BH has entered into a number of bilateral and regional trade agreements in recent years.[23] While these agreements provide access to high-value EU markets for agri-food products, they will expose BH to more food imports from the EU and other countries in the Western Balkans region, increasing the pressure on farmers and processors to become more competitive. The small-scale subsistence farmers, who dominate the agriculture sector today, currently cannot match the prices and quality of imported agricultural products. Unless agriculture producers become more competitive, they will lose market share both domestically and abroad, and fail to take advantage of opportunities presented by liberalization.

14. **Despite potential comparative advantages, farmers and processors are unable to compete on the domestic market due to their inability to adapt to changing consumer and**

[19] World Bank and International Finance Corporation, *Doing Business 2010.*
[20] Very small amounts of produce enter Europe from North Africa.
[21] Data are for 2005. FAOSTAT Database, 2009.
[22] Garside, et al., 2008.
[23] In November 2001, BH received preferential export status (autonomous trade preferences) with the EU, exempting its products—including agricultural products except wine and some types of fish and baby beef—from EU import tariffs. In addition, it established bilateral free trade agreements with Albania, Bulgaria, Croatia, Macedonia, Moldova, Romania, Serbia, and Montenegro under the framework of the Stability Pact for South Eastern Europe. In November 2007, these bilateral free trade agreements were replaced by the Central European Free Trade Agreement. The agreement comprises BH, Croatia, Macedonia, Moldova, Montenegro, Serbia, and the United Nations Mission in Kosovo (on behalf of Kosovo) and aims to establish a free trade area among the member states by December 31, 2010, and in the region. On June 16, 2008, BH signed a Stabilisation and Association Agreement with the EU, through which mutual liberalization will occur gradually. Finally, the process of accession to the WTO will likely result in a reduction in BH's relatively high tariff equivalents.

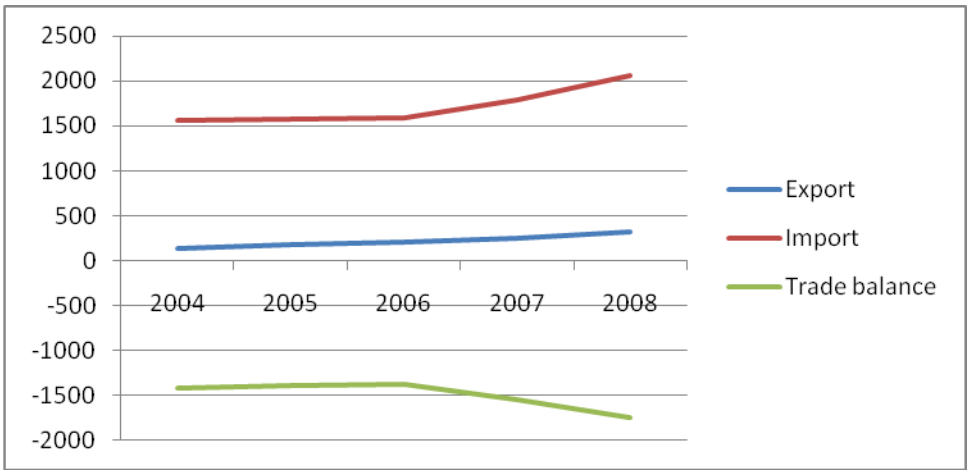
retail demands. Farmers, processors, and retailers need to consolidate and integrate vertically and horizontally to improve quality standards, reduce costs, and boost competitiveness. Although driven thus far by stringent food quality and safety standards in line with EU regulations, food safety in BH will increasingly be driven by consumer preferences and the retail sector. Consumer preferences are shifting toward higher-quality and safer food products. A still huge trade imbalance in the agri-food products signals that BH is not reaping the benefits of its low DRCs (discussed above). As consumers demand safer food, retailers demand that their suppliers produce under hygienic conditions, support traceability (the ability to trace the history of a food product), and deliver products at the right time and in sufficient quantity and quality (a parameter that includes safety). Increasing competition from imports will force farmers and agro-processors to adapt through better coordination and logistics in the food chain or to leave the market.

Figure 2: BH Agri-food Imports



Source: World Bank staff calculations, based on CBBiH dataset.

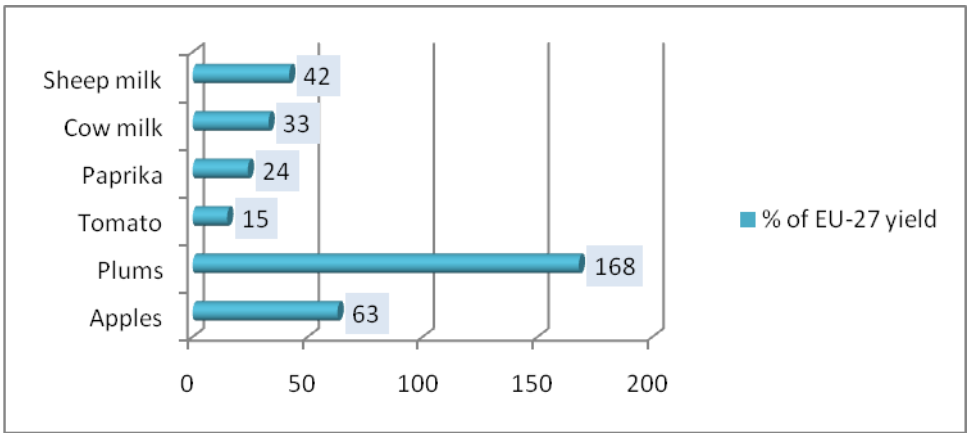
Figure 3: BH Agri-food Trade Balance (KM thousands)



Source: World Bank staff calculations, based on CBBiH dataset.

15. **The BH agriculture sector faces a lengthy modernization process**. The structure of the agriculture sector resembles that of Southern Europe about 30 years ago, and yields are generally much lower than in the EU today (Figure 4).[24] To substantially improve agricultural labor productivity in BH, and hence enable higher agricultural wages, yields must increase and the share of the labor force in agriculture must shrink. This, in turn, means that opportunities in alternative sectors must grow. The competitiveness of commercially-oriented producers and processors will need to be further enhanced through consolidation and investments in modern production technologies, and a new future for non-productive farmers must be designed through effective rural development programs. The country can move this modernization process forward by adjusting and strengthening its agriculture policies and institutions and aligning them with EU requirements.

Figure 4: Yields of Selected Products as a Share of EU-27 Average (per ha or per cow)

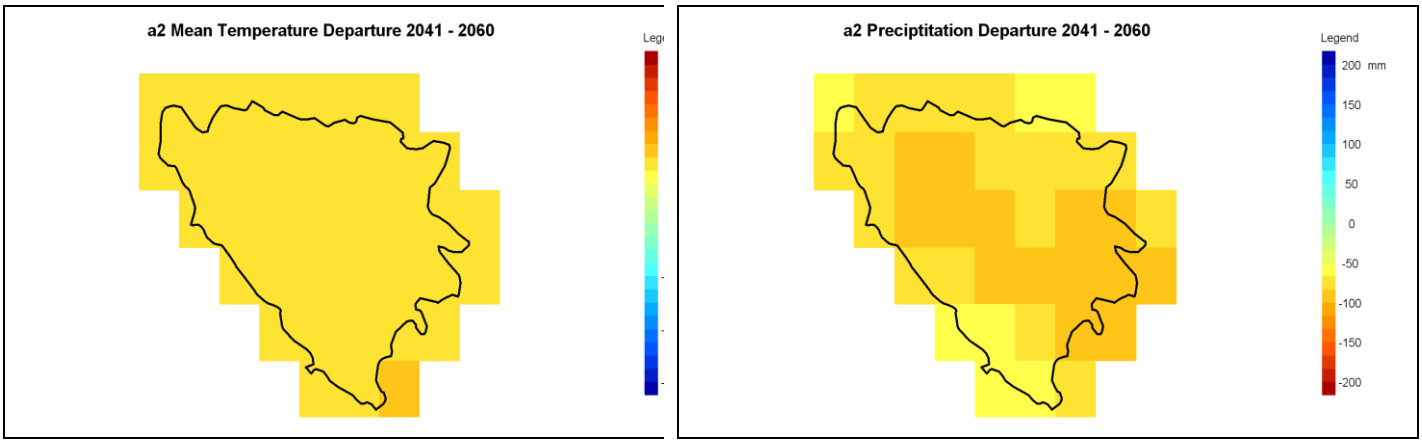


Source: World Bank staff calculations based on FAOSTAT and BHAS data.

16. **Climate change will increasingly threaten the competitiveness of agriculture**. As mentioned above, BH's relatively mild climate provides a natural comparative advantage, especially compared to northern European countries. However, the latest climate models predict that as a result of climate change, BH will over time experience higher average temperatures, and reduced and more variable precipitation. Projections for the period 2041–2060 show that, on average, temperatures are expected to increase by up to 3° C, with precipitation decreasing by 50–100mm, or up to 10 percent, across most of the country (Figure 5). Seasonally, the greatest impact is expected in the fall, with precipitation declining significantly—by up to 25 percent. This change in precipitation could have important implications for winter wheat production, for example. There is ample evidence that climate change is already happening[25] and that its impact is already being felt, as illustrated by the devastating forest fires that have swept the Balkans in recent summers.

[24] Lampietti, et al., 2009.
[25] IPCC, 2007.

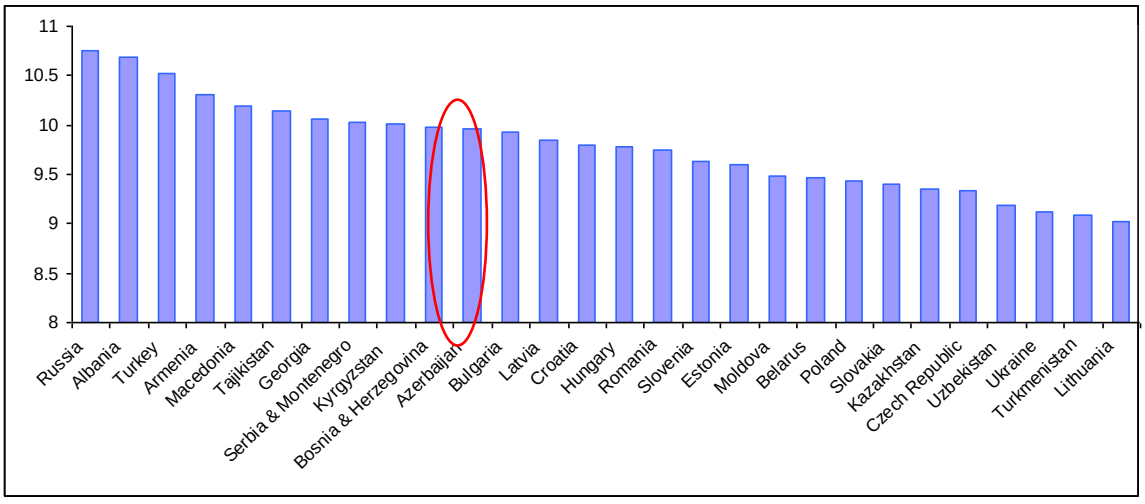
Figure 5: Climate Projections Point to a Warmer and Drier BH
Temperature and Precipitation Trends for 2041–2060, as Compared to a Baseline of 1951–2001



Source: www.climatewiz.org; A2 Emissions Scenario.

17. **Not only will BH become hotter and drier, but extreme events will also become more common**. A recent study investigating the future risk of extreme events like floods, droughts, and heat waves predicts that BH will be more heavily affected by such events than other countries in the ECA region.[26] The extreme event index combines the average additional number of one-in-twenty-year events for hot, dry, and wet years; hot, dry, and wet summers; and hot, dry, and wet winters projected over the 2070–2100 period relative to the 1961–1990 period (Figure 6). The implication is that agriculture will become riskier over time, with yields varying more widely from year to year.

Figure 6: Climate Change Extreme Event Index, ECA Region



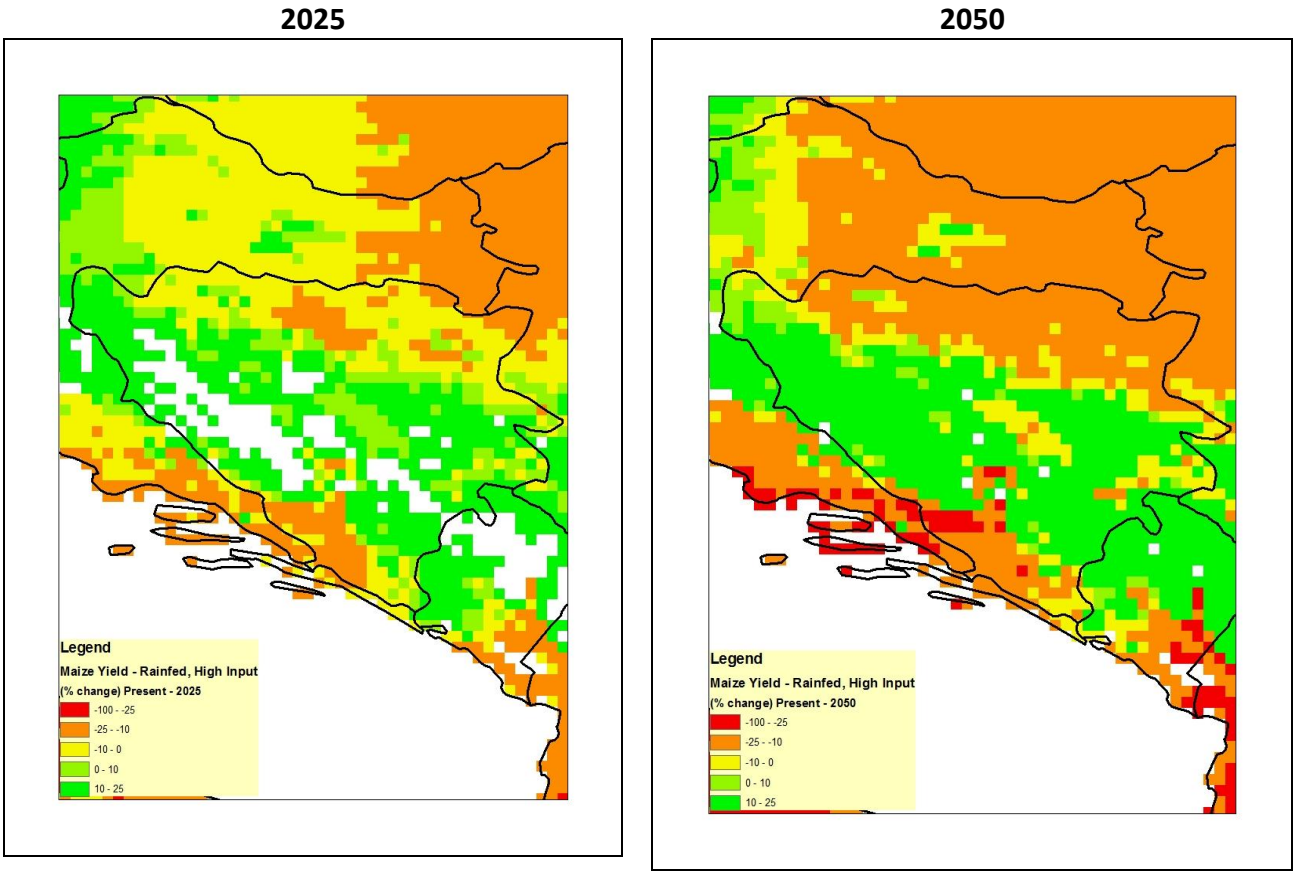
Source: Baettig, et al., 2007.

18. **Climate change has important implications for agriculture in BH**. The Stern Review on the Economics of Climate Change estimates significant economic impacts from climate

[26] Baettig, et al., 2007.

change, resulting in reduced welfare "by an amount equivalent to a reduction in consumption per head of between 5 and 20%."[27] Because of its dependence on weather and the natural resource base, agriculture is a highly climate-sensitive sector.[28] Projections of potential rainfed maize yields for 2025 and 2050, developed by the International Institute for Applied Systems Analysis (IIASA) for the World Bank, show that over time, the main maize-growing regions in the north of BH could suffer yield declines of 10-25 percent (Figure 7). In the south, where fruit and vegetable crops are more common, the projections indicate that, without irrigation, crops could suffer even more. While the projections show the potential for significant yield increases in the center of the country, it should be noted that they do not take topography into account, and much of central BH would be ill-suited to large-scale crop production due to the mountainous terrain of the Dinaric Alps.

Figure 7: Projected Change in Rainfed, High-Input Maize Yields (2025 and 2050, from a baseline of 1961–90)



Source: Fischer, et.al., 2007. Maps by the World Bank team. Projections assume A2 emissions scenario with carbon fertilization.

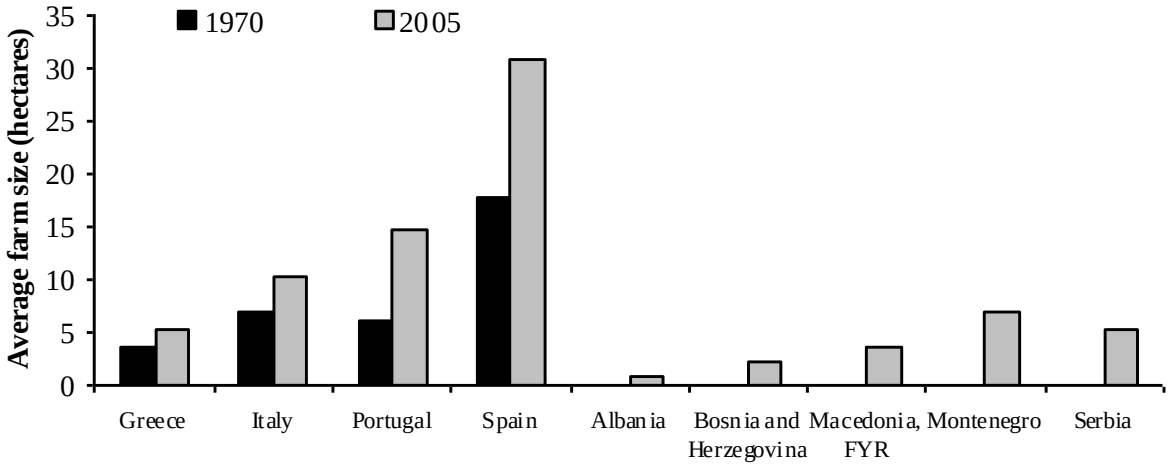
IV. Constraints to Growth and Competitiveness

19. Fragmented arable land undermines the viability of many agricultural producers. Farms in BH are generally small and fragmented. The majority of farms in the country

[27] Stern Review on the Economics of Climate Change.
[28] World Bank, 2009.

consist of 2–3 ha of landholdings, which are then subdivided into 6–8 plots.[29] At 2.03 ha, the average farm size is smaller than it was in Southern Europe in 1970, and smaller than it is in most other Western Balkan countries today (Figure 8). While large farms are not necessarily more efficient, small farms have greater difficulty producing enough to be commercialized, integrating with value chains, and investing in modern production methods.

Figure 8: Farms in the Western Balkans Today Are Smaller than in Southern Europe in 1970



Source: World Bank staff estimates, based on total arable land and permanent crops divided by total number of holdings as estimated by Eurostat, FAOSTAT, and national statistical offices.

20. **Poorly defined property rights and weak institutions that encourage informal transactions continue to limit the development of rural land markets, which in turn hampers land consolidation**. Despite a long tradition of private land ownership, BH, like the other countries of the former Yugoslavia, has struggled with privatizing collective farms.[30] The assets of many larger, previously state-owned farms remain idle as a result. Land may have been sold, subdivided, or passed on to children without registering the transaction, or property records may have been destroyed. Approximately 47 percent of arable land in BH remains unused due to uncertainties regarding land ownership, landmines, and displacement of landowners following the war.[31] Land consolidation is further complicated by the absence of a uniform legal framework governing land ownership in BH, which, for example, hinders the scaling-up of small land consolidation pilot initiatives countrywide. Even land rental, which has been used effectively to consolidate farmland in other ECA countries, has proven daunting (Box 2).

[29] World Bank, 2007d.
[30] Rabinowicz, et al., 2006.
[31] Government of BH, Ministry of Foreign Trade and Economic Relations, 2007.

Box 2: Case Study—Mixed Farm

An interview with the owner of a large mixed farm confirms several of the above-described obstacles to doing business in rural areas.[1] The farm uses 143 ha of land, of which 20 ha are owned by the farmer and the rest is leased from the state. The farm has animals (70 pigs and 53 cows, including 10 milking cows) and produces field crops (maize on 70 ha, as well as triticale, soybean, barly, peas for animal feed, and others). The farm is self-sufficient in terms of equipment, including for land management, harvesting, preparing silage, manure management, milking, and transportation. The farmer currently employs his wife and son, one additional worker during the low season, and two more workers during the agricultural season.

The stagnant land market is seen as one of the main obstacles to operating in the agriculture sector. Even renting land is costly and time consuming, taking three years to complete land lease transactions. This has limited the number of workers that the farmer was able to employ: the procedures necessary to complete the land leases generated high costs in terms of the farmer's time and foregone production opportunities, which in turn had a negative impact on the need for additional labor on the farm. Since the land rent of 50 KM per ha is set annually and determined by bidding, it is difficult for the farmer to predict rental costs for multiple years, and thus estimate returns to investments in the land. The lack of secure, long-term tenure also significantly increases the risks of investing in improvements.

Access to credit is another problem due to high interest rates, long application procedures, and rigorous collateral requirements, including business records for a minimum of two years. This farmer solved this problem partly by using the services of non-governmental organizations (NGOs), which have provided access to credit and at times even capital inputs.

As a result of bad infrastructure, particularly in relation to public transportation, it has proven difficult for the farmer to find labor that is willing to work in the remote rural area. In order to gain easier access to other types of inputs and new technologies, the farmer has joined a farmers' network at the regional level that is piloting different seed varieties (mainly maize) with support from the Seeds Institute in Novi Sad. Through this network, the farmer is able to access knowledge and quality inputs. His main concern is the quality of livestock semen and the insemination services provided by the Veterinary Services.

Given the size of his farm, this farmer does not perceive access to markets as a problem. Both milk and meat are sold directly to processors, and animal feed is sold directly to farmers from all around BH.

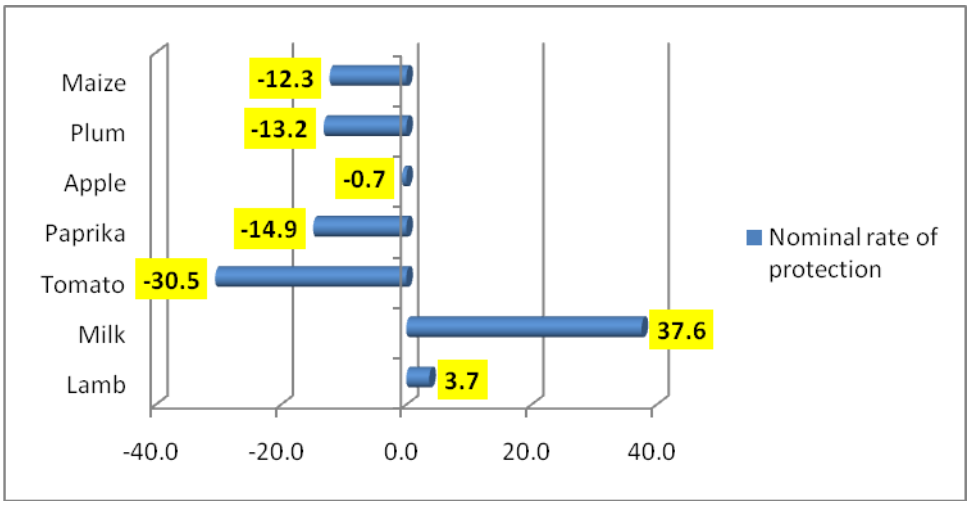
Securing access to fresh water in the summer for his livestock is problematic. Each cow consumes between 30 and 50 l of water per day. This problem is solved in part by letting the cattle drink from an artificial pond while in the fields.

In the future, this farmer plans to invest in a larger barn for the cattle, as the present building is too small to optimize productivity. The farmer is trying to start organic production, but finds it almost impossible to access suitable seed varieties. Finally, he plans to expand milk production to 120 milk cows with a facility that, unlike his current one, complies with EU food safety requirements. Access to finance remains a problem, however, due to the required collateral rather than the interest rates.

[1] The farm in the case study was chosen due to its size and its potential to grow and to adapt to the EU's Good Agricultural Practice (GAP) and food safety requirements, in order to better understand some of the obstacles and challenges that face highly entrepreneurial farmers with a relatively solid capital base. The mixed farm is the most common type of farming in BH. Note that this particular farmer comes from a farming background, but also has a university degree in telecommunications.

21. **Farmers in BH receive low prices for their outputs, which means that their products are implicitly taxed**. A measure of how domestic prices deviate from international prices is the nominal rate of protection coefficient (NRP). The NRP is a standard measure of domestic market distortions relative to world markets, and is defined as the degree of protection given to a good by tariffs and other restrictions on imports.[32] When a commodity's NRP is positive, the domestic farm price is above the international parity price; that is, there is positive protection. A negative NRP conversely indicates that the farm gate price is less than the comparative international price, which can be interpreted as negative protection or implicit "taxation." The analysis of NRP for BH included the same products as the DRC calculations: maize, plum, apple, paprika, tomato, milk, and lamb meat. The NRPs for BH show that, to a varying extent for all domestically produced fruits and vegetables, farmers receive less for their produce than they should by international market standards (Figure 9). Domestic farmers are thus implicitly "taxed" on their sales of these products, resulting in lower farm incomes.

Figure 9: Nominal Rate of Protection for Selected Products (%)



Source: World Bank Team calculation

22. **The low prices received by farmers are largely the result of market failures**. For example, small producers participating in the domestic market have low bargaining power, reducing the prices they can receive for their products. In addition, there is a lack of post-harvesting facilities for storage and packaging, with the exception of the milk industry, which is heavily subsidized in both the Federation of Bosnia and Herzegovina (FBH) and Republika Srpska (RS) and benefits from a minimum price guarantee. The milk industry thus receives a higher price than it would outside of BH. Other market failures include costly and limited availability of quality inputs, fragmented supply chains and costly logistics, little access to affordable finance, and lack of adequate food safety institutions.

23. **Low quality, limited availability, and excessively priced inputs pose obstacles to productivity improvements and supply-chain participation**. It is difficult to find modern and specialized inputs, such as for organic production, and prices are elevated due to high

[32] NRP is calculated as the ratio of the domestic price to the international price minus one, after accounting for transaction costs such as transportation, handling, and taxes.

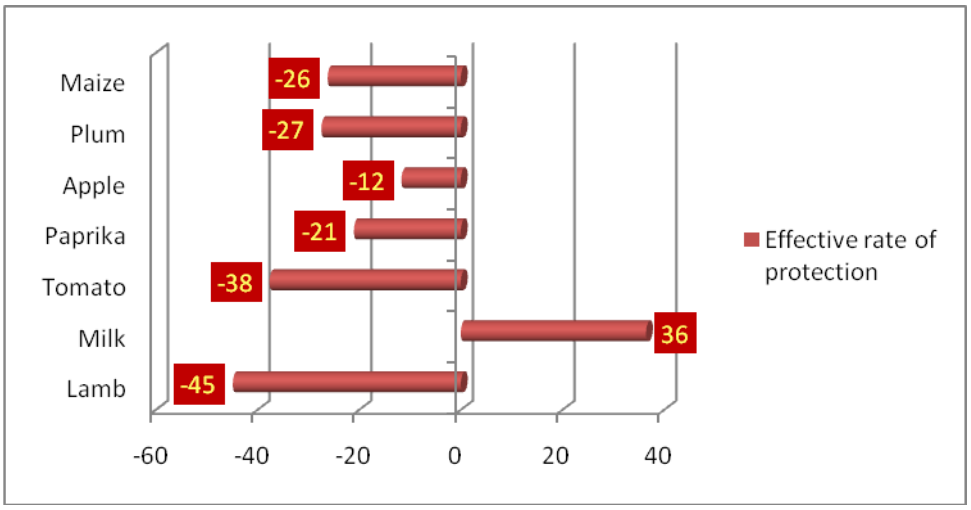
transport costs and traders' margins. Despite the development in recent years of domestic production of seedlings, this is not enough to cover domestic demand in terms of quantity and varieties. The result is a lack of access by farmers to the latest plant genetic resources, which embody much of the technology of modern agriculture. This has implications for productivity as well as market access, in the latter case because opportunities to participate in formal supply chains often require farmers to produce specific varieties. Farmers interviewed for this paper also complained about the poor quality of inputs (such as seeds, fertilizers, and pesticides) available on the local market, which further contributes to lower agricultural productivity.

24. **Complicated import regulations further limit access to inputs**. The import of production inputs is complex and lengthy, as most agricultural inputs are subject to special import procedures and must be included in a list approved by the BH Ministry for Foreign Trade and Economic Relations (MFTER). Detailed documentation must be submitted to the Ministry to obtain import permits. This lengthy process results in significant costs to foreign suppliers, yet the small size of the BH market often does not offer adequate incentive to go through these processes. In addition, the lists of seeds and seedling varieties and other inputs are not always kept up to date as a result of weak institutional capacity. In general, the current system encourages sales of illegally imported inputs, often under false labeling. Since the farmer cannot hold anyone accountable for the inputs purchased, the farmer bears the entire risk rather than sharing the risk with input suppliers, as should be the case.

25. **Farmers do not benefit from lower input prices, despite past removal of customs duties**.[33] Instead, traders seem to be the main beneficiaries of trade liberalization. Calculation of the effective rate of protection (ERP), which measures combined distortions in input and output prices, confirms this (Figure 10). The ERP uses international price data to estimate the economic price of fertilizer and other tradable inputs. Somewhat simplified, it estimates the ratio between the value added calculated using domestic market prices, compared to the value added calculated using border prices.[34] Positive values indicate that the product is subsidized, whereas negative values imply in effect a new tax on the product. High negative values of ERP indicators in comparison to NRP are a consequence of the problems with agricultural input markets. An example is lamb, which had a slightly positive output NRP but a highly negative ERP, implying that inputs for lamb production are very expensive relative to international prices due to poorly functioning input markets in BH.[35]

[33] Research confirms the farmers' observations. Findings show that reduction of prices was not conveyed to farmers or other final consumers, due to a market structure dominated by a few big players. (Lubura, 2007)
[34] Tsakok, 1990.
[35] Some caution should be exercised when interpreting this figure due to problems of identifying the exact cost of production of lamb meat, since most farms from which data were drawn are mixed and thus have other animals using some of the inputs. It does, however, indicate a general failure in the input market.

Figure 10: Effective rate of Protection for Selected Products (%)



Source: World Bank staff calculations

26. **Fragmentation of supply chains raises production costs and reduces competitiveness**. Transition has affected primary producers, agro-processors, and retailers, and splintered the supply chain from primary producers to retailers. The processing sector that has emerged from the transition is extremely fragmented. For example, BH had only 18 large-scale flour and feed mills in 1995; today it has 78, an increase driven mainly by the establishment of small private mills after the war.[36] This reduces the scope for economies of scale and increases the cost of livestock production. In the milk sector, there are 53 dairies in BH today, most of which are relatively small-scale and non-specialized in terms of product assortment (Box 3). As most of these small dairies focus on fresh produce with a short shelf life, bringing their products to market implies high transaction costs. The production of milk is also highly scattered, making both logistics and quality control expensive. (It is also heavily subsidized, as confirmed by the NRP and the ERP results.) By contrast, the less-fragmented tobacco and beer industries have recovered and grown, and newly established mineral water production and juice factories have expanded substantially.

[36] CEEC Agri Policy, 2006

Box 3: Case Study—Milk Processor

An interview with a medium-size dairy processor[1] gives a good overview of problems facing the food-processing industry in BH. The milk processor is one of the previously state-owned processors that was privatized by its employees, and today has 82 employees. Of these, the majority have a secondary diploma and 7 percent a university degree. The dairy's production capacity is 35,000 liters per day, but it uses only around 65 percent of its capacity. Its main processed products are pasteurized milk, sour cream, yogurt, and cottage cheese. In addition to their own production, they have a trade-related business under which they buy and package butter and other items. The processor has implemented Hazard Analysis and Critical Control Points (HACCP) throughout its activities, and is trying to strengthen traceability throughout the supply chain.

Despite making a small profit, the processor faces a number of problems, the main one being the large number of suppliers from whom it purchases raw milk. The production of raw milk is dominated by very small actors, often with no more than 1–3 cows, so the processor buys milk from more than 3,000 farmers. This implies high collection costs and, therefore, the second largest expenditure after raw milk for this processor (as for the sector in general) is transportation. Due to the fragmentation among milk producers, quality control is costly and implementing traceability across the supply chain is problematic.

The minimum price guaranteed for milk producers is a clear obstacle to growth for the processor. It results in very small profit margins for the processor, especially on pasteurized milk and other simple products, and makes it difficult for the processor to gather sufficient resources for new investments.

Overstaffing is another problem for this processor. Because the plant was taken over from the state by the workers, the employees are also the owners. As such, they all continue to work in the facility despite the fact that half the current staff would be enough to achieve current production volumes.

While the employees have sufficient technical skills, the processor's management does not have adequate marketing skills, posing problems for further development. New product lines are not being developed and negligible resources are being allocated for marketing, including product design (currently only 1 percent of the profit). This has resulted in an invisible brand with an unknown name among consumers, according to a small marketing survey carried out by the processor. The small-scale processing plant is inadequate for expanding to higher-value products.

The processor's main market is central Bosnia and the Sarajevo canton, though it does export sporadically to Kosovo and (F.Y.R.) Macedonia. Production of fresh dairy products with a short shelf-life requires extensive logistical systems to reach a larger geographical market, which is difficult for a processor of this size.

Despite small profit margins, the processor is planning to invest in a new facility, though not in connection with the old plant as land is not available there. One reason for this new investment is to increase capacity and diversify into more sophisticated products. The other reason is the new water directive, which will require that processors be equipped with water cleaning facilities and which will thus require additional space.

[1] Milk production is at the core of BH's agriculture sector and receives by far the largest amounts of public support. The dairy industry consists of 53 processors, of which the majority are small- and medium-scale with a capacity of less than 100,000 l of milk per day. All processors have similar product lines of milk, yogurt, and sour cream, and in some cases an assortment of cheeses. Whereas BH milk dominates the domestic market (80 percent), and BH yogurt has a significant share (60-65 percent), other dairy product markets are dominated by foreign products. Only three dairy processors produce ice cream, and other high-value dairy products such as milk desserts, coffee creamers, and salad dressing are not produced domestically at all. With a few supermarket chains increasingly dominating the consumer market, BH dairy processors are losing shelf space in the stores.

27. **Despite having gained duty-free access to the EU market, BH is missing out on**

trade opportunities due to insufficient food safety institutions and inadequate safety and quality assurance among domestic producers. While steps have been taken to improve the legal and institutional framework in line with EU requirements in the fields of food safety and veterinary and phytosanitary services, the capacity of key institutions—including the recently established Food Safety Agency, the State Veterinary Office, the Administration of Plant Protection and Plant Health, and Entity Inspectorates—remains underdeveloped, and there is insufficient cooperation and coordination between the state- and entity-level institutions. Due to insufficient food safety infrastructure (both legal and institutional), BH is currently not allowed to export a number of fruits and vegetables, nor any kind of animal products, except for fish to the EU.[37] As a result, the country is missing out on the opportunity presented by its early planting season to export to high-value markets in northern Europe. Moreover, many producers and processors in BH are unlikely to meet EU requirements for the infrastructure and organization of agri-food value chains. Bringing agri-food businesses up to EU standards will pose a major challenge for the private sector, requiring substantial investment.

28. **It is increasingly necessary for processors to apply private standards in order to remain competitive on domestic and international markets**. As a result of consumer demands and their own quality control needs, retailers—especially the modern supermarket chains—increasingly require producers and processors to adhere to private production and labeling standards. The inability to apply good hygiene and manufacturing practices and quality assurance schemes, including the HACCP system (Box 4); poor marketing information; and inadequate packaging and labeling all have a negative impact on

Box 4: Hazard Analysis and Critical Control Points

After the Codex Alimentarius Commission adopted Hazard Analysis and Critical Control Points (HACCP) as the international standard for food safety in 1993, HACCP became a prerequisite for participating in food trade around the world. HACCP is a preventive measure that has proven to be more efficient than the traditional sampling and spot-checking method.

HACCP is based on the following seven principles:

- Analyze hazards
- Identify critical points in the value chain where potential hazards can be controlled or eliminated
- Establish preventive measures with critical limits for each control point
- Establish procedures to monitor these control points
- Establish corrective actions to be taken when monitoring shows that a critical limit has not been met and then reprocessing or disposing of food if minimum safety criteria are not met
- Establish procedures to verify that the system is working properly
- Establish effective record keeping to document the HACCP system

The approach focuses on the entire production chain, thus shifting responsibility for the implementation of food safety measures from government regulators to the producers and processors. The government's role is limited to establishing safety criteria backed by sound scientific knowledge and monitoring the records of producers and processors to verify their compliance with food safety regulations.

Source: World Bank/WHO, 2009.

[37] This restriction applies even when production and processing facilities have been certified according to internationally recognized standards.

the BH agri-food sector's ability to compete with foreign suppliers.

29. **High-quality rural infrastructure is needed to efficiently link producers and processors to domestic and foreign markets**. Substandard rural infrastructure, including roads, irrigation and drainage systems, and electricity, constrains growth and development in the agri-food sector by imposing significant costs on producers and processors. As discussed above, interviews with farmers suggest that limited public transport in rural areas imposes restricts the labor supply. In 2005, insufficient water supply implied higher losses for businesses in BH than in any other country in the ECA region. Although BH is considered a water-rich country with high potential for hydropower generation, some areas face localized water shortages. For example, lack of irrigation is a key factor limiting the development of high-value crops in the region close to the Adriatic Sea. World Bank experience from across the world has shown that benefits normally exceed costs when there is a demand for irrigation from water users. In the past few years, however, limited rehabilitation and development of irrigation systems has taken place in BH. At present, fewer than 3,000 ha are irrigated.[38] Previously constructed drainage systems have been abandoned and have deteriorated. Finally, while access to electricity is generally not a problem in BH and power shortages is not an issue, the costs of gaining access and of electricity are relatively high compared to other countries in the Balkans.

30. **With modern value chains and global markets, logistics are needed to realize potential comparative advantages in the agri-food sector**. Logistics, including efficient customs, good transport and information technology, and timely shipments, ensure that goods are delivered predictably, efficiently, and in a cost-effective manner. They also increase competition among traders, processors, and retailers, ultimately enabling primary producers to take a larger share of retail prices. BH faces several disadvantages related to logistics, with missed opportunities for supplying both domestic and international markets. The country is in the bottom half of the world in overall performance of logistics infrastructure, ranking 88th out of 150 countries in the World Bank's Logistics Performance Index (Table 3).

31. **Investors are discouraged from investing in BH as a result of the poor business environment**. The constraints to business development are reflected in limited access to finance, inadequate legislation and regulation for facilitating the formation of business partnerships and professional associations, slow and costly business and property registration, and weak contract enforcement systems. Improving the business environment remains an important priority, including for agriculture. For instance, farmers who are registered as business entities receive reimbursement for the value-added tax (VAT). Yet, owing to complicated and costly registration procedures, many farmers are not properly registered and cannot benefit from VAT returns. As a result, farmers—particularly small household farmers—are in effect taxed at a higher rate than enterprises in other sectors. Slow, complicated, and costly land registration processes are also likely to act as a disincentive for farmers to formally register their businesses.

32. **Limited access to affordable agriculture finance hinders investment in this sector**. Commercial banks continue to charge high interest rates to primary agricultural producers relative to businesses in other sectors due to the difficulty banks have in conducting proper

[38] World Bank, 2007d.

risk assessments of agricultural production. This obstacle is not specific to BH, but it imposes severe constraints to agriculture sector investment. Given the long-term nature of the agricultural production cycle and the problems farmers have in using their property as collateral due to uncertainties regarding land ownership, commercial banks tend to perceive rural lending as a high-risk operation. Interviews with farmers suggest that larger farms also perceive access to finance as an obstacle to further investment and expansion especially with regard to extensive collateral requirements. Some commercial banks are participating in subsidized credit schemes set up by the entity-level agricultural ministries to address this issue, but it is possible to conclude that these schemes delay the development of a sustainable rural credit market by continuing to exclude proper risk evaluations by the banks.

Table 3: BH Is Not Connected to Compete—The 2007 Logistics Performance Index[a]

Country	Rank (out of 150 countries)	Score
Western Balkans		
Albania	139	2.08
BH	88	2.46
Macedonia, FYR	90	2.43
Serbia and Montenegro[b]	115	2.28
Eastern Europe		
Bulgaria	55	2.87
Croatia	63	2.71
Hungary	35	3.15
Poland	40	3.04
Southern Europe		
Greece	29	3.36
Italy	22	3.58
Portugal	28	3.38
Spain	26	3.52

Source: World Bank, 2007a.

a. The logistics performance index is built on information from a web-based questionnaire completed by more than 800 logistics professionals worldwide. The index uses seven performance indicators: efficiency of the clearance process by customs and other border agencies, quality of transport and information technology infrastructure for logistics, ease and affordability of arranging international shipments, competence of the local logistics industry, ability to track and trace international shipments, domestic logistics costs, and timeliness of shipments in reaching destination.

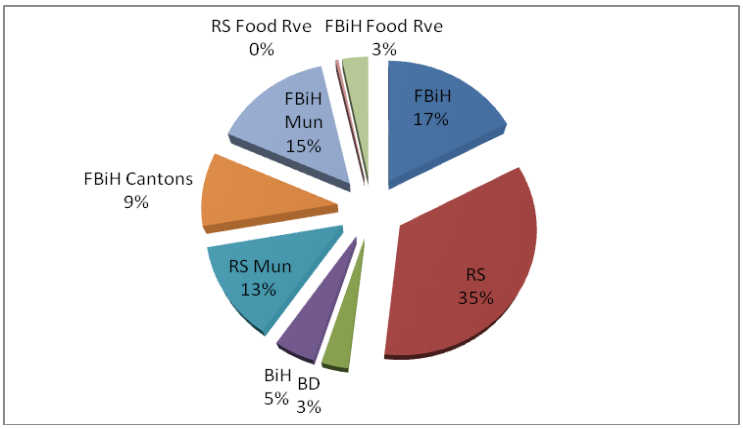
b. Although Montenegro declared independence from Serbia and Montenegro on June 3, 2006, disaggregated data for each country are not available.

33. **Agricultural support programs send confusing signals to agricultural producers and processors**. The programs include production and interest subsidies that are determined mainly on an ad hoc basis, thus introducing a significant degree of uncertainty in the long-term investment planning process of agricultural producers. The measures seem to be directed at supporting rural incomes in the short term, rather than improving the sector's long-term competitiveness. Cross-country research shows that allocating public expenditure to the agriculture sector is critical to its performance, and reallocating expenditures from subsidies to support for investment in essential public goods yields substantial contributions to growth. This is the case even without increasing the total amount of public spending, and

more so than increasing total public spending without reallocating from subsidies.[39] Specifically, investment in rural infrastructure, such as irrigation and roads, together with the generation and dissemination of new technologies demonstrate a significant positive impact on agricultural growth. In addition, support to private investments contributes more to growth than do direct subsidies. BH's current public expenditure focus therefore contributes much less to agriculture sector modernization than it could. Coordination is limited at the entity level and between the cantons in the Federation, resulting in a fragmented system.

34. **Public expenditures in the agriculture sector are poorly targeted to support agricultural growth**. A public expenditure review (PER) of the agriculture sector was carried out by the World Bank and Food and Agriculture Organization (FAO) in 2006 and early 2007, covering the period 2000–2006.[40] This analysis draws from that review in addition to more recent data.[41] Public expenditures in BH are administered at state, entity, canton, and municipal levels. In the absence of any type of body or institution responsible for monitoring or collecting agriculture sector public expenditure data, it is difficult to obtain a complete overview of public expenditures in BH. However, with reporting obligations linked to preparations for WTO membership, attempts have been made to compile information on public expenditures.

Figure 11: Agricultural Expenditures by Level of Responsibility



35. **Public expenditures in BH's agriculture sector are low relative to other countries**. Based on data gathered for the 2007 PER, total agricultural spending was estimated at KM 99.6 million in 2004, or about 1.35 percent of total public spending. By 2007, the figure had risen to KM 208.3 million, or about 2.13 percent of total public spending. Though the

[39] Cross-country research in Latin America and the Caribbean shows that reallocation of 10 percentage points of total public expenditures from subsidies to public goods, without increasing total public expenditure, increases per-capita agricultural income by 2.3 percent. In contrast, increasing total public expenditures by 10 percent without reallocating its composition only increases per-capita agricultural income by 0.6 percent (Lopez, 2005).

[40] In general, both then and now, it has been difficult to obtain complete datasets and economic statistics, due to weak reporting capacity at entity, canton, and municipal levels. This relates to data on public expenditure as well as growth indicators, and should be kept in mind when reading this analysis.

[41] The analysis focuses solely on agricultural expenditures, without going into fiscal and institutional details. This brief review aims only to provide a brief overview of the nature of agricultural spending in BH and advice on how best to use available resources to support growth in the agriculture sector.

definition of what falls into the category of agricultural spending varies, the current expenditure level is low compared to an average of about 6–8 percent of total public spending in developing countries, and 3–5 percent in developed countries. BH's public spending in the agriculture sector is also low as a share of total GDP, increasingly slightly from about 0.7 percent in 2004 to nearly 1 percent in 2007. Countries with similarly sized agriculture sectors tend to spend more as a share of GDP, closer to 1.5–2 percent.[42]

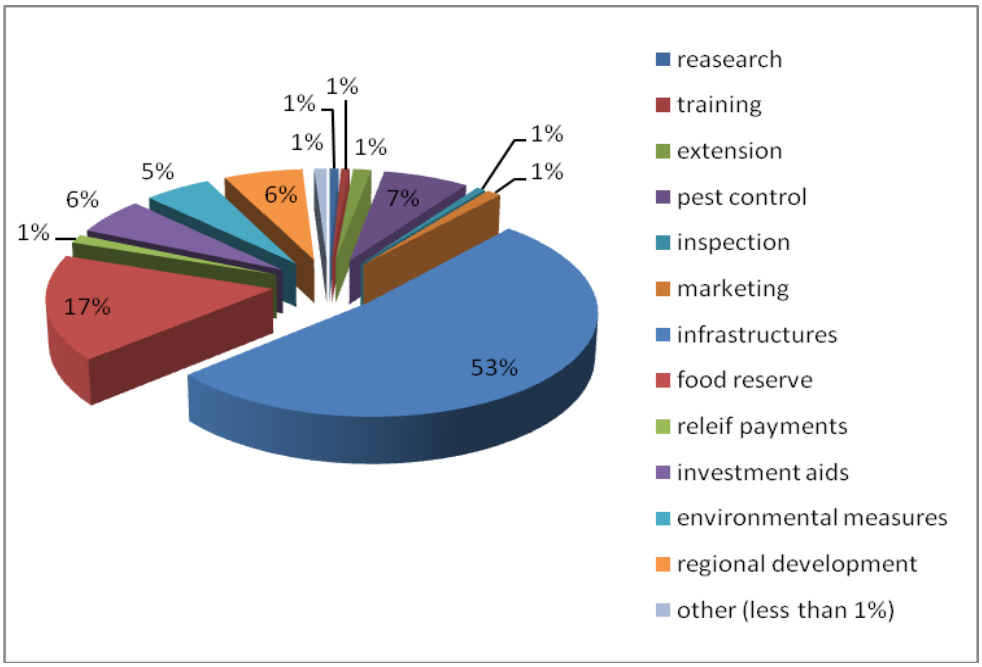
36. **The composition of subsidies in BH is heavily weighted toward direct production rather than investment**. The WTO reporting system, which includes the so-called "green box" and "amber box" classifications[43] of agricultural subsidies, provides an overview of where, how, and to whom these subsidies are allocated. In 2007, amber box support, which comprises direct production subsidies, accounted for KM 125 million, or 60 percent of total agricultural expenditures, as compared with KM 60.3 million, or 63.5 percent of total spending in 2005 . Hence, total allocation of agricultural expenditures has increased while the composition of the support has changed only marginally. Meanwhile, green box expenditures, which tend to be more growth enhancing, constituted only 40 percent of the total. The single largest expenditure in the agriculture subsidy budget is milk production subsidies, which absorbed as much as 70–80 percent of total subsidies distributed by the FBH Ministry of Agriculture during 2003–2006. Given that 80 percent of milk producers have three cows or less, on average,[44] this subsidy takes on the characteristics of a social transfer rather than productive support to the agriculture sector. BH's support system is also inconsistent with the current direction of the EU's Common Agricultural Policy (CAP), which has moved away from subsidies tied to production and is gradually moving toward investment grants (through Pillar II). The EU Instrument for Pre-Accession Assistance for Rural Development (IPARD), for which candidate countries become eligible, is also based on investment grants.

[42] World Bank and FAO, 2007.

[43] Under WTO's classification for agricultural support, the green box refers to support that is non-distortive to trade, is government funded (as opposed to consumer funded through higher prices), and cannot involve price support. Green box mechanisms would include support to research, education, and training; extension services; pest control, marketing activities; infrastructure; and other similar initiatives. The amber box refers to all domestic support that distorts production and trade, including price support and subsidies directly related to production quantities. For WTO members, these subsidies are limited to 5 percent of agricultural production for developed countries and 10 percent of agricultural production for developing countries. This is referred to as "*de minimis*."

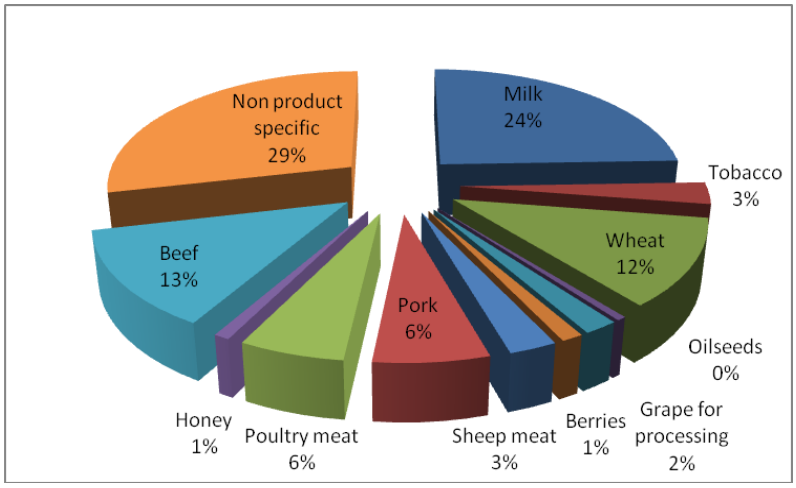
[44] BH MFTER, 2007. This figure refers to 2006.

Figure 12: Green Box Support in BH



Source: BH MFTER

Figure 13: Amber Box Subsidies



Source: BH MFTER

37. **Existing public services related to agriculture education, research, and information systems are weak and do not sufficiently promote competition and quality orientation**. Agricultural education systems are currently unable to meet the rising demand for skills as better technologies are introduced and markets become more discerning. Many agricultural schools and faculties still focus curricula, education, and qualification standards on large farms and public sector jobs rather than on the new community of small- and medium-sized farmers and rural service providers. The stand-alone nature of most agricultural faculties limits interdisciplinary studies, which are important for know-how related to EU policies (such as cross-compliance, environmental issues, and rural development). The level and quality of research expenditures is insufficient. Most research has limited relevance to the

new class of smaller private farmers and tends to focus on on-station rather than on-farm trials, due in part to funding limitations. Immediate action is needed to improve agricultural statistics for sound planning and decision making in the agriculture sector. Available information on ownership, size, and operational structures of farms; numbers of livestock; and labor in agriculture is insufficient.

38. **Furthermore, the extension system is not fully functioning**.[45] Existing extension systems in BH are not yet in a position to provide the services needed to help farmers increase competitiveness and productivity, to better manage their businesses, or to respond to new circumstances such as changing market requirements, food safety concerns, and climate change. Moreover, the current thinking on rural advisory services favors a wholly public system, without competition from the private sector, which would be expensive and difficult to staff properly in times of fiscal restraint and public wage ceilings. Experience from other countries has demonstrated that purely public advisory services can be inefficient and insufficiently responsive to farmers' needs. Current good practice recommendations favor pluralistic institutional approaches that include roles for NGOs, producer organizations, and the private sector.[46]

39. **BH faces an "adaptation deficit" that will increase with the projected climate change**. Like many countries in the ECA region, BH is vulnerable to climate change as a result of a legacy of environmental mismanagement and the collapse of agricultural services.[47] These issues increase the threat to the agriculture sector from climate risks, and reduce its ability to take advantage of opportunities that may emerge. BH has recently made progress in integrating environmental considerations into agriculture and forestry, for example by establishing inter-ministerial working groups to discuss the nexus between agriculture and environment.[48] Environmental protection is not yet fully incorporated into agricultural development policies, however, and poor coordination between state and entity agencies is delaying implementation. In addition, environmental monitoring in agriculture is limited; nutrient analysis, for example, is based on estimates. Environmental management issues could undermine the sustainability of agricultural production and limit access to high-value EU markets (such as those that demand organic or GlobalGAP[49] certification), thereby limiting growth potential.

[45] Extension offices were established throughout BH in 2000 with EU support. Responsibilities included designing business plans and providing other advisory services for farmers. In the Republika Srpska, the system is still in place and includes municipal-based advisors in most areas, assisted by a central support unit in Banja Luka. Though appreciated, the service is poorly equipped, underfunded, and understaffed. In FBH, the system was originally established at the canton level with no central service. It is largely non-operational due to limited interest from the cantons. In November 2008, the FBH parliament adopted the Law on Extension, which envisages the establishment of a central Extension Agency.

[46] World Bank, 2004.

[47] World Bank, 2009.

[48] Sutton, et al., 2007.

[49] GlobalGAP refers to the Global Partnership for Good Agricultural Practice, which is a private sector body that sets voluntary standards for certifying agricultural production processes.

V. Key Public Policy Actions

40. **The agriculture sector in BH has potential comparative advantages in a number of products, but faces important constraints in competing domestically and internationally**. Large parts of the country enjoy a favorable climate for agricultural production, and domestic factor prices are lower than in many comparable countries. However, distortions in input and output markets result in small profits for agricultural producers. Together with stagnating land markets, limited access to credit, inadequate provision of rural services and infrastructure, inappropriately focused public expenditures, and weak institutional capacity, this limits opportunities and incentives for much-needed agricultural investments.

41. **BH's agriculture sector is at a crossroads**. In order for the country to catch up with the rest of Europe and survive increasing competition from the EU and other neighboring countries, new agricultural and rural development reforms will need to be implemented. Some of these reforms can be realized relatively quickly and with little or no cost to public finances, while others will take years to complete. If they are to take full advantage of available opportunities, BH farmers need to be able to operate in an environment that is similar to that of EU farmers. This will require strengthening institutions and creating a favorable business environment. It will be important, therefore, to maintain an agenda that encourages growth and participation in the sector, while preparing institutions for possible EU accession in the future.

42. **Targeting public expenditures toward the provision of public goods and services will be essential to support growth and development in BH's agriculture sector**. International experience shows that investment in public goods—such as institutions, agricultural education, research and extension services, food safety, market infrastructure, natural resource management, and information systems—is important for growth. Investment in agricultural research and development has shown particularly high returns to growth.[50] Teaching in agricultural economics and business, marketing, agricultural policy, environmental and natural resource management, and biotechnology needs continuous upgrading. The EU's Bologna process presents a significant opportunity to further improve the quality of agricultural higher education, and more regional and international collaboration and partnerships would help strengthen programs. Extension strategies, which are currently under preparation in FBH and RS, should define a multifaceted approach for service delivery that involves the public sector, NGOs, rural producer organizations, and private sector service providers. Although a fully private system is not feasible now, approaches based on public funding of services contracted to private local suppliers may be an effective avenue for meeting the needs of small farmers. Agricultural research spending needs to focus on clearly identified priorities and farmer needs. In the short run, emphasis should be on applied research, including on-farm and on-site trials with farmer involvement, as well as storage, packaging, and marketing technologies. Coordinating investments and sharing resources (such as people, equipment, and ideas) with other countries and institutions would increase economies of scale.

43. **The main components of EU agricultural policy information systems should be developed**. These include Eurostat's agricultural statistics program, the agriculture market

[50] Alston, et al., 2000.

information system, the Farm Accountancy Data Network (FADN), and the Integrated Agriculture Control System (IACS), including the farm registry. Important components of these are already being established,[51] but further cooperation with new EU member states could help establish these information systems in a stepwise approach.

44. **Existing subsidies in the agriculture sector should be better targeted to maximize their contribution to growth**. Changing the composition of BH's agricultural subsidies will be vital if they are to effectively contribute to agricultural and rural growth. In the highly fragmented milk-producing sector, for example, it would be economically advisable to identify investments and services that could contribute to growth in the dairy sector (such as modern barn and milking facilities, cooling tanks, and quality assurance equipment) and to reallocate the current milk subsidies to support such investments. This sector is likely to have many non-viable milk producers that depend on production subsidies for their livelihood, but that do not have incentives to invest further in their farming activities. It is thus important for the Ministries of Agriculture to work in parallel with the Ministries of Social Affairs to ensure that alternative safety nets are in place, at least for a transition period.

45. **Shifting from production subsidies to more investment-oriented support would pave the way for possible EU pre-accession funds for rural development**. These resources, under the EU IPARD program, would support on-farm investments, ease the transition toward non-farm activities—such as eco-tourism—for non-commercial farmers, and bring BH closer to meeting EU accession requirements in the field of agriculture. This funding would also provide the means to support the agriculture sector in investing for future participation on the EU market. If BH obtains full EU membership, it will eventually need to move completely away from direct product subsidies to decoupled rural support.

46. **By maximizing the absorption and effective use of available EU pre-accession assistance, BH can alleviate the financial burden posed by necessary reforms and investments**. In the period 2007–2011, €440 million has been allocated for BH under the Instrument for Pre-Accession Assistance (IPA) to support its transition from a potential candidate country to a candidate country.[52] Around 90 percent of the envelope is intended for projects supporting institutional reforms under IPA Component I: Transition Assistance and Institution Building. The remainder is to fund Cross-Border Cooperation Projects. With careful planning and attention to establishing appropriate absorptive capacity, IPA resources could significantly alleviate the financial burden associated with aligning BH's institutions with EU requirements. The IPA could also provide technical support to help implement needed reforms, such as strengthening advisory services, food safety

[51] These include a client registry, a parcel registry, strengthened payment systems, and harmonization toward a single state-level paying system (i.e. a paying agency).

[52] The IPA is a financial instrument offered to EU candidate countries and potential candidate countries during the period 2007–2013 to support their adaptation of public institutions to EU requirements with a view to future EU membership. The Instrument for Pre-Accession for Rural Development (IPARD) is one of five IPA components. The purpose of IPARD is to prepare candidate countries with policies and institutions to manage EU's CAP, while ensuring sustainable development of the countries' agriculture sectors. IPARD support to candidate countries is estimated at €880 million for the period 2007–2013. While BH is included under the IPA framework as a potential candidate country, it does not benefit from IPARD 2007–2013, which is exclusively for candidate countries.

institutions, and registers (though significant additional resources are typically required for hard investments). Well-targeted assistance will be needed for the agri-food sector to adjust to increasingly demanding EU standards on food safety, environmental protection, and animal welfare. This assistance is expected to come primarily in the form of competitive matching grants within the broader framework of rural development programs consistent with EU IPARD requirements. Such grants could also finance farm modernization and small-scale irrigation. These programs will need to be accompanied by comprehensive training programs for the private sector (normally conducted by extension services), both on grant application procedures and in more technical fields such as HACCP systems. Finally, the creation of rural non-farm employment can be supported through rural development matching grants schemes in accordance with those supported under EU IPARD and CAP Pillar II.

47. **It will be important to develop an EU-compliant food safety control system**. The existing institutional framework must be streamlined, with national-level coordination and clearly defined responsibilities for all involved agencies. Effectively enforcing food safety legislation will require improved capacity in inspection services—particularly to support the transition to a risk-based inspection program and food businesses' ability to assess the application of good hygiene practices as well as the HACCP system (Box 4). Enforcement will also depend on the implementation of effective controls at border inspection posts. Although a great deal of work is underway in this area,[53] complying with EU food safety requirements will be a lengthy and costly process requiring significant private sector investment to upgrade production and processing facilities. Adopting EU food safety regulations would be a good start—particularly prior to future EU negotiations, since in the past negotiations have been delayed due to food safety issues. Appropriate regulation will include ensuring that state-level legislation is directly implemented in entity-level legislation. A second important measure would be to strengthen the capacity of the Administration of Plant Protection and Plant Health. Testing facilities will require major upgrades, modernization, and a new vision. This effort will require significant consolidation of infrastructure and functions. Importantly, an EU-compliant food safety system will require a single, state-level system. While inspection services may remain decentralized at the entity level, institutions like the State Veterinary Office, the Administration of Plant Protection and Plant Health, and the Food Safety Agency will need to be accountable for these services at the state level. Entity levels will have to comply with state-level legislation, as the current system will not be acceptable to the EU.

48. **Investment in quality infrastructure and logistics will be important to link producers to domestic and foreign markets efficiently**. NRP calculations show that farm gate prices are low and that market distortions impose implicit taxes on BH farmers. Interviews with processors have also pointed to the problem of logistics throughout the supply chain. By themselves, however, these investments will not be enough to sustain agricultural and non-agricultural growth and competitiveness; only when based on local demand and combined with education and a better business environment can improved infrastructure services promote long-term sustainable growth and competitiveness.[54] The

[53] These activities are being supported under the World Bank-financed Agriculture and Rural Development Project and other projects.
[54] World Bank, 2008.

government can improve farmer connectivity by supporting the establishment of producers' organizations to facilitate market participation for small-scale farmers. This can be accomplished by strengthening access to finance for the purposes of establishing organizational structures and investing in post-harvest infrastructure, as well as through technical support to small-scale agri-businesses.

49. **Well-functioning land institutions are essential for the development of the agriculture and rural sectors**. Clear land titling and ownership are crucial for ensuring optimal use of agricultural land and encouraging agricultural investment. Functioning land registration and cadastre systems and an IACS will be required to access EU IPARD funds intended for agricultural investment. Land registration and cadastral systems also need to be updated. It is important to note, however, that well-functioning land and rural property markets are by themselves often not enough to promote consolidation of agricultural land; voluntary, market-based land consolidation programs would also be helpful. Projects that facilitate land consolidation, or "re-parceling"—such as the successful pilot recently implemented under a World Bank-financed project in Moldova and Turkey—can help to significantly reduce the transaction costs involved in consolidating large numbers of fragmented parcels.[55]

50. **The World Bank has identified a number of steps to establish good governance, protect rights, and improve land and property markets**. These steps, as laid out in the Project Appraisal Document for the BH Land Registration Project, are as follows:

a) Establish a secure and efficient real estate registration system
b) Complete the cadastre records for all property in BH
c) Increase the efficiency and reduce the costs of systems for issuing land use and construction permits, and update urban planning documentation to reflect the situation on the ground
d) Regularize illegal developments and encroachments
e) Finalize outstanding restitution claims from persons displaced during the war years and resolve the approach to be taken with respect to claims to property nationalized during the socialist period
f) Facilitate the land privatization process and create more private land ownership as the foundation of land markets
g) Establish an adequate property tax system to help fund local government services[56]

Whereas a few of these activities are already ongoing under the Land Registration Project, others remain to be initiated. The most urgent short-term steps would be to: (i) complete the ongoing digitalization of existing maps and land-books; (ii) record land registration data in electronic databases; (iii) harmonize cadastre and land registration information; and (iv) expand work with the Cadastre Agencies, based on the forthcoming results of the eight ongoing pilots under the World Bank-financed Land Registration Project.

51. **Improved input markets will help farmers access competitive inputs**. There is a need to address the limited number of plant varieties allowed into BH, to improve farmers'

[55] World Bank. 2007. Project Appraisal Document, Rural Investment and Services Project II.
[56] World Bank. 2006. Project Appraisal Document, Land Registration Project.

access to seeds and seedlings,[57] and to establish a quality assurance system. The easiest way to solve these issues would be to adopt the EU Common Catalogue for Agricultural Plant Species, while maintaining a system to test common varieties and provide information and recommendations to farmers. This would open up the possibility for more importers to participate in the market, and even for farmers to import seeds and seedlings directly. Adopting the Common Catalogue would also be likely to lower input prices and improve the quality of available planting material, thereby increasing yield. Formal trade channels would be established, making producers and traders accountable for the products. In addition, fertilizers and pest management will be important for increased yields. Rigid import regulations and procedures need to be eased, within the limits of safety and hygiene. Given BH's EU aspirations, regulatory changes should be in line with existing EU regulations, including the Nitrates Directive and other "good agricultural practices" applied in EU countries.

52. **In parallel, better information on alternative fertilizers and pest management methods should be provided**. Manure management, green manure production, and integrated pest management (IPM) are all agronomic and economic good practices, in addition to being suitable for organic production. To apply these approaches properly, however, farmers need information and training. For IPM, it is necessary to assess risks and appropriate methods, and to understand what methods are applicable in different parts of the country and for different types of agricultural production. The type of crop for which green manure is suitable (for example, nitrogen-fixing crops like legumes) depends on climate conditions as well as market demand for the byproduct (such as beans or peas), which has to substitute for the crop forgone when planting the green manure. Animal manure management requires knowledge in storing and handling; relevant recommendations should be developed and practical training in these methods provided to farmers. Recommendations for different parts of the country can be developed in collaboration with the universities, and training can be provided through extension and advisory services, NGOs, or other mechanisms.

53. **Finally, BH should integrate climate change adaptation and environmental sustainability into agricultural policies, programs, and investments**. Although the precise impact of climate change on agriculture remains uncertain, it seems likely that heat and water stress and extreme events will destabilize crop yields in many areas, while greater exposure to vector-borne pests and diseases will increase crop and livestock losses. These elements will also affect BH's water and land resources, biodiversity, and ecosystems. To succeed in agriculture, producers and governments will have to adapt. According to the latest advice from experts on the subject, the way to start is to focus on reducing agriculture's vulnerability to current climate variability. For example, improving water and soil management, and investing in improved research, extension, and weather forecasting are "win-win" measures because they will generate a positive rate of return under today's conditions, and will be even more important in the face of climate change. The United Nations Intergovernmental Panel on Climate Change (IPCC) has been recommending for some time that countries develop climate change adaptation action plans,[58] and the

[57] It is noted that domestic seedling production has been initiated, improving BH farmers' access to quality seedlings. It is unlikely, however, that domestic production will be able to cover domestic demand.
[58] Article 4 of the United Nations Framework Convention on Climate Change (UNFCCC), to which BH is a party.

recently released EU White Paper on adapting to climate change includes an action to "encourage the further development of National and Regional Adaptation Strategies with a view to considering mandatory adaptation strategies from 2012."[59] With the help of the international community, BH should pursue such a process.

[59] Commission of the European Communities, 2005.

Table 4: Summary of Recommended Measures by Time Horizon

Short-term measures (1–2 years)
1. Public Expenditures: • Continue to reallocate public expenditures from direct subsidies to more investment- and service-oriented agricultural support. • Analyze how social transfers can better target low-income groups in rural areas so that agricultural subsidies to otherwise non-viable farmers can be phased out. • Develop a Climate Change Adaptation Action Plan to guide future interventions to reduce the vulnerability of agriculture.
2. Food Safety: • Start adopting EU food safety regulation at state and entity levels. • Strengthen the capacity of the Administration of Plant Protection and Plant Health.
3. Land Policies: • Complete the ongoing digitalization of existing maps and land-books. • Record land registration data in electronic databases • Harmonize cadastre and land registration information. • Expand work with the Cadastre Agencies, based on the forthcoming results of the eight ongoing pilots under the World Bank-financed Land Registration Project.
4. Input Markets: • Start the process of adopting the EU Common Catalogue for Agricultural Plant Species. • Develop a system for domestic testing of plant species that can provide farmers with recommendations without limiting domestic competition. • Analyze how import regulations for fertilizers and pesticides can be eased in a way that optimizes BH's needs. • Make price information for a broad range of inputs easily available to farmers. • Start regional studies to form the basis for recommendations on IPM and green manure. • Launch training programs for farmers on alternative fertilizing and pest management methods.
Medium-term measures (2–5 years)
1. Strengthen agricultural research and education and make it receptive to the demands of the sector.
2. Strengthen extension and advisory services.
3. Separate agricultural expenditures from social transfers.
4. Better align the agricultural support program to the EU's IPARD program.
5. Continue to develop the components of the EU's agricultural policy information system.
6. Continue adopting an EU-compliant food safety system.
7. Support the private sector in meeting EU food safety requirements.
8. Continue with the land policy program according to the action plan recommended under the World Bank-financed Land Registration Project (pp. 25-26)
9. Begin implementing Climate Change Adaptation Action Plan, focusing on investments with high co-benefits for current vulnerability reduction.
Long-term measures (5–10 years)
1. Ensure continued progress toward EU membership and EU integration
2. Support off-farm employment in rural areas
3. Improve rural infrastructure
4. Ensure clarity of land ownership and well-functioning land markets in BH
5. Continue implementation of the Climate Change Adaptation Action Plan, including for longer-term interventions such as the introduction of new varieties.

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