

Mayors for Economic Growth

Market Research of the AGRICULTURAL SECTOR of economy in the Eastern Partnership countries

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AA	Association Agreement						
CEPA	Comprehensive and Enhanced Partnership Agreement						
CIS	Commonwealth of Independent States						
DCFTA	Commonwealth of Independent States Deep and Comprehensive Free Trade Agreement						
EAEU	Eurasian Economic Union						
EaP	EU Eastern Partnership						
EU	European Union						
FAO	Food and Agriculture Organization of the UN						
FLW	Food loss and waste						
FTA	Free Trade Agreement						
GAP	Good agricultural practice						
GDP	Gross Domestic Product						
GHP	Good Hygiene Practice						
GI	Geographical Indication						
GMP	Good manufacturing practice						
ha	hectares						
HACCP	Hazard Analysis and Critical Control Points						
hl	Hectoliter = 100 liters						
IFOAM	International Federation of Organic Agriculture Movements (called also Organic International)						
ILO	International Labor Organization						
ILO kg	International Labor Organization Metric kilogram						
ILO kg ISO	International Labor Organization Metric kilogram International Standard Organization						
ILO kg ISO LCU	International Labor Organization Metric kilogram International Standard Organization Local currency unit						
ILO kg ISO LCU MFN	International Labor Organization Metric kilogram International Standard Organization Local currency unit Most Favored Nation treatment						
ILO kg ISO LCU MFN mhl	International Labor Organization Metric kilogram International Standard Organization Local currency unit Most Favored Nation treatment Million hectoliters						
ILO kg ISO LCU MFN mhl PEM	International Labor Organization Metric kilogram International Standard Organization Local currency unit Most Favored Nation treatment Million hectoliters Pan-Euro-Mediterranean						
ILO kg ISO LCU MFN mhl PEM PPP	International Labor Organization Metric kilogram International Standard Organization Local currency unit Most Favored Nation treatment Million hectoliters Pan-Euro-Mediterranean Purchasing Power Parity						
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1. INTRODUCTION

This paper is prepared in the framework of the EU Mayors for Economic Growth (M4EG) Project (ref. no. EuropeAid138035/DH/SER/Multi).

Having in mind the importance of agribusiness sector for the development of EaP countries, the specific purpose of this paper is to provide a "...market overview on agriculture sector produce" of Eastern Partnership (EaP) countries, including: (i) industry overview, with focus on subsectors with export potential, (ii) market trends and requirements in the focus subsectors, and (iii) identification of initiatives that local authorities may undertake to overcome existing constraints/gaps and meet requirements in identified subsectors. To this end, the paper has the following outline:

- 1. Bird's eye view on agri-food landscape
 - provides a brief picture of the region's agriculture and food in EaP countries, including selected information relevant to the study such as: the structure of agriculture and farming, key agri-food products, farming technologies and practices, the role of agri-food in the economy, agri-food trade, relevant aspects of policy and institutional framework, other country specific features.
- 2. Selected agri-food supply chains and markets
 - include more detailed discussion about the structure and operation of selected supply chains in EaP countries. The selection criteria include export potential, commercial potential, potential economic and social impact, cross-country cooperation opportunities.
- 3. Highlights on selected issues/solutions
 - provide additional details on selected agri-food sectors and issues, possible solutions to those issues and examples from international experience that are important and relevant to the EaP countries.
- 4. Strategies and measures by communities/municipalities
 - elaborate on the practical role that communities/municipalities may play in the process of the development of agri-food sector in their communities, regions and countries, and specifies a number of recommended strategies and actions that municipalities could make, having in mind the scope of their functions.

2. EXECUTIVE SUMMARY

Agriculture plays a significant role in the economic and social life in EaP countries - Armenia, Azerbaijan, Belarus, Georgia, Moldova, and Ukraine. EaP countries share common historic heritage that affected their economies and social life, including the structure and practices of farming. At the same time, there are significant differences due to varying factor endowments (land, water) climate, government policies and regional/international integration processes.

Significant economic role of agriculture. Agriculture's contribution to GDP is particularly high in Armenia, Moldova and Ukraine, with about 14%, 10.2% and 10.1% shares, respectively. Agriculture's contribution is even higher in foreign trade in all countries, but Azerbaijan. The shares of agri-food in total export in Moldova and Ukraine are above 40%, and in Armenia and Georgia - more than the quarter of total exports. Ukraine is the largest country in terms of the size of arable land (32.8 million ha) and agricultural production (\$13.3 billion). Table 2 provides details about the size and role of agriculture in economies of EaP countries.

Even higher social role. Agriculture's weight in the population and employment is even higher than its economic role. The share of rural population and employment in agriculture is especially high in Moldova and the three South Caucasian countries (Armenia, Azerbaijan, and Georgia). In Moldova, more than 57% of population lives in rural areas, while in Georgia agriculture employs about 43% of labor force, and around one third in the other three countries. The higher share in employment compared to the contribution to the GDP is an indicator of low labor productivity of agriculture, compared to other sectors of the economy.

Prevalence by fragmented, non-professional peasant-farmers combines with low cooperation. In most EaP countries, fragmented, semi-subsistence, "self-employed" smallholders dominate the agricultural production. In South Caucasian countries smallholders (with less than 2 ha land) account for virtually all agricultural production. In contrast, in Belarus and Ukraine large commercial farms account for 80% and 56.5% of total agricultural production, respectively. Smallholders are not legal entities and have no fiscal or statistical identity. In effect, in all EaP countries, smallholders have common characteristics and share same challenges. Small fragmented farming structure, combined with low level of cooperation between farmers causes inefficiencies in the agri-food supply chains as well as in market operation resulting in low productivity, low and inconsistent quality and safety of produce, and overall low income for supply chain participants. However, the fragmented, small-scale farming structure brings some advantages such as the flexibility in reacting to the market demand, low investment requirement, more incentive to focus on higher value production, and, in some cases, easier to adopt sustainable practices. In any case, effective farmer cooperation is essential for tackling many of the market imperfections, as well as for expansion and diversification of export markets.

Key agricultural products. There are distinct differences between the product coverage of agricultural production and export in South Caucasian countries and the other EaP countries (Belarus, Moldova and Ukraine). In relation to plant products, South Caucasian countries are focused on fresh and dried fruits and vegetable production, while Belarus, Moldova, and Ukraine concentrate on cereals and technical crops such as sunflower, sugar beet, flax, rapeseed, and linen. In relation to animal products, Belarus and Ukraine are leaders in bovine and poultry meat, and milk and dairy production. Importantly, there are distinct differences between large commercial farms and smallholders in terms of product coverage. *Smallholders* focus more on the production of high value, labor intensive agri-food products such as: fresh and dried fruits and vegetables; milk and cheese, while *large agri-food entities* focus more on the production of commodity products such as cereals, forage crops, sunflower and other oilseeds, soybean, sugar beet, and meat production.

Key agri-food export products. The main exported products from Armenia, Georgia and Azerbaijan include:

- grape wine, Georgia as a leading exporter
- brandy (cognac) and grape spirits, with Armenia being the leader
- soft drinks (mineral waters, fruit juices, sweetened waters such as lemonade)
- fresh and dried fruits (apricots, peaches, plums, apples, cherries, grapes)
- fresh and prepared vegetables (tomatoes, cucumbers, onions, garlic, pepper)
- nuts (hazelnut, walnut), Georgia being the leading exporter
- citrus fruits (mandarins, lemons), Georgia being the leading exporter
- dairy products (cheese), Armenia being the leading exporter.

The main products exported from Belarus, Moldova and Ukraine include:

- o cereals wheat, corn and other, Ukraine and Moldova being leading exporters
- o dairy products, including milk and cream, yoghurt, butter and cheeses (Belarus being the leader)
- o sunflower (and other plant) seeds and oils (Ukraine and Moldova being the leading exporters)
- o sugar beet, Ukraine being the leading exporter
- o meat (bovine and poultry), Ukraine and Belarus being leaders
- o alcoholic beverages (wine, brandy), Moldova being the leading exporter

Russia and EU are major export markets. In 2018, total agri-food trade of EaP countries with the rest of the world was around \$ 27.3 billion, while intra-EaP agri-food trade was about \$ 2 billion. Thus, intra-EaP agri-food trade is about 7.3% of EaP agri-food trade with the world. Trade with major partners – Russia and the EU – is several times greater than intra-EaP trade. For most countries and most agri-food products Russia still remains the main export market. Moldova and

	Agri-food trade in EaP, 2018, \$ million					
	World	EU	EaP	Russia		
Armenia	670.2	13	44.9	329.4		
Azerbaijan	705.1	60	11.8	521.5		
Belarus	5,172.0	210	182.5	4,104.5		
Georgia	959.2	139	313.6	243.6		
Moldova	1167.5	705	92.6	114.5		
Ukraine	18,611.5	2,315	1327.9	92.0		
EaP	27,285.5	3,442	1973.3	5,405.5		

Ukraine have more diversified export markets for their agri-food products with commodity products (wheat, sunflower oil, sugar, tec.) exported to Asian and the Middle Eastern markets.

A need for increased market diversification. Market diversification is important for agri-food sectors of EaP countries not only to minimize the risks of concentration and dependency on one large market (the Russian market), but also for capturing opportunities of higher profit margins in new and more lucrative markets. New emerging markets for agri-food exports, in addition to the EU market, include the USA, Asian countries (China, Japan) and Middle Eastern countries (UAE, Iraq, Jordan, Saudi Arabia, Israel), and North Africa (Egypt, Libya). The effective market diversification and expansion will require a systemic approach and concerted action by multiple public and private stakeholders, and investments towards (i) conducting proper market research; (ii) identification and application of the *formal and informal* quality and safety standards of potential export markets, (iii) expansion of the production volume to meet the market demand; (iv) enhancing the competitiveness of products; and (v) establishing effective export logistics and distribution channels.

Regional integration processes create challenges and opportunities. Armenia and Belarus are members of *Eurasian Economic Union (EAEU)*, while Georgia, Moldova, and Ukraine have signed *Association Agreements with the EU* (including *Deep and Comprehensive Free Trade Agreements - DCFTA*). In addition, to the EAEU, Armenia also signed a *Comprehensive and Enhanced Partnership Agreement (the CEPA)* with the EU with the aim to enhance political and economic partnership and cooperation with the EU, based on "common values and close links, including by increasing the participation of Armenia in policies, programmes and agencies of the EU". The EAEU membership of Armenia and Belarus, and the DCFTA of Georgia, Moldova and Ukraine with the EU may create interesting avenues for cross-border cooperation in trade, keeping in mind that Russia and EU are a major trading partner for all EaP countries. Armenia and Belarus may serve as an effective entry point for Georgia/Moldova/Ukraine to the large market of EAEU, while the latter may serve as an effective platform for better access of Armenian and Belarusian businesses and traders to the EU market.

Liberal agricultural markets in most EaP countries. In all countries, except Belarus, agri-food markets are liberal. Prices are formed through free interaction of market participants and factors. In Belarus there is high level of state intervention in the agricultural production, price formation and marketing. Ukrainian government also exercises some policies to regulate prices of a number of key products such as grains, oilseeds, sugar beets, and milk. The market operation in Belarus is strongly affected by state policies such as the price regulations and state procurement. The government of Belarus determines procurement prices for almost all agricultural products at the beginning of each agricultural season. Prices can be regulated by the national government and by regional authorities. The system of input supply is still based on state purchases and distribution of key inputs to the farms. These state purchases are made at regulated prices.

Comprehensive supply chain approach needed to achieve effective solutions. While designing policies and measures and projects aimed at the development of agriculture it is critical to have a comprehensive view on

agri-food supply chains. Otherwise, the strategies, policies, and measures adopted by central and local authorities as well as businesses are fragmented with low effectiveness and efficiency, and solutions are not sustainable. To this end, the paper discusses a number of supply chains, to highlight the production challenges and market inefficiencies in more concrete and practical contexts and to depict the important role of interlinkages between various stages of supply chains. The supply chains discussed in the paper are: (1) dairy (milk and cheese) supply chain, (2) fruit supply chain (including grape), (3) vine and wine supply chain; (4) organic supply chains.

Market inefficiencies. In most EaP countries, agri-food supply chains and market operation are strongly affected by the prevalence of small-scale and fragmented semi-subsistence farming. In the three South Caucasian countries and Moldova (and to some extent in Ukraine), a number of critical *market imperfections combined* with weak farmer cooperation significantly constrain the development of agricultural production, by limiting the bargaining power of farmers, distorting the price formation process to the detriment of both farmers and processors, and discouraging investments in the sector. This relates, particularly, to:

- i. the lack of cold and non-cold storage capacities (and processing capacities at rural communities)
- ii. weak system of product safety and quality standards (and or poor practical implementation of the existing standards), and marketing/labelling requirements
- iii. abuse of market power by a small number of large processing plants (e.g. in wheat, grape, dairy producers)
- iv. imperfections in the input markets (e.g. wheat seeds, feed, agri-chemicals, tools and equipment), including those caused by the intervention of governments in the market
- v. complexities in export logistics/transportation faced by small- and medium-size producers/exporters, e.g. problems of grouping/shipping small batches, and problems of achieving consistent quality.

Productivity issues. Overall, to improve international competitiveness, EaP countries need to enhance the productivity in agriculture. In comparison to European peer countries, the productivity is low in relation to most agricultural products of plant and animal origin, including milk, cattle meat, and egg production, wheat, potato, sunflower seeds, fruits and vegetables. EaP countries have internationally high productivity in a number of subsectors, including: *Armenia* (grapes, hazelnuts, walnuts, cherries, berries, tomatoes, cucumbers), *Azerbaijan* (grapes, walnuts, cherries), *Belarus* (cherries, tomatoes, cucumbers, carrots), Georgia (hazelnuts), *Ukraine* (poultry meat, cherries). The combination factors leading to low productivity in agriculture, includes: (i) the prevalence of smallholders, combined with low level of cooperation among farmers, that results in a peasant-based low productivity agriculture; (ii) lack of knowledge and skills about modern effective and sustainable technologies and practices along all the stages of agri-food supply chains; (iii) low investment in advanced technologies.

The need to incorporate Sustainable Development Goals (SDGs) into agri-food sector development strategies. The agri-food sector has multiple impacts on all three aspects of sustainable development – economic, environmental, and social. *There are a number of persistent environmental challenges* in EaP countries that need urgent attention that are related particularly to inefficient water use and water pollution, soil degradation and pollution due to unsustainable farming practices (improper use of fertilizers and pesticides, poor crop rotation practices, overgrazing). In South Caucasian countries ineffective irrigation, poor practices with salinity, and overgrazing causes significant land as well as productivity losses. Armenia and Azerbaijan remain water stressed countries, according to FAO methodology. More than half of irrigation water is lost in Armenia. High level of food loss also is an important challenge in the context of sustainable development (food loss in the cereals sector in Armenia was around 15%, and roots and tubers sector 19% percent).

The effective engagement of local communities, the private sector and households is of utmost importance for SDG implementation. To effectively engage local communities in the implementation of SDG targets, it is of high importance to enhance local community's institutional and human capacities and empower them to be more proactive. The engagement of municipalities can be enabled through effective translation of national and international development strategies and goals (including SDGs) into the local realities and context.

Strategies and measures by municipalities. It is understood that in pursuing agriculture and rural development strategies, municipalities have certain limitations in terms of financial and human resources, and revenue

generation and policy making capacities. Even with this limitation, municipalities can still design and apply effective strategies and measures to support agri-food sector development in their communities, including:

- Enhancement of knowledge and skills with such strategies and actions as: (i) strengthening extension services at municipalities; (ii) stimulating medium- to large size agricultural input suppliers and service providers to become effective agents for knowledge accumulation and transfer; (iii) preparing and disseminating high quality informative materials about modern good approaches and practices in farming and food-processing.
- Improvement of product quality and safety, and sustainable technologies and practices. For long-run viability and sustainability of agri-food production it is critical to raise the quality of products to internationally competitive levels. Quality and safety requirements are usually set by central governments or national agencies, and even regional and international organizations. However, local communities/municipalities may promote high quality production through close collaboration with and practical support to enthusiastic farmers and food processors, as well as to farmer cooperatives to establish and implement higher quality standards for agri-food products and production processes; to apply sustainable farming and processing practices; to promote the use of high-performance species/varieties; and to promote organic farming.
- Improvement of farms/orchards/fields/vineyards. The activities that municipalities may consider for promoting and encouraging the improvement of farms/orchards may include: (i) improvement of the quality and accessibility of maps, records, and classification of land plots in their communities to help better planning of fields, orchards; (ii) close collaboration with the private sector and central authorities towards identifying, mapping and promoting products (wines, cheeses, etc.) with Geographical Indication (GI) in local and international markets. (iii) regular dialogue with landholders to find out effective mechanisms to promote and facilitate land consolidation in their communities; (iv) creation and operation of effective and transparent mechanisms for renting and/or selling pastures/grazing land under the ownership or control of municipalities (e.g. via establishing clear good practice requirements to be followed by entities renting or buying the land); (v) promotion of technologies against damages of bad weather conditions the use of hail and frost protection systems (protection nets, anti-frost fans, anti-frost sprinklers, variety selection to better match climate, etc.), and drip irrigation systems.
- Development of market infrastructure (storage facilities, marketing facilities, roads, etc.). Municipalities may support the development of market infrastructures and application of advanced, environmentally friendly technologies, through: (i) encouraging investments by the private sector into such infrastructure via establishing simple and clear procedures for allocation of land/space for investment; (ii) providing administrative and other support to potential investors; (iii) extending roads and utility services (gas, electricity) to selected areas where the private sector expresses interest establish such infrastructures and processing facilities (e.g. milk collection points, dairy farms, cold storage facilities, processing facilities); (iv) helping to reduce water losses and water stress, through improvement of physical irrigation infrastructures; (v) be open, wherever practicable, to enter into public-private partnership initiatives towards development of market and other infrastructure (storage facilities, farmer market space; roads, pasture improvement), and promotion and implementation of sustainable technologies and practices (e.g. drip irrigation; sustainable farming and grazing; pasture management);
- Promotion of farmer cooperation. Strategies and measures municipalities could take to promote farmer cooperation may include: (i) establishing effective public-private dialogue forums to identify challenges and opportunities, design solutions and projects, and share experiences; (ii) designing and offering incentives to promote cooperation such as simplified procedures for investment, allocation of land/space, preparing promotion materials; (iii) support the cooperatives and private sector entities to organize and participate in exhibitions, fairs and other similar events to promote local brands in domestic and international markets.
- Active municipal engagement in SDG implementation. In addition to policies and measures to promote sustainable farming and food processing technologies and practices (discussed above), community engagement is critical for reliable and disaggregated data collection and monitoring activities (SDG 17.18. Many SDG indicators can effectively be collected and analyzed only at municipality level. For data collection, it is important to also introduce at community level the Human Rights Based Approach to Data (HRBAD), based on the principles of participation, transparency, privacy and accountability.

3. BIRD'S EYE VIEW ON AGRI-FOOD LANDSCAPE

This section is to provide a brief picture of the EaP region's agriculture and food sector, including selected country and regional level information relevant to the study such as: the structure of agriculture and farming, key agri-food products, farming technologies and practices, the role of agri-food in the economy, agri-food trade, relevant aspects of policy and institutional framework, and other country specific features.

To start with, the table 1 presents selected macroeconomic indicators to form a picture about the size of economies of EaP countries. According to World Bank classification, Armenia, Azerbaijan, Belarus, and Georgia are upper middle-income countries, while Ukraine and Moldova are lower middle-income countries.¹ Ukraine is the largest economy in terms of population size and GDP, however, in has the lowest GDP per capita among EaP countries. The highest GDP per capita is in Belarus (\$6.290). Poverty and unemployment rates are the highest in Armenia (25.7% and 18.8%, respectively) and Georgia (22% and 14%, respectively). Despite the fact that Moldova has the lowest unemployment rate among EaP countries, its GDP per capita is low at \$3,189 per capita.

	Armenia	Azerbaijan	Belarus	Georgia	Moldova	Ukraine
Population, million people	3.0	9.9	9.5	3.7	3.5	42.1
GDP, current international \$, billion	12.4	46.9	59.7	16.2	11.3	130.8
GDP, international \$, PPP, billion	30.5	179.1	189.3	42.6	25.9	390.3
GDP per capita, current international \$	4,212.1	4,721.2	6,289.9	4,344.6	3,189.4	3,095.2
GDP per capita, international \$, PPP	10,324.9	18,012.3	19,959.5	11,420.6	7,300.9	9,233.2
Agriculture/GDP, %	13.7	5.3	6.4	6.7	10.2	10.1
Average monthly, wage, LCU	166,004*	529*	963*	999	466*	7,104*
Average monthly rate, \$	343.9*					
Unemployment rate, national estimate, %	18.7	5*	5.7*	13.9*	3.0	9.5*
Unemployment rate, ILO estimate, %	17.7	5.2	5.7	14.1	3.4	9.4
Poverty, national poverty lines, %	25.7*	6****	5.9*	21.9*	9.6**	2.4*
Poverty, at \$3.2 a day, PPP (2011), %	12.3*	0****	0*	16.3*	1.1*	0.5**

Table 1. EaP countries

* 2017, ** 2016, **** 2012, *****2005

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¹ For the current 2020 fiscal year, low-income economies are defined as those with a GNI per capita, calculated using the World Bank Atlas method, of \$1,025 or less in 2018; lower middle-income economies are those with a GNI per capita between \$1,026 and \$3,995; upper middle-income economies are those with a GNI per capita between \$1,026 and \$3,995; with a GNI per capita of \$12,375; high-income economies are those with a GNI per capita of \$12,376 or more. https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

	Armenia	Azerbaijan	Belarus	Georgia	Moldova	Ukraine
Agricultural production size	• \$1.7 billion	• \$ 2.46 billion	 \$ 3.8 billion 	 \$1 billion 	• \$1.15 billion	• \$ 13.26 billion
Agriculture's share in: ²	 GDP - 13.7%³ Population - 36.8% Employment - 32.2% Export - 27.9% Import - 17.8% 	 GDP – 5.3% Population – 44.3% Employment – 36.1% Export – 4.6% Import – 20.6% 	 GDP - 6.4% Population - 21.4% Employment - 10.6% Export - 19% Import - 14.1% 	 GDP - 6.7% Population - 41.4% Employment - 42.9% Export - 29.3% Import - 15.0% 	 GDP -10.2% Population - 57.4% Employment - 32.2% Export - 46% Import - 15.5% 	 GDP – 10.1% Population – 30.6% Employment – 15.3% Export – 42.7% Import – 9.6%
Land (000 ha) ⁴	 o Arable land - 446.3 o Cultivated land - 353.3 o Ownership – private o Average plot - 1.3 ha 	 o Arable land - 1,999 o Cultivated land - 1,959 o Ownership - private o Average plot – 2.6 ha 	 Arable land - 5,683 Cultivated land - n/a Ownership - state Average plot: Small -1.25ha Medium - 53 ha Large - 4,000 ha 	 o Arable land - 344 o Cultivated land - 240 o Ownership – private o Average plot – 1.3 ha 	 Arable land – 2,200 Cultivated land – 1,790 Ownership – private Average plot – 1.5 ha 	 Arable land – 32,776 Cultivated land – 31,550 Ownership – Average plot – Average plot: Small - < 3ha Medium – n/a Large – n/a
Key agricultural products	 Plant origin Fruits (apricot, peaches, cherries, apples, plums) Vegetables (tomato, cucumber) Grapes (table and wine) Animal origin Milk and dairy products Seep meat Bovine meet Fish (aquaculture) 	 Plant origin Fruits (apricot, peaches, cherries, pomegranates) Vegetables (tomato, chickpeas, onions) Olives Sunflower Cereals (wheat, barley) Animal origin Bovine meat Sheep meat Milk and dairy products 	 Plant origin Cereals (wheat, barley) Vegetables Potatoes Flax and rapeseed Animal origin Bovine meat Milk and dairy products 	 Plant origin Fruits (apples, cherries, plums, peaches, pears) Vegetables (cucumber, tomato, onion, garlic) Grapes (wine) Citrus fruits Cereals (wheat, barley, corn) Animal origin Bovine meat Sheep meat Milk and dairy products 	 Plant origin Sunflower Cereals (wheat, corn) Vegetables (tomato, onion, cabbage) Fruits (grape, nuts) Animal origin Bovine meat Milk and dairy products 	 Plant origin Cereals (wheat, corn) Vegetable oil Sugar Animal origin Poultry meat Eggs Bovine meat Milk and dairy product

Table 2 Agricult - in EaD _ _ (2010 :f مالد م الد م • aified)

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² Source: World Bank Data, if not otherwise specified. <u>https://data.worldbank.org/</u>

³ Includes the share of agriculture, forestry, and fishery. Source: World Bank Data: https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?display=graph--%3E&locations=AM-AZ-BY-GE-MD-UA ⁴ Data for 2016. Source: FAOSTAT http://www.fao.org/faostat/en/#data/RL ; http://www.fao.org/3/y2722e0j.htm#bm19

Table 2. Agriculture in Ear countries at a giance (2016, il not otherwise specified)								
	Armenia	Azerbaijan	Belarus	Georgia	Moldova	Ukraine		
Agricultural trade	o Export - 643	o Export – 787	o Export – 4,891	o Export – 933	o Export - 1,175	o Export – 18,687		
volume (\$ million) ⁵	o Import - 801	o Import – 1,681	o Import – 3,959	o Import – 1,320	o Import - 724	o Import – 4,482		
Key agricultural export products ⁶	 Cigars, cigarillos Alcohol < 80% vol. Tomatoes, fresh or chilled Chocolate or other cocoa food Meat of sheep or goats, fresh 	 Tomatoes, fresh or chilled Other fruit, fresh Other nuts, fresh or dried Cotton, not carded or combed Apricots, cherries, peaches 	 Cheese and curd Butter & other fats and oils Milk and cream, concentrated Bovine meet, fresh, chilled Meat and edible offal of poultry 	 Wine of fresh grapes Cigars, cigarillos Alcohol < 80% vol. Waters, natural or artificial Other nuts, fresh or dried 	 Sunflower seeds Wine of fresh grapes Maize (corn) Other nuts, fresh or dried Wheat and meslin 	 Sunflower seed oil Maize (corn) Wheat and meslin Rape or colza seeds Solid residues from other oil 		
Key export destinations	o Russia	o Russia o Ukraine o Belarus o Georgia	o Russia o Ukraine	o Russia o Ukraine o Azerbaijan	o Russia o Belarus o Ukraine	 India EU (Netherlands, Spain) Egypt China Belarus Moldova Georgia 		
Key agricultural import products ⁷	 O Unmanufactured tobacco Wheat and meslin Cigars, cheroots, cigarillos Chocolate and other cocoa food Meat and edible offal of poultry 	 Wheat and meslin Cigars, cheroots, cigarillos Cane or beet sugar Butter and other fats and oils Waters containing added sugar 	 Cut flowers and flower buds Apples, pears, and quinces, fresh Soya beans, whether or not broken Other food preparations Solid residues from soya- bean oil 	 Cigars, cheroots, cigarillos Wheat and meslin Meat and edible offal of poultry Cane or beet sugar Chocolate and other cocoa food 	 Cigars, cheroots, cigarillos Other food preparations Sunflower seeds Bread, pastry, other bakers' wares 	 Unmanufactured tobacco Sunflower seeds Other food preparations Alcohol < 80% vol. Citrus fruit, fresh or dried 		
Productivity	 Plant products Wheat -2.2t/ha Tomato – 37.7t/ha Apple –10.9t/ha Peaches – 15.4t/ha Grape – 14.1t/ha Cherries – 4.9t/ha 	 Plant products Wheat – 3.0t/ha Tomato – 29.3t/ha Apple –9.7t/ha Peaches – 5.4t/ha Grape – 10.8t/ha Cherries – 5.5t/ha 	 Plant products Wheat – 3.7t/ha Tomato – 41.4t/ha Apple –6.1t/ha Peaches – n/a Grape – 4.1t/ha Cherries – 10.3t/ha 	 Plant products Wheat – 2.2t/ha Tomato – 12.5t/ha Apple –3.8t/ha Peaches – 5.0t/ha Grape – 3.8t/ha Cherries – 3.2t/ha 	 Plant products Wheat – 3.7t/ha Tomato – 15.5t/ha Apple –6.4t/ha Peaches – 2.5t/ha Grape – 4.6t/ha Cherries – 3.0t/ha 	 Plant products Wheat – 4.1t/ha Tomato – 30.5t/ha Apple –11.8t/ha Peaches – n/a Grape – 9.9t/ha Cherries – 6.9t/ha 		

Table 2 Agriculture in EaB countries at a glappe (2018, if not otherwise specified)

⁵ Source: World Trade Organization (WTO): <u>https://www.wto.org/english/res_e/booksp_e/trade_profiles19_e.pdf</u> ⁶ Source: World Trade Organization (WTO): https://www.wto.org/english/res_e/booksp_e/trade_profiles19_e.pdf

⁷ Source: World Trade Organization (WTO): <u>https://www.wto.org/english/res_e/booksp_e/trade_profiles19_e.pdf</u>

Table 2. Agriculture in Ear countries at a giance (2016, if not otherwise specified)								
	Armenia	Azerbaijan	Belarus	Georgia	Moldova	Ukraine		
	o Berries – 9.9t/ha	o Berries − 2.0t/ha	o Berries−n/a	⊙ Berries – 1.6t/ha	o Berries − n/a	o Berries − n/a		
	 Animal products 	 Animal products 	 Animal products 	Animal products	 Animal products 	 Animal products 		
	○ Milk – 2.3 t/cow/year	○ Milk – 1.5 t/cow/year	○ Milk – 4.9 t/cow/year	○ Milk – 1.0 t/cow/year	o Milk−3.7 t/cow/year	○ Milk – 4.9 t/cow/year		
	⊙ Eggs−13.5kg/hen/year	⊙ Eggs – 6.6kg/hen/year	o Eggs - 10kg/hen/year	⊙ Eggs - 13.5kg/hen/year	o Eggs−11.1kg/hen/year	○ Eggs – 9.7kg/hen/year		
	o Meat, cattle−122.4kg/a	o Meat, cattle − 111.8kg/a	⊙ Meat, cattle − 183.6kg/a	0 Meat, cattle – 72kg/a	o Meat, cattle-148.5kg/a	⊙ Meat, cattle – 166.6kg/a		
	o Meat, chicken– 1.15kg/a	o Meat, chicken-1.18kg/a	o Meat, chicken-0.13kg/a	o Meat,chicken-1.66kg/a	o Meat,chicken-1.51kg/a	⊙ Meat, chicken- 1.88kg/a		
Fertilizer use (kg/ha of arable land), 2016 ⁸	⊙ Total – 110.5	⊙ Total – 14.1	⊙ Total – 146.6	o Total – 170.8	⊙ Total – 24.4	o Total – 52.7		

Table 2 Agriculture in EaB countries at a glappe (2018, if not otherwise specified)

⁸ Source: World Bank Data: <u>https://data.worldbank.org/indicator/AG.CON.FERT.ZS</u>

3.1 Essential features of agriculture and farming

The discussion in this section will cover key issues related to:

- the size and structure of agriculture and farming and its role in the economy
- o key agri-food products
- o technologies and practices applied in the agri-food production

Agriculture's role in the economy

The table 2 above, represents key indicators related to agriculture in the EaP region. Ukraine is the largest country in terms of the size of arable land area (~32.8 million ha), which equals 30% of that of the EU and 2.1% of the world's total arable land area. The share of agriculture in GDP is the highest in Armenia (~14%).

Agriculture plays a significant role in the economies of EaP countries. Its contribution to the GDP is particularly high in Armenia, Moldova and Ukraine, with about 14%, 10.2% and 10.1% shares, respectively (table 2 and figure 1). Agriculture's contribution to foreign trade is notable in all countries, except Azerbaijan. For instance, the share of agri-food export in Moldova and Ukraine is above 40%, and in Armenia and Georgia it accounts for more than the quarter of total exports.

In addition to its economic role, agriculture has very important social and environmental impact in EaP countries. Particularly, agriculture's role is greater in terms of the share of population and employment. The employment in agriculture is especially high in the three South Caucasus countries (Armenia, Azerbaijan, and Georgia) and Moldova. In Georgia agriculture employs about 43% of labor force, and around one third in the other three countries. The higher share in employment compared to the contribution to the GDP can be an indicator of low labor productivity of agriculture, compared to other sectors of the economy.



Figure 1. The role of agriculture, EaP countries

In terms of environmental impact, there are a number of challenges in the EaP countries that require attention and action. This relates to inefficient water use and pollution, soil degradation and pollution due to unsustainable farming practices (improper use of fertilizers and pesticides, poor crop rotation practices, etc.) and overgrazing. Armenia and Azerbaijan, for instance, remain stressed countries, according to FAO methodology (see box 9 below). Soil degradation and pollution is present practically in all the EaP countries. In Armenia, Georgia and Azerbaijan there are significant problems regarding a requirement for irrigation and the consequent problems due to inappropriate practices with salinity, causing land losses to production as well as significant areas of unused land left idle by the owners - many hundreds of thousands of hectares.

The structure of farming

In general, there are differences in the structure of agricultural production between the South Caucasian (Armenia, Azerbaijan, and Georgia) and other EaP countries (Belarus, Moldova, and Ukraine). In the South Caucasian countries, agricultural production is predominantly based on fragmented, semi-subsistence and "self-employed" smallholders (with less than 2 ha land). Smallholders make up over 95% of all holdings and account for virtually all production of plant and animal origin. In contrast, there are very large enterprises in Belarus and Ukraine. In Belarus, agricultural production is dominated by large commercial farms, producing about 80% of agricultural output) with significant state ownership and/or participation. In Belarus, the average size of large commercial farms is around 4,000 ha, followed by 2,000 private farms (with average size of up to 53 ha), and smallholders with 1-1.25 ha land. In Ukraine, farming consists of large commercial farms (agricultural enterprises that are legal entities), including medium size private farms, and a large number of small household producers. In 2017, agricultural enterprises provided more than half (56.4%) of total agricultural production, including medium size private farms (with the contribution of 8.7% of the total). Ukrainian smallholder farms (households) accounted for 43,6% of total agricultural production

Smallholders in all countries have common characteristics and share same challenges. In Ukraine and Moldova, like in the South Caucasian countries, there are also very large numbers of smallholders, including backyard gardens, demonstrating the same problems and constraints to development as in the South Caucasian countries. Smallholders are not legal entities and have no fiscal or statistical identity. They pay no taxes other than levies or land taxes at local level. The prevalence of smallholders, combined with low level of cooperation among farmers, results in a peasant-based low productivity agriculture.

The South Caucasian countries contain very large areas of state owned and communal pasturelands, which are used as the only source of grazing of animals, owned on an individual basis. The herding of animals on a large scale on these pasturelands, summer pastures on the highlands that also form borderlands, results in problems of both a lack of grassland management and animal disease control, in-country and trans-boundary. In Ukraine and Moldova livestock tends to be held by small-holders and grazed on near-bye communal lands, thereby constraining production and putting great pressure on (unmanaged) pastures and on ground waters as the animals are housed on household yards.

3.2 Essential features of agri-food markets

In all countries, except Belarus, agri-food markets are liberal. Prices are formed through free interaction of market participants and factors. In Belarus there is a high level of state intervention in the agricultural production, price formation and marketing. Ukrainian government also exercises some policies to regulate prices of a number of key products such as grains, oilseeds, sugar beets, milk.

Market inefficiencies

In most EaP countries, the market operation is strongly affected by the prevalence of small-scale and fragmented semi-subsistence farming. In the three South Caucasian countries and Moldova (and to some extent in Ukraine), a number of critical market imperfections significantly constrain the development of agricultural production, by limiting the bargaining power of farmers, distorting the price formation process to the detriment of both farmers and processors, and discouraging investments in the sector. This relates, particularly, to:

i. the lack of the storage capacities (and processing capacities at rural communities) to allow hedging, i.e. storing in high season and selling in low supply season; Small producers being unable to collect, sort and

store the harvest (wheat, fruits and vegetables, grapes, milk, etc.), are often forced to sell the produce during the harvest, i.e. high supply season, and, thus, at low prices. This reduces significantly the income of farmers.

- ii. weak system of product safety and quality standards (and or poor practical implementation of the existing standards), and marketing/labelling requirements due to which the price formation process in the market often does not reflect critical safety and quality characteristics of produce.
- iii. abuse of market power by a small number of large processing plants (e.g. in wheat, grape, dairy producers) who dictate prices of agricultural products, and apply ineffective and burdensome (for small farmers) organization of input procurement procedures;
- iv. imperfections in the input markets (e.g. wheat seeds, feed, agri-chemicals, tools and equipment), i.e.:
 (i) burdensome and costly import procedures; (ii) dominance of a small number of businesses (supported by the state) in import of inputs, which often result in the entry of low quality seeds and other inputs into the market, and in distorted price formation in the market; (iii) the state subsidy programs affect market prices and discourage competition in the input market (of fertilizers, seeds, genetic material, etc.)
- v. complexities in export logistics/transportation, i.e. (i) when small- and medium-size producers and exporters face difficulties related to logistical arrangement and shipment of products, e.g. problems of grouping and shipping small batches, and problems of achieving consistent quality; (ii) due to country specific peculiarities, e.g. Armenia being landlocked in a region with geopolitically complex situation.

Weak producer/farmer cooperation

Farmer cooperation in most EaP countries is very week. This, combined with the small size of farms, does not allow farmers to reach and benefit from economies of scale, and to gain bargaining power in the market. Therefore, farmers often are unable to hedge and sell off-the-season and bargain viable price for their produce. In addition, due to weak cooperation, small- and medium-size farmers, processors and traders lose the possibility of sharing costs of compliance to requirements in export markets, including the lucrative organic markets. Effective farmer cooperation is essential for tackling many of the market imperfections listed above, as well as for expansion and diversification of export markets.

Low level of sophistication of the information system in agriculture and rural development

In most EaP countries, there is no farm, farmer, and animal registration system in place to support the effective design, implementation and evaluation of policies in the agriculture and rural development sectors. This also does not allow ensuring traceability in agricultural and food production, which, together with economic and business reasons, is important for food safety reasons.

Peculiarities of the agri-food market in Belarus

In Belarus, large commercial farms have limited managerial freedom to react to market signals, while small private farms face particular issues related to marketing. Small volumes, inefficient (hence costly) production, and product quality issues severely constrain marketing options for small private farms and households. This is especially the case for the dairy sub-sector where consumer demand in higher-priced markets requires certain technical arrangements in production and marketing (e.g. related to temperature, smell and animal health management). Russia, key importer of Belarusian dairy exports, requires for example that milk from household farms be collected (and processed) separately from the milk of large commercial farms.

The market operation in Belarus is strongly affected by the structure of farming and state policies such as the price regulations and state procurement. Majority of state support programs qualify as so called "amber box"

subsidies, as defined by the World Trade Organization, and distort the market operation and producer incentives.

The government of Belarus determines procurement prices for almost all agricultural products at the beginning of each agricultural season. Prices can be regulated by the national government and by regional authorities. In addition, there is a list of socially important products the prices of which are regulated by the state. The list includes such products as: bread flour, bread and bread products; milk, kefir, sour cream and cottage cheese; meat (beef and pork); milk formulas; canned meat-based baby food; sugar and sweeteners for diabetics; and potatoes and horticultural products. The government sets ceiling wholesale prices for the "socially important" products. These prices are reconsidered by the state from time to time.

The system of input supply is still based on state purchases and distribution of key inputs to the farms. These state purchases are made at regulated prices.

3.3 Agri-food trade dynamics

The section below provides a brief picture of regional trade and related arrangements as well as the scope and structure of intra- and inter-EaP trade in agri-food products.

Armenia, Georgia, Moldova and Ukraine are members of the World Trade Organization (WTO) and committed to apply the WTO principles of trade liberalization, predictability, non-discrimination, fair competition, and transparency. Azerbaijan and Belarus are WTO observer countries negotiating their accession terms.

Regional trade and related arrangements

Armenia and Belarus are members of Eurasian Economic Union (EAEU), while Georgia, Moldova, and Ukraine have signed Association Agreements with the EU (including Deep and Comprehensive Free Trade Agreements - DCFTA). In addition, to the EAEU arrangement, Armenia also signed a Comprehensive and Enhanced partnership Agreement (the CEPA) with the EU with the aim to enhance political and economic partnership and cooperation between the Parties, based on "common values and close links, including by increasing the participation of the Republic of Armenia in policies, programmes and agencies of the EU".

The EAEU membership of Armenia and Belarus, and the DCFTA of Georgia, Moldova and Ukraine with the EU may create interesting avenues for cross-border cooperation in trade, keeping in mind that Russia and EU are major trading partners for both countries. For instance, Armenia and Belarus may serve as an effective entry point for Georgia/Moldova/Ukraine to the large market of EAEU; while the latter may serve as an effective platform for better access of Armenian and Belarusian businesses and traders to the EU market.

The Eurasian Economic Union (EAEU) is a regional economic integration agreement between Armenia, Belarus, Russia, Kazakhstan, Kyrgyzstan. The EAEU provides for free movement of goods, services, capital and labour, pursues coordinated, harmonized and single policy in the sectors determined by the Treaty and international agreements within the Union. EAEU countries apply common tariffs to the rest of the world, including tariffs on the importation of agri-food products.

The objective of the EAEU is to comprehensively upgrade, raise the competitiveness of and cooperation between the national economies, and to promote stable development in order to raise the living standards of the nations of the Member-States.

The EU -Armenia Comprehensive and Enhanced partnership Agreement (the CEPA) was signed in November, 2017 and thereafter ratified by the National Assembly of Armenia on April 11, 2018. The provisional application of the agreement entered into force on 1 June 2018 and is in the process of ratification by EU Members.

In line with CEPA provisions, Armenia and the EU have jointly developed Partnership Priorities, which defines the priority areas of cooperation. These are mainly: (i) strengthening institutions and good governance; (ii) economic development and market opportunities; (iii) connectivity, energy efficiency, environment and climate action; and (iv) mobility and peopleto-people contacts. Presently, Armenia and EU are in process of developing and agreeing a Roadmap for the implementation of the CEPA.

According to the CEPA, the Parties shall apply Most Favoured Nation (MFN) tariffs in accordance with WTO principles. In addition, the EU will grant Armenia preferences under the Generalised System of Preferences (GSP+)⁹. The GSP+ provides

The EAEU membership and the DCFTA with the EU may create interesting avenues for cross-border cooperation in trade, keeping in mind that Russia and EU are a major trading partner for EaP countries. For instance, the countries may serve as effective entry points to EAEU and EU markets for each other.

tariff preferences to Armenia when exporting to the EU - zero duty on 66% of all tariff lines. Quantitative restrictions on imports and exports are prohibited in the CEPA, except if allowed by the relevant WTO rules¹⁰.

EU Association Agreements are effective since 2016. **Deep and Comprehensive Free Trade Agreements** – **(DCFTA)** set up free trade areas between the EU and Georgia, Moldova, and Ukraine in line with the principles of the World Trade Organization. The DCFTA allows for:

- The removal of import duties for most goods traded between the EU and the three EaP countries
- Provides for broad mutual access to trade in services for both partners
- Companies from the EU and the three EaP countries can create a subsidiary or a branch office on a non-discriminatory basis. This means they receive the same treatment as domestic companies in the partner's market when setting up a business.

An important part of the DCFTA is aligning trade-related laws to selected EU legislative acts. The aim of the adoption of EU approaches to policy-making is to improve governance, strengthen the rule of law and provide more economic opportunities by widening the EU market to goods and services originating from Georgia, Moldova and Ukraine.

The DCFTA, part of the AA, promotes a broad and deep level of liberalisation of trade between Georgia, Moldova and Ukraine and the EU, covering both tariff and non-tariff barriers to trade. In terms of trade in goods, the DCFTA provides tariff-free trade for exports and imports, with the following exceptions related to agricultural products:

- EU applies an annual tariff rate quota on one agricultural product, namely garlic. Georgia/Moldova/Ukraine may export 220 tons of garlic annually to the EU tariff-free. The EU's MFN customs duty rate shall apply to imports exceeding the limit of the tariff rate quota;
- EU applies an "entry price" system to fruits and vegetables, which includes a combination of *ad valorem* and *specific* duties aimed at ensuring that the price of imported products is not below a certain price level defined by the EU for a given product¹¹; and
- trade in most processed agricultural products is subject to "anti-circumvention" mechanism as a safeguard against products from third countries being exported to the EU market via Georgia/Moldova/Ukraine as Georgian/Moldovan/Ukrainian products¹².

⁹ GSP+ is granted to a developing country if (i) it fulfils the vulnerability criteria (economic criteria); and (ii) it submits a successful application showing it fulfils certain criteria linked to ratifying and implementing 27 core international conventions on human and labour rights, sustainable development and good governance (sustainable development criteria). A country is qualified as vulnerable and hence eligible for GSP+ if: i) it is not competitive enough on the EU market (defined as an import-share ratio) and ii) it does not have a diversified export base (defined as a non-diversification ratio).

¹⁰ i.e. Art. XI GATT)

¹¹ Under the entry price system, customs duty is composed of two parts: *ad valorem duty* and *specific duty*. DCFTA applied only *specific duty*, expressed in €/100kg. The duty depends on the extent, if any, to which the customs value (invoice price) of the product imported into the EU is below a certain entry price defined by the EU. The level of the specific duty is zero when the customs value of the product is equal to or higher than the entry price.

¹² The list of these products is provided in the Annex II-C.

Quantitative restrictions on imports and exports are prohibited by the DCFTA, except if allowed by relevant WTO rules. The DCFTA also prohibits export duties and includes a "standstill clause", i.e. parties may not increase customs duties or adopt a new customs duty on goods originating in the territory of the other party.

In line with the AA, product exported from Georgia to the EU must be wholly obtained in Georgia/Moldova/Ukraine or "sufficiently processed" to benefit from tree trade regime defined in the DCFTA.

The DCFTA allows for "diagonal cumulation" with Turkey for industrial products. Given that Georgia now has a free trade regime with both the EU and Turkey, this means that a producer in Georgia may manufacture a product from materials imported from Turkey and export this product to the EU as a "Georgian product", provided that more than the "sufficient processing" requirements took place in Georgia and Turkey taken together. However, before this diagonal cumulation is applicable, Georgia and Turkey first have to amend their bilateral free trade agreement (FTA) to align it with the EU's system of rules of origin. Moreover, Georgia has made a commitment to join the Regional Convention on Pan-Euro-Mediterranean (PEM) preferential rules of origin. The PEM Convention allows a much wider scope for diagonal cumulation between the EU, Turkey and the countries of the European Free Trade Association (EFTA), the Mediterranean European Neighbourhood Policy and Western Balkans, providing that FTAs are in place, including protocols on rules of origin consisting of identical rules (i.e. as in the PEM protocol on rules of origin). The DCFTA also allows Georgia to benefit from FTAs with other countries, e.g. China.

Geography of intra- and inter-EaP agri-food trade

Table 3 presents the picture of intra- and inter- regional trade in 2018. Total agrifood trade of EaP countries with the rest of the world was around \$ 27.3 billion, while intra-EaP agri-food trade was about \$ 2 billion. Thus, intra-EaP agri-food trade is about 7.3% of EaP agri-food trade with the world.

Trade with major trade partners – Russia and the EU – is several times greater than intra-EaP trade.

Table 3. Agri-food trade in EaP, 2018, \$ million

	World	EU	EaP	Russia
Armenia	670.2	13	44.9	329.4
Azerbaijan	705.1	60	11.8	521.5
Belarus	5,172.0	210	182.5	4,104.5
Georgia	959.2	139	313.6	243.6
Moldova	1167.5	705	92.6	114.5
Ukraine	18,611.5	2,315	1327.9	92.0
EaP	27285.5	3.442	1973.3	5405.5

The table presents also agri-food trade with Russia, and the EU is having in mind the importance of the Russian and EU markets for EaP countries. Russia is a key export partner for Armenia, Azerbaijan, Belarus and Georgia. In Belarus, for instance, agri-food export to Russia accounted for more than 79% of total agri-food export. For Armenia, Azerbaijan and Georgia the shares of agri-food export to the Russian market are 49.1%, 74%, and 25.4%, respectively. Agri-food trade with Russia was significant also for Ukraine. However, during recent years Ukraine-Rissa trade declined sharply due to political conflict between the two countries. Thus, in 2012 (before the political conflict) agri-food export from Ukraine to Russia was over \$ 2 billion, which declined sharply (by more than two times) starting from 2014, and then to only \$ 92 million in 2016.

The EU market is particularly important for Moldova, Georgia, and Ukraine. Thus, 60% of exports from Moldova was directed to the EU market. The EU export shares in Georgia and Ukraine were 14.5% and 12.4%, respectively. In addition to the EU market, Ukraine exports significant amounts of agri-food products to Asian (India, China) and African (Egypt) countries.

Products of intra- and inter-EaP agri-food trade

There are distinct differences between the product coverage of agri-food exports from South Caucasian countries and the other EaP countries (Belarus, Moldova and Ukraine).

The main exported products from Armenia, Georgia and Azerbaijan to the rest of the world (particularly, Russia and the EU) as well as to the other EaP countries, particularly, Belarus and Ukraine, include:

- alcoholic beverages (grape wine, brandy, and grape spirit)
- soft drinks (mineral waters, fruit juices, sweetened waters)
- fresh and dried fruits (apples, apricots, peaches, plums, cherries, grapes)
- fresh and prepared vegetables (tomatoes, cucumbers, onions, garlic, pepper)
- nuts (hazelnut, walnut), Georgia being the leading exporter
- dairy products (cheese), Armenia being the Armenia exporter.

The main products exported from Belarus, Moldova and Ukraine include:

- o cereals wheat, corn and other with Ukraine and Moldova being the leading exporters
- o dairy products, including milk and cream, yoghurt, butter and cheeses (Belarus being the leader)
- o sunflower (and other vegetable) seeds and oils (with Ukraine and Moldova being the leading exporters)
- o bovine meat
- o poultry meat

It is important to note that there are distinct differences between large commercial farms and smallholders in all EaP countries in terms of product coverage. Expectedly, *smallholders* focus more on the production of high value, labor intensive agri-food products such as: fruits and vegetables; milk, while *large agri-food entities* focus more on the production of commodity products like cereals, forage crops, sunflower and other oilseeds, soybean, sugar, as well as on meat production.

For instance, small land owners (with land less than 10 ha land) produce over 70% of total agricultural production, and 80% of high value horticultural products. Similarly, the size of animal farms is predominantly small and fragmented (99% of farms with less than 10 cows per farm). In Ukraine 84% of fruits and berries, 94% of vegetables, roots and tubers, 73 % of milk, and 99 % of honey are produced by smallholders, while large farms focus mostly on crop production, and provided 78.3% of total crop production in 2017.

Agenda 2030 for Sustainable Development

EaP countries adopted the 2030 Agenda for Sustainable Development (the 2030 Agenda), including its 17 Sustainable Development Goals (the SDGs). The countries have undertaken significant steps towards the nationalisation of SDG targets and relevant indicators and are now focused on integrating and mainstreaming the SDGs into their national plans and processes.

Many of the SDGs are directly and indirectly related to agriculture and rural development, as well as international trade. Despite the fact that the SDGs are not explicitly mentioned in the agriculture sections of CEPA and AA, many of the provisions of the agreements are in line with the Agenda 2030. It is thus assumed that the implementation of these agreements will contribute to the achievement of SDGs and bring the countries closer to fulfilling their commitments related to sustainable development. See more details on the links with SDGs in the section 4.6 of this paper (Agri-food supply chains and SDGs).

3.4 Highlights on state policies in agriculture

Most of the EaP countries pursue liberal policies in relation to their agri-food sector. A significant difference exists between Belarus and the other countries. The state support to agriculture in Belarus is significant and is higher compared to the other EaP countries, and there is also higher state intervention in agri-food production and marketing processes. Below, are the main instruments of agri-food policy applied in EaP countries:

• **Price regulation:** EaP countries, except Belarus and Ukraine (for a limited number of agricultural products) allow the market to freely determine the prices for agri-food inputs and outputs. Belarus applies domestic price regulation along the entire food chain through various instruments such as:

setting state prices, capping margins; special additional payments for quality products and products delivered by households. Ukraine also applies price regulations on selected agricultural commodities such as grains, sunflower, sugar beet, milk.

- Foreign trade (protection of domestic market): Belarus and Armenia are members of the Eurasian Economic Union (EAEU) and the tariffs on products imported from third countries are set at EAEU level.
- Production support includes: main instruments of state policy in agriculture applied among EaP countries are (i) general government services fitting into the "green box" measures of the WTO agreement on Agriculture; (ii) subsidization of agricultural inputs such as irrigation water, fertilizers, seeds, genetic material, e.g. breeding animals, fuel and energy; (iii) subsidized loans or leasing arrangements for agricultural producers for investment in technologies, machinery and equipment; (iv) application of special tax regimes in agriculture such as VAT exemption on agricultural inputs and sales of primary produce by small farmers; application of simple tax regimes (e.g. a single tax set as a percent of agricultural land value, instead of income, profit, and social taxes).

In addition to these instruments, Belarus applies more measures such as: (i) investment support (direct budget investment; budget loans; budget guarantees for bank loans; debt write-offs; interest rate subsidies; direct regulation of banks); (ii) state supply of inputs (state purchase and distribution of key inputs and compensation for some input purchases by farms; subsidized leasing of machinery; preferential prices for fuel); (iii) tax concessions for agriculture; (iv) mandatory and subsidized insurance; (v) production based and direct income support to rural households.

Input supply programs are among the financially largest part of the state support to agriculture in Belarus. These programs include governmental coverage of mineral fertilizer and pesticide costs, the cost of machinery and machinery maintenance and repair, energy costs, the cost of seeds and livestock breeding material, the cost livestock feed, and the cost of land amelioration.

Important to note that the other EaP countries also apply similar programs of input support, however, there is a critical difference between the program in Belarus and other countries. In Belarus the choice of inputs to be procured and provided at preferential prices to farmers is made by the Government, while in other countries farmers have the possibility to make their own choice.

• Marketing support which includes, for instance, state procurement of agricultural products.

4. SELECTED AGRI-FOOD SUPPLY CHAINS

The main focus of the analysis is on products and their supply chains high export potential. However, attention was given also to products/supply chains that may have significant impact on the economic and/or social life of a country or a region within the country. For the selection of supply chains, the spatial aspect within and among countries was considered. For instance, there may be significant differences between different regions within one country, while similarities may exist between some regions in different countries in terms of main crops and products, farming structure, landscape and climate, infrastructural and logistical issues, etc. Attention was given to any supply chains that may provide interesting opportunities for cross-country cooperation and trade.

4.1 Dairy products - cheese supply chain



Dairy supply chain, particularly, cheese supply chain is an interesting platform which may provide many avenues for business and market development, and for cooperation - local and international cooperation. Particularly:

- Cheese is a product with high export potential
- Cheese supply chain is equally important for large and medium size processors, as well as smallholders. In practically all EaP countries smallholders are involved in milk production. Cheese and other dairy production are carried out both by large- and small-scale producers.

In 2018, total export of cheese from EaP countries was 240,000 t (\$ 853.7 million in value), more than 95% of which went to the Russian market.

More than 90% of the Russian cheese import was from EaP countries, with Belarus being the leader (94% share).

• Cheese supply chain provides possibilities of mutually beneficial cooperation between various upstream and downstream stages of the supply chain and participants of various sizes including smallholder farmers and large processors, communities (across such stages as genetics and animal breeding, animal grazing and pasture management, feed and fodder production, animal husbandry/farming, milk production, cheese production).

The dairy sector in EaP countries involves a large number of smallholders - participants of the supply chain (Armenia, Azerbaijan, Georgia, and small size milk producers in Belarus and Ukraine), though many of the issues discussed in this section apply equally to medium-size and large milk and cheese producers. Among EaP countries Belarus and Ukraine differ from others to a certain degree due to the operation of a large number

of specialized commercial producers in the market, with sophisticated production and quality management systems, and the state intervention in the price formation in the market.

Table 4. Cheese and curd export from EaP countries¹³

	2010	2012	2015	2017	2018		
World	198536.8	204465.8	201774.7	206127.4	240936.6		
Russia	183554.5	190846.6	191414.2	193900.2	229463.3		

¹³ Source: UN COMTRADE, <u>https://comtrade.un.org/data/</u>

The opportunity for export expansion (EAEU/Russian market)

There is a high demand in the Russian market for cheeses produced in EaP countries. Russia has been the key market for dairy products, particularly, cheese export from EaP countries, except Moldova (since the latter is not a cheese exporter). In 2018, total export of cheese from EaP countries to the rest of the world was about 240,000 tons (with a value of \$ 853.7 million), of which more than 95% was for the Russian market (table 4). Since 2015, the export of cheese from Armenia, Azerbaijan, and Belarus to Russia has increased significantly (tables 5-9 and figure 2). For Ukraine, the Russian market was a major destination for cheese export until 2012. After 2012, cheese export from Ukraine to Russia practically stopped due to political tensions between the two countries.

Cheese export from EaP countries demonstrates dynamic growth. Armenian and Belarussian cheese producers and exporters benefit from membership to the Eurasian Economic Union (EAEU). During 2010-2014 export of cheese from Armenia increased by more than three times. In 2015 there was a sharp increase of cheese export – six-fold increase compared to the previous year (from 1,500 tons in 2014 to 9,000 tons in 2015). Though cheese export has reduced thereafter, it is still more than three times higher than the export volume in 2014.¹⁴ There has been a steady increase of cheese export from Belarus to Russia during the last decade. Since 2015, a sharp increase of cheese export to the world and Russia can be noted also from Azerbaijan. Georgian cheese export has been increasing, though with small volume and wide up and down swings (tables 5-9 and figure 2).

Other potential export markets

The dynamics of diary export from EaP suggests that Russia still remains the main export market for most of the countries, though *businesses are in search of new markets in the EU, the Middle Eastern, and Asian countries.* The new market search attempts are still weak and slow. Belarus and Ukraine demonstrate higher diversity in terms of the types of exported dairy products, while dairy export from Armenia, Azerbaijan and Georgia is concentrated on cheese.

Armenia's dairy (cheese) export is highly focused on the EAEU market (Russia and Kazakhstan). Other than the EAEU market Armenia makes also attempts to enter USA and Israel markets. The export to USA is targeted at the Diaspora Armenian community in the USA (table 5). Export to Israel, though is small in volume, has been steadily increasing since 2016.



Figure 2. Chees & curd export, EaP countries

¹⁴ Possible reasons for such a sharp increase and decrease in cheese export from Armenia may be the instability of sourcing arrangements among Armenian producers and/or exporters.

Georgia's cheese exports are destined mostly to USA and Armenia. There have been some attempts to enter the market of China, Hong Kong (table 6).

Azerbaijan's cheese export is still small and mainly targeted at the Russian market. Other markets include Georgia and United Arab Emirates (UAE). See table 7.

Ukraine's cheese export is more diversified in terms of products as well as geography, with top five markets in 2018 being: Kazakhstan, Moldova, Egypt, Georgia. Morocco, Ukrainian exporters are looking also at Middle East markets (UAE, Saudi Arabia, Jordan, Israel). Note that Ukraine is an important exporter of other dairy products, i.e. milk and cream, whey, butter, yogurt (table 8). The geographic coverage of export of the other dairy products is broader, and includes more countries. For instance, among the largest export markets for milk and cream are Georgia, Moldova, Bangladesh, Qatar, Libya, Poland, China, while butter is exported mainly to Morocco, Turkey, Netherlands, Moldova, Saudi Arabia, Azerbaijan, and Georgia.

Belarus dairy exports also are concentrated in the Russian market, despite being more diverse, compared to South Caucasian countries. Potential key export markets, other than EAEU and EaP countries, include China, Hong Kong, Canada, UAE, Estonia, Jordan, Viet Nam, Philippines.

Table 5. ARMENIA, cheese export, kg

	2014	2015	2016	2017	2018
World	1542390	8416973	5237745	8200722	4325576
Russia	1540810	8344944	5183125	8137116	4236870
Kazakhstan	0	0	13529	18314	0
Georgia	1000	9511	6306	8412	3896
Israel	0	0	1200	2948	4050
USA	0	62518	31958	31582	77876

Table 6. GEORGIA, cheese export, kg

	2014	2015	2016	2017	2018
World	1741	4788	10315	102890	41895
USA	1011	1608	7222	19791	31199
Armenia		1802	1558	80000	10090
China, HK	446	1000	1500	547	442

Table 7. AZERBAIJAN, cheese export, kg

	2014	2015	2016	2017	2018
World	0	5611	45322	275932	608637
Russia	0	0	29336	275846	608529
Georgia	0	4191	12817	0	0
UAE	0	0	1728	50	108

Table 8. UKRAINE, Export of Dairy products, 2018, tons

Product	Volume	Top 7 export markets
Milk and cream; concentrated or containing sugar	35499.7	Moldova, Libya, Qatar, Georgia, Poland, Armenia, Singapore
Milk and cream; not concentrated, not containing sugar	20814.9	Bangladesh, Georgia, Kazakhstan, Armenia, Turkmenistan, China, Moldova
Whey and products consisting of natural milk constituents	31943.0	China, Philippines, Malaysia, Vietnam, Pakistan, Uzbekistan, Myanmar
Butter & other fats/oils from milk	30382.5	Morocco, Turkey, Netherlands, Moldova, Saudi Arabia, Azerbaijan, Georgia
Cheese and curd	8342.9	Kazakhstan, Moldova, Egypt, Morocco, Georgia, Azerbaijan, Turkmenistan
Buttermilk, curdled milk and cream, yoghurt, kefir	5470.1	Moldova, Georgia, Kazakhstan, Poland, Armenia, UAE, Azerbaijan
Table 9. BELARUS, Export of I	Dairy produc	cts, 2016, tons
Product	Total	Top 7 export markets
Milk and cream; concentrated or containing sugar	212,879	Russia, Kazakhstan, Ukraine, Georgia, Azerbaijan, Moldova, Turkmenistan
Milk and cream; not concentrated, not containing sugar	316,911	Russia, Kazakhstan, Ukraine, Moldova, Azerbaijan, China, Georgia
Whey and products consisting of natural milk constituents	134,866	Russia, China, Kazakhstan, Philippines, Uzbekistan, Vietnam, Ukraine
Butter & other fats/ oils from milk	84, 998	Russia Azerbaijan, Armenia, Georgia, China, Hong Kong, Iran, Kazakhstan
Cheese and curd	204, 976	Russia, Azerbaijan, Armenia, Canada, China, Estonia, Georgia

International market of milk during the last decade is characterized by the following interrelated features and factors:

- Dairy prices have been decreasing during recent years (tables 10 and 11)
- Productivity worldwide is growing fast thanks to improved genetics, application of modern effective and efficient technologies and practices of production and management

aple to	ible 10. International daily prices, \$7ton							
	Butter	Cheddar cheese	SMP	WMP				
2010	4,270	4,010	3,081	3,514				
2011	4,876	4,310	3,556	4,018				
2012	3,547	3,821	3,119	3,358				
2013	4,484	4,402	4,293	4,745				
2014	4,010	4,456	3,647	3,868				
2015	3,212	3,340	2,113	2,509				
2016	3,350	3,094	1,983	2,457				
2017	5,573	3,848	2,025	3,179				

Table 10. International dairy prices, \$/ton¹⁵

- Efficiency becomes a major factor for domestic and international competitiveness, with an increase in average size of farms
- o Quality and safety of dairy products became critical factors for competitiveness
- \circ $\;$ The dairy processing and trade are becoming more and more globalized
- Asia countries (India, China, Pakistan) have become influential participants of global dairy business.

Global milk output in 2018 was around 843 million tons, an increase of 2.2 percent from 2017. The main countries behind this increase in production are India, Turkey, the EU, Pakistan, the USA and Argentina, though the production declined in some large milk producing countries such as China and Ukraine. This increase has been achieved as a result of higher dairy herd numbers together with improvements to milk collection processes (e.g. in India and Pakistan), efficiency improvements in integrated dairy production systems (Turkey), increased yield per cow (the EU and the USA) and higher demand from the processing sector and imports (Argentina). Some of the reasons for the decline of milk production in some countries largely stemmed from industrial restructuring processes and downscaling of small-scale farms (China) and reduced producer margins and farm gate prices (Ukraine).¹⁶

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
2006	23.9	24.0	23.9	23.3	23.0	22.8	22.9	23.1	23.2	24.0	25.9	29.1
2007	30.3	32.4	34.1	37.1	40.1	42.8	49.1	51.9	52.1	52.4	53.7	52.8
2008	50.2	47.9	46.9	45.0	45.3	45.6	45.3	42.0	36.8	32.9	28.0	24.4
2009	20.3	19.3	20.2	20.8	21.5	21.3	22.0	24.2	28.5	32.5	40.7	41.7
2010	37.8	36.1	36.2	39.8	41.3	39.5	37.6	37.2	38.9	39.8	40.1	40.7
2011	44.2	47.7	48.2	46.1	46.5	46.7	45.4	43.9	42.5	40.8	40.6	41.2
2012	41.6	40.9	39.5	37.0	35.2	34.3	33.9	35.2	38.0	39.3	39.5	39.9
2013	40.2	41.2	46.0	54.9	52.0	49.3	49.5	50.3	50.5	50.5	50.9	53.4
2014	54.4	56.0	54.7	49.5	46.8	44.6	43.8	39.2	35.9	34.8	33.3	33.0
2015	33.6	36.8	34.9	32.1	30.4	28.7	23.2	24.0	27.2	28.8	26.6	26.4
2016	25.4	24.1	22.4	22.2	22.1	24.2	25.1	28.7	33.3	34.1	34.8	35.8
2017	36.1	37.2	35.6	34.7	36.2	38.4	38.9	38.4	38.7	37.2	35.0	31.9
2018	31.9	35.0	35.1	36.1	37.9	37.1	34.9	34.4	33.4	32.2	31.3	30.9
2019	33.6	35.8	38.4	40.7	42.1	36.6	36.4					

Table 11. World milk price indicator, \$/100 kg¹⁷

¹⁵ Source: Dairy Market Review, FAO, 2019: <u>http://www.fao.org/3/ca3879en/ca3879en.pdf</u>.

⁽¹⁾ Butter: 82 percent butterfat, FOB Oceania and EU indicative average trading price

⁽²⁾ Cheddar cheese: 39 percent maximum moisture, FOB Oceania indicative trading price

⁽³⁾ Skim Milk Powder: 1.25 percent butterfat, FOB Oceania and EU average indicative trading prices

⁽⁴⁾ Whole Milk Powder: 26 percent butterfat, FOB Oceania and EU indicative trading prices

⁽⁵⁾ FAO Dairy Price Index represents the trade-weighted average of international prices of the four dairy products shown above

¹⁶ Source: Dairy Market Review, FAO, 2019: <u>http://www.fao.org/3/ca3879en/ca3879en.pdf</u>

¹⁷ Source: International Farm Comparison Network (IFCN) Data Table: World milk price in US\$/100 kg ECM (Energy Corrected Milk: 4% fat, 3.3% protein) <u>http://ifcndairy.org/aboutifcn-neu/ifcn-dairy-research-center-method/</u>

Tables 12 to 16 below present key producers and traders of milk and cheese in the world during 2017-2018, with an indication of key export/import markets. Note that Belarus is among leading global exporters of dairy products (5% of global exports), while Russia is among the main importers of dairy produce (about 5% of global imports).

Milk prices in EaP countries are lower than the world average, and in most peer countries in Europe (table 10 and figure 3), except Georgia. Milk prices are high in Armenia and Georgia due to very high seasonality and shortage of milk supply. The situation is similar in Azerbaijan, but the milk price is relatively low due to very low bargaining power of smallholders in the market.

Global market has become more and more demanding in relation to dairy products' quality and safety, due to (i) enhanced knowledge of health and increased awareness of consumers; (ii) advances in technology and practices that allow achieving higher quality and safety; (iii) intensification of competition in international as well as domestic markets. Moreover, quality requirements are high regarding not only the final product itself, but also the sourcing and production processes. Governments, consumers, businesses and the civil society now are more conscious and concerned about sustainability of agri-food industry. They require farmers and processors to apply environmentally friendly and socially responsible production and management methods.

Producers and exporters are more often expected to apply modern quality management approaches, standards and systems. These include, particularly:

- GAP Good Agricultural Practice,
- GHP Good Hygiene Practice
- GMP Good Manufacturing Practice,
- HACCP Hazard Analysis and Critical Control Point system
- Codex Alimentarius standards
- EU requirements and the standards.

Development and export challenges

On the way towards expansion and diversification of dairy export, the governments and private business entities both face challenges along the cheese supply chain. Most challenges are linked to the prevalence of small, fragmented, and non-professional cattle farms with little control over the safety or nutritional value of their milk, and unable to supply good quality and sufficient quantity milk to cheese producers. To enhance the competitiveness of dairy products, particularly of cheese, in traditional as well as potential new markets there is a strong need to:

- enhance productivity, to expand the production volume as well as to lower costs of production (to achieve price competitiveness)
- improve significantly the quality and safety to comply with market requirements.

Table 12. Leading milk producers, 000 t

	2017	2018
World	824,801	842,989
India	176,272	186,143
EU 28	165,600	167,256
USA	97 735	98 646
Pakistan	44 294	45 623
Brazil	35 257	35 539
China	31 958	31 592
Russia	31 184	31 527
Turkey	20 700	22 791
New Zealand	21 341	21 372

Table 13. World milk imports, 000 t

	2017	2018
World	72 910	74 967
China	13 538	14 615
Mexico	3 965	4 202
Algeria	3 431	3 835
Russia	4 498	3 700
Indonesia	2 736	2 981
Saudi Arabia	2 984	2 790
Philippines	2 296	2 501
Malaysia	2 179	2 389
Japan	2 171	2 211

Table 14. World milk exports, 000 t

	2017	2018
World	72 667	74 781
EU 28	20 395	20 504
New Zealand	18 666	18 748
United States	10 724	11 778
Belarus	3 714	3 789
Australia	3 015	3 055
Argentina	1 341	1 996
Uruguay	1 259	1 556

Table 15. World cheese export, tones

	2017	2018
World	2 548 891	2 570 548
EU 28	829 531	832 678
USA	342 914	350 240
New Zealand	343 438	324 171
Belarus	189 423	210 253
Australia	171 295	172 520
Egypt	105 498	101 000
Saudi Arabia	68 324	72 300

Table 16. World cheese import, tones

	2017	2018
World	2 496 418	2 539 609
Japan	272 772	285 701
Russia	226 197	263 151
USA	183 264	175 839
Saudi Arabia	173 578	170 400
China	157 992	156 396
Korea Rep	125 002	123 850
Mexico	121 510	122 975
Australia	115 926	98 284

The levels of milk yield per cow in the EaP countries is very low, if compared internationally (e.g. 2300 liter/cow, 1,500 liter/cow and 1000 liter/cow per year in Armenia, Azerbaijan and Georgia respectively, respectively in 2017).¹⁸ This is well behind the EU average level of 7,000 liter/cow.

Compared to south Caucasian countries, the milk productivity is higher in Belarus and Ukraine (4,900 liter/cow) due to the existence of large commercial and professionally managed farms and state support (in Belarus). But even this level is well below the EU average.

The insufficient supply and high seasonality of milk supply inhibits the further development of the dairy sector in South Caucasus countries. The insufficiency of milk supply is more severe in Georgia, where the shortage of milk leads to higher milk prices (compared to peer countries, including Armenia).

Under the current circumstances, key binding constraints in the milk supply chain that significantly inhibit the development of milk and dairy production include:

- knowledge and skill constraints: there is a serious lack of knowledge about effective techniques and practices in virtually all the stages of dairy production (especially among small and medium-size farmers), which significantly hinders the development of the sector. This includes, particularly the lack of knowledge and skills in animal housing conditions, animal care and reproduction, animal feeding, farm management, and milking techniques. There is a lack of milk production specialists, zootechnicians, veterinarians.
- lack of high genetic breeds: the stock of high genetic breeds in most EaP countries (Armenia, Georgia, Azerbaijan, Moldova) is still very low and limits the country's capacity to improve the productivity in milk production. So far, the efforts by governments and the international donor community have been insufficient or ineffective in increasing the stock of high-quality breeds.
- insufficiency of good quality feed/forage, and of feeding practices: The majority of farmers do not apply effective feeding regimes and rations, due to: (i) the lack of year-around effective supply of dry forage, silage and fodder, (ii) fodder and silage preparation machines and equipment; (ii) lack of feed laboratories, and (iii) lack of knowledge and skills in good feeding management. Overall, there is lack of knowledge and skills in such important areas as feed crop rotation, GAP, fertilization with manure, good grass harvesting and processing techniques, good land management practices, and animal management (e.g. animal feeding, animal transfer).
- ineffective quality standards and product safety practices: In markets of Armenia, Azerbaijan, Georgia, and Moldova the quality of milk and dairy products suffers due to the practice of milk being priced mostly based on the fat content, ignoring somatic bacteriological content and presence of antibiotics. Low quality produce has low competitiveness and thus cannot generate sufficient profit and financial resources for further business development and investments. This, in effect, creates a strong disincentive for farmers and processors to invest in high genetic breeds, good quality feed, and/or implement good animal breeding and production technologies. Note that one of the reasons of poor quality and safety standards is the lack of animal identification system in countries, which does not allow ensuring traceability of products across the supply chain.

At the same time there is low use of such internationally accepted modern production and hygiene practices by farmers and processors as GAP, GMP, HACCP systems, EU requirements, and the standards of the Codex Alimentarius. Large cheese producers utilize much better conditions and sophisticated production systems; however, they also do not widely apply HACCP/GMP systems. The quality of cheeses produced in small and medium enterprises deteriorates due to the low level of sophistication of technologies implemented, the ineffective selection of cheese types for production, and insufficient investment and effort in product grading, classification, and packaging activities. Wide application of these modern approaches and practices is necessary if countries wish to achieve high quality and safety, and international competitiveness of dairy production.

• **milk collection and storage infrastructure and logistical issues in milk supply:** The collection of milk from a large number of small milk collection centers located in different parts of the country causes additional logistical difficulties and costs. Activities geared toward promotion of the creation of milk

¹⁸ Source: FAOSTAT, 2019

collection centers and the establishment of milk producers' cooperatives played a very important positive role in tackling these issues, but is still not sufficient. The section "Highlights on Selected Issues" provides interesting and useful details about international experience in milk collection and quality assurance.

the impact of homemade cheese marketing: In addition, the prevalence of production and marketing 0 of homemade cheeses (informal sector) is considered to be one of the major factors affecting the functioning of milk and cheese markets. A large number of small holdings are involved in the production and sale of low-quality and cheap cheeses and other dairy products, and, as a rule, they are not concerned with the quality of milk used for dairy production. These holdings exist outside of the taxation field. In Armenia, for instance, the informal small producers account for 72 percent of total cheese production.¹⁹ In Georgia, these informal small producers account for even more (> 90 percent, according to various expert estimates). Businesses report that this practice negatively affects the price formation process in milk and cheese markets.

Inability of the market to effectively value the quality of milk

Milk and cheese market often are unable to value the quality of milk as a result of a number of inter-linked circumstances forming a vicious circle in the dairy supply chain (figure 4). Thus, dairy processors are, in effect, not willing and/or ready to pay extra price for higher quality of milk, since they do not face significant problems in selling their products (even of low quality) in their main markets - domestic markets of Armenia and Georgia, and the EAEU market (particularly the Russian market). The consumers in these markets are not demanding in terms of quality yet. Therefore, processors do not see a sound reason for paying extra price for high quality milk.

The quality of milk and the milk price formation process in the market are also affected by additional factors. Small animal farmers have weak bargaining power in the market and are highly dependent on market prices dictated by medium and large processors. Milk prices in EaP countries are lower than the world average, and in most peer countries in Europe (table 10 and figure 3), except Georgia. Highest milk prices are in Armenia and Georgia due to very high seasonality and shortage of milk supply. The situation is similar in Azerbaijan, but the milk price is relatively lower due to very low bargaining power of smallholders in the market. Moreover, milk producer-processor relationships are usually not contract-based, due to which farmers often face problems related to collection of payment for milk from middlemen (who collect milk from farmers and sell it to processors) or dairy processors. This latter issue is a very acute factor that negatively affects the functioning of the milk market today.

The ineffective price formation process in the milk market leads to a distorted quality-price relationship, which discourages farmers from improving milk quality (as well as processors from seeking high quality milk and producing high quality dairy products). Currently, milk is being priced based on the fat content, ignoring the protein content, bacteriological contamination, the presence of antibiotics, and other



Figure 3. Milk prices

attributes, which significantly affect milk quality. In the technical regulation of milk and dairy products, the government established three classes of raw milk (High, First, and Second classes), based on the level of

¹⁹ Source: National Statistical Committee of Armenia.

bacteriological contamination by microorganisms. However, these are not effectively applied in practice during price formation. As a result, dairy products are of low quality and are thus priced less reducing competitiveness of milk processors and their margins.



Figure 4. The vicious circle leading to low quality and low productivity of milk

4.2 Vine and wine supply chain



Grape is an important product for both final consumption in food and as an input for the food industry (i.e. wine and brandy industries). Vine and wine production are an important part of economy in the EaP region. Grape production and viticulture are one of the largest sub-sectors of agriculture in Georgia, Armenia, Azerbaijan, and Moldova. In Moldova, vine and wine sector is the biggest employer in rural areas, while in Armenia, Georgia and Moldova wine and brandy are key export products.

While discussing the vine and wine supply chain, note that it is, in effect, a combination of two supply chains:

- 1. table grape supply chain, which is very similar to fresh fruit supply chain, and
- 2. wine supply chain which includes also wine grapes as one of supply chain stages.

Table grapes and wine grapes

While discussing of the grape sector, attention shall be given to distinctions between *table grapes* and *wine grapes*, since they have different supply chain and market characteristics, as well as different issues and challenges. There are also, so-called, "technical" or "universal" varieties of grapes that are suitable for both final consumption as a fruit and for winemaking. From a supply chain perspective, some of the differences between table and wine grapes include, particularly, the following:



- While high yield per hectare is desirable for table grapes, it may negatively affect the quality of grapes for wine. In many wine producing countries (Italy, France, etc.), there are limitations on the maximum yield level for wine grapes.
- For table grapes, a critical element of the market infrastructure is the availability of refrigerated storage facilities for grapes, while for wine grapes it is important to have grape crashing facilities, and grape must/juice storage facilities, as well as wine, brandy or other alcohol producing and bottling facilities.
- Table grapes are sensitive to post-harvest handling, and require boxes and refrigerated trucks for transportation to the market, especially remote markets. In effect, the supply chain of table grape and the issues related to it are similar to any other fruit supply chain.
- The buyers of table grapes in the market are usually a large number of final consumers, while for table grapes the customer is often industrial wine or other alcoholic beverage producers.

In Georgia, the production of grapes is focused on varieties suitable predominantly for wine production, while Armenia and Moldova grow a considerable amount of table grapes, in addition to wine grapes. In Armenia, 15% of grape production is table grapes, and an additional 15% of production is universal varieties (i.e. can be used as both table and wine grapes). In Moldova, 15% of grape production is table grapes. In Ukraine (in 2018), the share of wine grapes in total grape production by state and private agricultural enterprises (excluding households) was about 94%, the rest being varieties of either table grapes or universal grapes.

Vineyards

Grape is widely cultivated in all the three south Caucasian countries and Moldova. It is cultivated also in Belarus and Ukraine, but in a relatively small scale in terms of the share of the total cultivated area (figure 5). In Armenia, Georgia, and Moldova vineyards make 4.6%, 20%, and 7.5% of the total cultivated land, respectively. Moldova is by far the country with the largest area planted in vineyards as well as with the production volume, with over 102,000 tons of grape production in 2018 (table 18).

In most EaP countries, the vineyard area was reduced sharply during 1990s (after the collapse of Soviet system of farming). Vineyards were destroyed and put under production of other crops such





	Vineyards, 000 ha	Total cultivated, 0000 ha	% of total
Armenia	16.3	353.3	4.6%
Azerbaijan	13.5	1959	0.7%
Belarus	1.0	5683	0.0%
Georgia	45.6	240	19.0%
Moldova	133.7	1790	7.5%
Ukraine	44.2	31550	0.1%

under Figure 5. Grape harvest area, EAP countries

as wheat. Vineyard area contracted by more than two times in Armenia (from 37,000 ha in 1990s to 16,320 ha in 2017);²⁰ and by more than three timed in Ukraine (from 137,700 ha in 1995 to 41,300 ha in 2017). The most severe reduction of vineyard area was in Azerbaijan (from 94,700 ha in 1995, to about 14,000 ha in 2017).²¹ During the recent 5-year period, there has been a slow increase of vineyard area in EaP countries.

Most of the vineyards in EaP countries are run by small farmers. In Georgia, for instance, around 70% of vineyards are smaller than 0.5ha. Most of these are unsophisticated vineyards that have low yields, where farmers grow grapes for personal consumption or to sell to large wineries. If compared internationally, this is significantly lower than the average vineyard size in the New World (e.g. 86 ha in the US) and even the Old World (e.g. 3 ha in France) wine-producing countries. In parallel, to these small vineyards, during the recent decade an increasing number of medium- to large-size wine and brandy producers established their own large vineyards. This strategy is adopted to ensure stable supply of quality grapes, because small farmers often are unable or unwilling to comply with quality requirements of wine producers.

Vineyard site selection and preparation/cultivation.²² The majority of vineyards (especially small vineyards) in EaP countries were established and farmed according to old methods and technologies, often not complying with contemporary advanced approaches of farming. This has negative effects on the productivity and the quality of grape production, as well as on the exposure to weather conditions (such as winds and frost), and environment (i.e. soil erosion). For the future promotion and development of grape production (and the wine sector) there will be a need for not only further expansion of vineyards, but also for restructuring and/or improvement of old vineyards (usually requiring notable investments).

²⁰ Source: Statistical Committee of Armenia.

²¹ Source: FAOSTAT: <u>http://www.fao.org/faostat/en/#data/QC</u>

²² The preparation of the vineyard site is very important since a vineyard, once established, will usually be maintained for many years. Correction of as many site imperfections as possible before planting will add greatly to the longevity and productivity of a vineyard. Ideally, a vineyard site should be prepared at least a year prior to planting. Soil preparation should include land leveling, correction of drainage problems and adjustment of fertility and pH, proper row spacing and ploughing, etc. Control of perennial weeds is also important before planting, because it is much more difficult after the vineyard is established. For more technical details, see, for example, http://viticulture.hort.iastate.edu/.

Plant growing/management. In the phase of plant growing, *for both table and wine grapes*, there is a serious gap in knowledge and technology in terms of crop/canopy management, application of fertilizers, pesticides and other chemicals, which significantly reduces productivity and quality of production.

Grape production and productivity

An international comparison of **productivity** (in terms of tons per hectare) is provided in the figure 6. Armenia and Azerbaijan rank high and above the world and EU averages in terms of yield per hectare, followed by Ukraine. The average yield is low in Georgia, Moldova, and Belarus. While analyzing the productivity indicator, the vineyard performance shall be evaluated or measured differently for table grapes and wine grapes. For table grapes, the higher the yield per hectare, the better the performance, since the performance in measured by other factors such as the variety of grapes, and specific characteristics of grapes necessary for wine production.

Grape yield and quality depend on the selection of grape varieties and planting material/rootstock. Both, grape and wine production in the EaP region suffer significantly from poor management of grape varieties and planting material. This is a common problem and a binding constraint, which leads to low productivity and quality of *table grapes*, and low quality of *wine grapes*. The lack of effective variety management, and resulting low quality and impurity or irregularities of varieties has significant negative effects downstream the *table grape and wine grape* supply chains. For instance, irregularities of grape varieties limit the ability of wine producers in controlling the quality of wine. This includes three important aspects: (i) low use of high-performance varieties and inadequate selection of grapevine cultivars; and (ii) lack of homogeneity or purity of vineyards in terms of the grape varieties grown, i.e. smallholder grape producers often have an uncontrolled mix of varieties at their vineyards; (iii) non-compliance of the varieties to market requirements and/or demands.

High dependency on crop failure due to adverse weather. Due to the lack of the use of effective on-farm protection techniques against adverse weather conditions such as hail and frost, grape harvest largely depend on weather conditions (hail, frost, etc.). Wine grapes are very sensitive to

weather conditions. Possible techniques to reduce or eliminate adverse effects of the weather include proper selection and management of vineyard sites, proper canopy management, the use of heaters, wind machines, water sprinklers, protection covers and/or nets.

Lack of cooperation among grape growers. The lack of cooperation among grape growers does not allow farmers to reach and benefit from economies of scale, while selling their produce in the market. The fragmented nature and small size of grape farms significantly lowers the possibilities and motivation for making effective investments in production, harvesting, and crashing-destemming equipment and storage facilities. Due to high compliance costs, small and medium size producers, without cooperation face difficulties while trying to engage in export activities.

Knowledge and skill constraints: There is a serious lack of knowledge about effective techniques and practices in virtually all the stages of grape production, including: soil preparation and cultivation, vineyard management, variety selection and management; plant/canopy management, farm management and production technologies; harvesting and post-harvest treatments. Very old and ineffective practices are still in place. Due to highly fragmented production, the transfer of knowledge is more difficult.

Crop harvesting and post-harvesting issues: One of the issues at the crop harvesting, which is especially important for wine grapes, is related to fruit maturity or ripeness evaluation of wine grapes for harvest



Figure 6. Grape yield comparison

planning. This is important for ensuring proper quality and characteristics (such as color compounds, sugars, acids, and pH) of grapes to be used in wine production.

Table grapes, as other fruits, are perishable and, thus, sale and export of grapes requires cold storage and warehousing facilities, and modern knowhow, to allow for collection and storage of fresh produce during the harvest season, and sale in the off season at a higher price. The lack of knowledge about proper product handling and storage techniques in EaP countries often leads to product spoilage and/or loss of quality, which, in turn lowers the competitiveness of the produce in the market.

For wine grapes, the fragmented production and lack of proper control of the purity/uniformity grape varieties causes difficulties for wine producers in ensuring high and consistent quality of raw material for wine and brandy production. In many cases, to overcome this problem and ensure consistent quality of grapes, wine and brandy producers establish their own large vineyards.

Quality and safety standards. In some EaP countries there are no formal/official quality standards for the production and marketing of table and wine grapes, though grape growers/retailers have their own non-official rules for grading grapes (e.g. 1st or 2nd class), based on visual evaluation. The lack of clearly spelled out quality characteristics leads to practical difficulties in ensuring consistent and competitive quality of grapes as well as of wine. The absence of quality control systems/ standards and lack of quality consciousness among the local consumers narrows down grape market both for fresh produce and processed products, specifically wine products.

Grape export

Moldova is the leading exporter of grapes in the region, followed by Armenia and Belarus. In 2018, Moldova and Armenia exported 47% and 12% of their total production of table grapes (see table 19). Ukraine has negligibly small amounts of grape export. EaP countries export mostly fresh grapes; the volume of export of dried grapes is small. Grape export volumes depend highly on the harvest in a given year, which fluctuates together with the weather conditions.



Table 18. Table (&universal) grape production, tones

	2012	2015	2016	2017	2018
Armenia	72429	92754	53626	62986	53900
Azerbaijan	18118	18849	16380	18341	
Belarus	840	936	1043	1030	
Georgia	8640	12870	9552	10848	15594
Moldova	75888	89800	92361	101265	102000
Ukraine	27360	23176	22667	24577	28058

Table 19. Grape export, tones

	2012	2015	2016	2017	2018
Armenia	10151	4601	31738	7533	6536
Azerbaijan	300	2027	4121	2450	3210
Belarus	2200	25202	15015	4703	5476
Georgia	49	208	189	110	1126
Moldova	31180	45376	51439	80239	48121
Ukraine	20	19	2	82	88

Figure 7. Grape production and export, EaP countries

The export of grapes is highly concentrated in terms of geography - almost all the grape export from Armenia, Azerbaijan, Belarus, and Georgia is destined for the EAEU market, particularly the Russian market (accounting for more than 95% of grape export).²³ Only small amounts of grape are exported to other (mostly to CIS)

²³ Source: UNCOMTRADE: <u>https://comtrade.un.org/data/</u>

countries. In contrast to this, Moldova's export geography is broader, including exports to Russia (over 56% of total grape export in 2018), Romania (23.6%), Ukraine (7%), Belarus (6%), Poland (3%), and a dozen of other countries.²⁴

Table and wine grape market operation

While loo	king at					_				
marketing/sales of grapes in		Table 20. Gra	Table 20. Grape prices in EaP countries, USD/ton ²⁵							
markets, the	distinction		2012	2013	2014	2015	2016	2017		
between <i>table</i>	grapes and	Armenia	450.8	426.9	444.9	326.7	395.1	378.4		
wine grapes sho	all be kept in	Azerbaijan	751	1007	939.6	715.4	450	406.7		
mind. Table	grapes are	Georgia	592.8	638.4	707.9	343.4	389.4	435.2		
supplied and	sold to the	Moldova	355.7	245.6	200.4	213.4	232.7	256.2		
large number	of final	Ukraine	495.9	466.7	278	295.3	246.8	233.9		
consumers direc	ctly at farmer									

markets, through middlemen/distributors, and/or through retailer/supermarket chains. Table grapes

are marketed domestically and in export markets. *Wine grapes* are supplied to a much smaller number of large wine/brandy producers. Important to note also that prices of *table grapes* are more volatile and year-on-year swings are wider compared to prices fluctuation of *wine grapes*.

The operation of grape markets in EaP countries has affected by a number of factors that affect grape quality and price formation. These include:

- o the structure of farming, i.e. prevalence of small landholders
- o marketing infrastructure, e.g. lack of good quality grape and grape juice/mast storage facilities
- o poor crop harvesting and post-harvest treatment techniques
- o the development level of the grape processing industry
- o the nature of relationships between farmers and processors (often non-contractual).

The fragmented production of *wine grapes* lowers the bargaining power of *wine grape producers* and makes them to accept prices dictated by larger processors. Under these market conditions, and constrained with the lack of crushing-destemming and storage facilities in the market, *wine grape* producers, in fact, operate in a

distorted market with no possibility of hedging. As a rule, only large grape processors do have crushingdestemming and grape must/juice storage facilities. Most wine grape producers have no storage facilities, and, thus, are forced to sell their produce - grapes (not grape must) - to processors immediately after harvest.

This situation in relation to storage facilities leads to almost-every-year problems related to sales of grape during the harvest season. Sharp increase in the supply of *wine grapes* - a perishable product - during the high season, combined with (i) lack of storage facilities at grape producers; (ii) small number of buyers/processors; (iii) often low cash payment capacity of buyers/processors; and (iv) usually the lack of contractual relationships between grape producers and processors, leads to low prices and serious logistical problems during the harvest season. This problem is especially severe in Armenia, where every year, the sale of *wine grapes* becomes a big challenge for producers, who are unable to obtain a "good" price, and farmers often are paid with long delays (several months after sales). Table 20 provides a picture of grape price dynamics in EaP countries.

In Armenia, Azerbaijan and Moldova, the grape market is competitive, and prices of grapes fluctuate freely and are formed through demand-supply interaction. In Georgia, to support farmers, the government implements a price support scheme to ensure a viable price for grapes for farmers.

In contrast to *wine grape* subsector, there is more availability of cold storage facilities in *table grape* subsector, since table grapes are higher value product and producers invest in building small cold storage facilities around their farms in the countryside. It has to be noted that most of these small storage facilities are poorly

²⁴ Other markets for Moldovan grapes include: Latvia, Iraq, Spain, Estonia, Croatia, Bosnia and Herzegovina, etc.

²⁵ Source: FAOSTAT <u>http://www.fao.org/faostat/en/#data/PP</u>. For Moldova, for years 2016, 2017, the data is from National Bureau of Statistics of Moldova: <u>http://statbank.statistica.md</u>

functioning facilities with basic and often outdated cooling equipment. In parallel, a number of large business entities have built modern cold storage facilities.²⁶ While this has increased cold storage capacity, there is a need to scale up further, having in mind the steady growth of table (universal) grape production in the region (especially in Georgia, Moldova, Armenia, Azerbaijan).

Due to the situation in the market, grape prices in the EaP region are significantly lower than the prices in other countries in the world (figure 8). Georgia has the highest grape prices in the region, because the Government of Georgia applies a price support scheme, and subsidy payment per kilogram of grape to producers during procurement in the harvest season.

An important characteristic of the wine grape market in EaP countries (particularly, Armenia, Azerbaijan, Georgia, Moldova) is that, for grape marketing and price formation, little or no consideration is given to the quality characteristics of grapes. The level of product differentiation is very low in the market; often grapes are differentiated only by color without even looking at other characteristics, i.e. the buyer looks just at the color is it "red-or-white grape". One of the main reasons for this low level of sophistication of the market is the low level of sophistication of wine production in the country, i.e. most wine producers do not give due consideration to the important quality characteristics of grapes and wine used as raw material for wine production (such as sweetness, acidity, tannin, body, aroma). This situation, in turn, does not provide sufficient incentives for grape producers to make an effort towards the improvement of grape production techniques and grape quality, selection of high-quality varieties and ensuring the uniformity of grape varieties, because for good quality grapes they are not able to get premium price in the market.



Figure 8. Grape prices

Wine production

The production of wine and other alcoholic beverages is one of the traditional and largest sub-sectors of agriculture in Armenia, Azerbaijan, Georgia, and Moldova. The wine production is dominated by small-size low quality producers, though during the last decade the countries witnessed a formation of a cohort of medium and large size private wine producers in each country and significant improvement of wine quality.

	Prod., hl	Export, hl	Import, hl	Cons., hl	Cons. per capita, l/capita +15
Armenia	94,000	28,000	5,000	74,000	3.2
Azerbaijan	102,000	1,000	1,000	105,000	1.4
Belarus	310,000	22,000	576,000	801,000	10.2
Georgia	856,000	579,000	2,000	402,000	12.7
Moldova	1,801,000	1,405,000	7,000	291,000	8.5
Ukraine	1,872,000	443,000	416,000	987,000	2.6

²⁶ For instance, in Armenia, at Zvartnots airport, the facility has almost 600 sq meters of cold storage that can store around 140 tons of agricultural produce. The Millennium Challenge Account (MCA) Program Armenia project established 21 small refrigerated collection points and 3 consolidation centers for fresh fruits and vegetables in the recent past. A number of large business entities (e.g. Spayka) have established large cold storage facilities equipped with modern advanced technologies. According to expert estimation, around 65% of table and universal grape harvest in September and October is stored in cold storage facilities for selling off-season at higher prices. Currently available storage facilities meet the present-day grape supply requirements. The prices for storage facilities are stable amounting to 30 AMD per kg.

Wineries can be classified as follows:

- **large commercial wineries** (>500,000 bottles per year), which often produce wine using contemporary technology and mass production methods, though may apply also to diversify into other segments, such as organic, hand-made wines, traditional wine. Some of the large wineries establish their own vineyards in order to be able to control the quality of grape.
- **medium size commercial wineries** (100,000-500,000 bottles per year) that may apply traditional as well as modern technologies, but are small in size, and
- **small wineries** (<100,000) that are commercial and apply traditional production methods. These also may be export-oriented wineries.
- **small, non-professional** wine producers (household producers), that produce mostly for the local market (both for final consumption and for selling to larger wineries), and their own consumption.

There have been some attempts by large wine producers to establish a mutually beneficial cooperation with grape growers, under which: (i) grape growers get technical assistance and, in some cases, input support from processors, and, in effect, obtain a guaranteed buyer of their produce; while (ii) wine producers ensure that grape supply is homogenous and of the required quality, including homogeneity of the varieties grown.

Vine and wine sector in EaP countries is in the phase of transformation from low quality, non-sophisticated production towards high quality, sophisticated wine industry. The structure of wine production is changing accordingly with the appearance of medium- to large-size wineries with modern advanced production methods and technologies.

- Armenia: there are about 40 registered commercial size wine producers. Among them only four wineries have production volume of over a million bottles; three wineries produce in the range of 200,000-500,000 bottles of wine per year, 11 wineries 50,000-200,000 bottles, the rest being rather small size producers.
- **Azerbaijan:** there are about 40 registered commercial size wine producers, the rest being smallholder wine producers.
- In Belarus: Wine industry in Belarus is dominated by a few large producers such as Minsk Krystal, Minsk sparkling wine factory, Bulbash-Belarus, and Brest distillery.
- **Georgia: t**here are around 180 wine producers in Georgia, of which 100 were engaged in export. About a dozen of wineries produce in the range of 100,000-1000,000 bottles of wine per year. The wine growing sector is fragmented.
- Moldova: There are 187 formally registered wineries, of which 68 wineries possess their own vineyards. The wineries own 36% of the total vineyards area, with an average surface of 220 ha per winery. Vine and wine sector is the biggest employer in the rural area, involving 29,679 legal entities.
- Ukraine: There are about two hundred enterprises engaged in the winemaking (including sparkling wines, champagne, and brandy production) of Ukraine. There are two clearly delineated groups among them: traditional enterprises that possess their own vineyards, and enterprises of a new wave that are exceptionally engaged in bottling wine.²⁷

²⁷ Important to note that Ukraine's wine industry suffered significantly due to the Crimea crisis, having in mind that before the annexation Crimea was one of the key grape growing and wine making regions of Ukraine.

EaP countries export not only wine, but also other alcoholic beverages from grape such as brandy, vermouth, grape spirits (e.g. Georgian chacha), and vinegar. Tables 22 to 25 provide details of export of grape beverages from EaP countries.

Moldova is the leader in terms of volume of wine export, with 141 million liters of wine export in 2017, followed by Georgia and Ukraine (58 million and 44 million liters, respectively). The wine export volume has been increasing in Moldova and Georgia, while Ukraine has seen its export declined by more than two times since 2014. Since 2014, Moldova increased its wine export by more than three times.

In addition to wine, brandy is another key export product in Armenia, Moldova, Georgia, Armenia being the leading exporter in the EaP region (with over 23 million liters of brandy export in 2017).

The geography of wine export from most EaP countries is concentrated Russia being the main market for wine as well as other beverages from grape (see tables 26 and 27). In 2017, the Russian market accounts for 83% and 90% of Armenian wine and brandy export respectively. For Azerbaijan, the respective shares were 90% and 87%. Moldova and Georgia have more diversified export geography.

The dependency on one large market has its positive and negative sides. On the positive side, it is good to have a large guaranteed buyer who is able to absorb all one can produce. On the other side, the dependency on one large buyer increases risks of market disruption (due to unfavorable economic developments in the export country or political problems).

Table 26. Wine export markets, export markets, 2017

Table 22. Wine export, million liters

	2014	2015	2016	2017
Armenia	2.13	1.38	1.90	2.77
Azerbaijan	3.36	1.91	1.88	3.74
Georgia	45.93	27.16	37.60	58.05
Moldova	45.39	113.66	133.29	141.18
Ukraine	102.50	61.23	31.37	44.26
Belarus	0.00	1.65	2.19	2.24

Table 23. Vermuth export, million liters

		· · ·		
	2014	2015	2016	2017
Armenia	0.00	0.00	0.00	0.00
Azerbaijan	0.01	0.03	0.02	0.01
Georgia	0.35	0.19	0.35	0.24
Moldova	0.27	0.35	0.14	0.36
Ukraine	0.27	0.36	0.70	0.91
Belarus	0.38	0.11	0.13	0.21

Table 24. Brandy export, million liters

	• •	-		
	2014	2015	2016	2017
Armenia	11.74	8.71	19.10	23.4
Azerbaijan	3.92	n.a.	n.a.	n.a.
Georgia	n.a.	5.2	18.05	9.2
Moldova	7.38	4.75	3.83	n.a.
Ukraine	1.55	1.71	0.00	n.a.
Belarus	0.21	0.17	0.20	n.a.

Table 25. Vinegar export, million liters

	2014	2015	2016	2017
Armenia	0.00	0.00	0.00	0.01
Azerbaijan	0.00	0.00	0.00	0.00
Georgia	0.00	0.00	0.00	0.00
Moldova	0.48	0.22	0.78	1.53
Ukraine	0.18	0.25	0.10	0.26
Belarus	0.02	0.03	0.09	0.05

ARMENIA		AZERBAIJAN		BELARUS		GEORGIA		MOLDOVA		UKRAINE	
TOTAL 2.77 mill. I		TOTAL 3.74 mill. I		TOTAL 2.24 mill. I		TOTAL 58 mill. I		TOTAL 141 mill. I		TOTAL 44.2 mill. I	
Russia	83.0%	Russia	90.4%	Ukraine	45%	Russia	61.6%	Belarus	33%	Russia	75.2%
USA	3.4%	China	7.3%	Unspecified	36%	Ukraine	12.0%	Russia	13%	Georgia	10.9%
Swiss	2.6%	Belarus	0.9%	Kazakhstan	4%	China	9.3%	Georgia	11%	Azerbaijan	2.9%
Ukraine	1.0%	Kyrgyzstan	0.3%	Israel	3%	Kazakhstan	4.2%	Romania	9%	Kazakhstan	2.9%
China	1.0%	Belgium	0.2%	Lithuania	2%	Poland	3.5%	Ukraine	7%	China	1.7%
France	0.9%	USA	0.0%	Viet Nam	2%	Belarus	2.6%	Czechia	6%	Romania	0.9%
Lithuania	0.8%	China, HK	0.0%	Estonia	2%	Latvia	2.0%	Poland	4%	Belarus	0.7%
Poland	0.7%	France	0.0%	USA	2%	Estonia	0.7%	China	4%	Germany	0.6%
Italy	0.6%	Kazakhstan	0.0%	Mongolia	1%	USA	0.6%	Germany	2%	Moldova	0.4%
Belgium	0.6%	Japan	0.0%	Georgia	1%	Lithuania	0.5%	UK	2%	Slovakia	0.4%
Recognizing this, the businesses in EaP countries are in search of new markets in the European Union and in Asia. It is important to note that in addition to logistical difficulties, market diversification would require significant efforts and financial investment towards achieving compliance with quality requirements of new markets.

In this context, it is worthwhile noting that market diversification in Georgia became a strategic priority following the Russian embargo in 2006. After the embargo, the Georgian wine industry, with the support of the Government, made significant efforts to improve the quality and image of Georgian wines and enter into more competitive and non-traditional markets (such as China, Latvia, Poland, Ukraine).²⁸

ARMEN	IA	AZERBAI.	IAN	BELA	RUS	GEORG	IA	MOLDOVA		UKRAINE		
TOTAL 67,	748 t	TOTAL 5,3	93 t	TOTAL 2	,242 t	TOTAL 33,0	OTAL 33,000 t TOTAL 5,659 t TOTAL 4		TOTAL 5,659 t		4.2 mill. l	
Russia	90%	Russia	87%	Not spec.	91.6%	Armenia	29.5%	Belarus	41.1%	Not spec.	48.6%	
Ukraine	3.4%	Latvia	5.5%	Ukraine	6%	Ukraine	20.3%	Ukraine	19.7%	Azerbaijan	11.6%	
Belarus	1.2%	Ukraine	3.5%	Russia	1.6%	Russia	19.8%	USA	8.0%	Georgia	5.9%	
Georgia	1.1%	Georgia	2.0%	Latvia	0.8%	France	18.8%	Estonia	4.5%	Turkey	5.8%	
Kazakhstan	1.0%	Belarus	1.2%			Spain	4.0%	Lithuania	3.7%	USA	5.8%	
Latvia	0.7%	Kyrgyzstan	0.9%			Belarus	2.6%	Kazakhstan	3.0%	Lithuania	5.1%	
Germany	0.6%	Areas, nes	0.2%			Kazakhstan	1.3%	Poland	2.8%	Russia	3.1%	
USA	0.5%	USA	0.0%			Latvia	1.1%	Georgia	1.7%	China	2.9%	
Lithuania	0.4%	France	0.0%			Lithuania	0.9%	Russia	1.1%	Israel	2.7%	
Denmark	0.4%					Cyprus	0.4%	Latvia	1.0%	Latvia	2.5%	

Table 27. Brandy export markets, export markets, 2017

Developments in international markets

Global market wine is with dynamically developing intense competition among countries for markets. In 2017, global wine production (excluding juice & musts) was 250 mhl, a decline of 23.6 mhl compared with 2016 production (see figure 13).²⁹

In 2017, the global market – considered here as the total exports of all countries – is estimated at **107.9 mhl** in terms of volume (an increase of 3.4% compared with 2016), and **EUR 30.4 billion** in terms of value (a rise of 4.8% compared with 2016) (see figure 10).



Figure 9. Wine consumption. Source: OIV, see footnote 32

²⁸ Wine exports to Ukraine, Latvia, Poland, and China grew at 19%, 19%, 30%, and 49% CAGRs, respectively, in 2005-2013. These 4 countries accounted for 32% of all wine exports in 2013, leaving room for further growth. In addition, the re-opening of the Russian market in 2013 provided a boost to the Georgian wine industry: up to 23mn bottles (c. 17mn liters) were exported to Russia in 2013 (49% of total wine exports).

²⁹ Source: "State of the vitiviniculture world market", 2018, OIV-International Organization of Vine and Wine.

The main type of product traded is bottled wine which accounted for 57% of global market by volume and 72% by value in 2017 Note that sparkling represented 8% of global market by volume, but its share was two times higher in terms of value (19%) in 2017. Bulk wine accounted for 35% of the total global exports by volume, but its share in terms of value was only 8%.

The largest consumers of wine as well as main exporters and importer in the global trade are presented in figures 9, 11 and 12. In terms of total consumption, USA is the leader in the world. followed by France. Italv and Germany. Note that China and Argentina, Russia, and Australia are among top ten consumers of wine. However, in terms of wine consumption per capita, all the top ten countries are the EU countries, with Portugal leading the list, and followed by France, Italy, Austria.

Germany, the UK, and the USA imported over 40 million hl of wine in 2017, about 40% of the world import value. The five

World wine market (excluding musts)

Volume (mhl)		Value (I	bn EUR)	Tune	2017 Vertical structure	
2016	2017	2016	2017	Type	volume	value
104.4	107.9	29.0	30.4	bottled sparkling	57% 8%	72% 19%
3.4% va	riation	4.8% v	variation	bulk and >2L	35%	8%

Sources: OIV, GTA





Figure 10. World largest wine exporters, 2017. Source: OIV, see footnote 32



Figure 12. World largest wine importers, 2017. Source: OIV, see footnote 32

largest wine importers accounted for 50% of the value of global wine import.

Spain is the largest exporter with 22.1 million hl and a global market share of 20.5% (in 2017), while France was the biggest world exporter in terms of value, with 9.0 billion EUR of exports in 2017. Wine exports are

dominated by Spain, Italy and France that jointly represented 55% of global market by volume in 2017. In terms of value of wine export market, France and Italy represent 30% and 19% of the global market value.

mhl	2013	2014	2015	2016 ^b	2017	2017/2016 Variation in volume	2017/2016 Variation in %
Italy	54.0	44.2	50.0	50.9	42.5	-8.4	-17%
France	42.1	46.5	47.0	45.4	36.7	-8.7	-19%
Spain	45.3	39.5	37.7	40.0	32.1	-7.9	-20%
United States ^d	24.4	23.1	21.7	23.6	23.3	-0.3	-1%
Australia	12.3	11.9	11.9	13.0	13.7	0.7	596
Argentina	15.0	15.2	13.4	9.4	11.8	2.4	25%
China	11.8	11.6	11.5	11.4	10.8	-0.6	-5%
South Africa	11.0	11.5	11.2	10.5	10.8	0.3	3%
Chile	12.8	9.9	12.9	10.1	9.5	-0.7	-6%
Germany	8.4	9.2	8.9	9.0	7.7	-1.3	-15%
Portugal	6.2	6.2	7.0	6.0	6.6	0.6	10%
Russia	5.3	4.8	5.6	5.2	4.7	-0.5	-10%
Romania	5.1	3.7	3.6	3.3	4.3	1.0	31%
Brazil	2.7	2.6	2.7	1.3	3.4	2.1	169%
Hungary	2.6	2.4	2.8	2.8	3.1	0.2	8%
New Zealand	2.5	3.2	2.3	3.1	2.9	-0.3	-9%
Greece	3.3	2.8	2.5	2.5	2.6	0.1	2%
Austria	2.4	2.0	2.3	2.0	2.4	0.4	23%
Serbia	2.3	2.3	2.3	2.9	2.3	-0.6	-21%
Moldova	2.6	1.6	1.6	1.5	1.8	0.3	20%
Ukraine	2.8	1.5	0.9	1.2	1.2	0.0	0%
Bulgaria	1.7	0.7	1.3	1.2	1.2	0.0	-2%
Georgia	1.0	1.1	1.3	1.1	1.1	0.0	0%
World	290	269	275	273	250	-24	.996

Wine production (excluding juice and musts)^a

Sources: OIV, OIV Experts, Trade Press

a) Countries for which information has been provided with wine production of more than 1 mhl

b) 2016: provisional data

c) 2017: forecasted data

d) OIV estimate (USDA basis)

Figure 13. Global wine production. Source: OIV, see footnote 32.

4.3 Fruit supply chain



Fruit and vegetable production is an important agri-food sub-sector in the EaP countries, and is a key export product for them. This section provides discussion on fruit supply chain, however, most of the supply chain characteristics, and issues discussed in this section are applicable to vegetable supply chain.

Main types of fruits exported from EaP countries include:

- Armenia apricots, peaches, grapes, cherries, plums, apples
- Azerbaijan apricots, peaches, nuts
- Belarus apples, cherries, berries
- Georgia citrus fruits, nuts
- Moldova grapes, nuts
- Ukraine apples, plums, berries, cherries, nuts.

Fruit and vegetable export is more significant for Armenia, Azerbaijan, Georgia and Moldova (table 28). The highest weight of horticulture is in Azerbaijan, where fruits and vegetables jointly account for over 71 percent of total agri-food export. In Armenia, Georgia and Moldova, the share of fruits and vegetables is 8, 12.8, and 18 percent, respectively.

Belarus and Ukraine also have considerable export of fruits and vegetables, but with lesser share in total agrifood export. The focus is more on animal husbandry products export. Agricultural export in Belarus is dominated by dairy products and meat, plus technical crops such as rape, sugar cane, and potatoes. In Ukraine the focus is more on technical commodity crops such as cereals (wheat, barley corn, rape, soya).

	Armenia	Azerbaijan	Belarus	Georgia	Moldova	Ukraine
Agri-food total	643	787	4,891	933	1,175	18,687
Fruits: of which	25.1	326.3	147.9	103.7	207.6	228.6
grape	4.0	2.34	1.96	0.82	25.1	0.044
Vegetables	28.3	233.3	309.0	16.0	7.1	235.7

Table 28. Fruit export, EaP countries, 2018, \$ million

Majority of issues/challenges in the fresh fruit sector are similar to those identified in the grape sector analysis. Therefore, in order to avoid repetitions, this sector will focus mainly on aspects specific to the fruits sector (while highlighting those that are the same in both sectors).

Orchard site selection and preparation/cultivation

The major part of orchards was established and are farmed according to old methods and technologies, and often do not comply with contemporary advanced approaches of farming. Most fruit orchards have low density of trees (i.e. orchards are sparse), which lowers the productivity of orchards.

High dependency on crop failure due to adverse weather (frost, hail) is one of the most critical constraints that negatively affects the fruit supply chain. The risk of damage to farms by hail and frost is rather high in the absence of anti-hail and anti-frost systems.

Fruit/vegetable varieties and planting material

Similar to the table grape sector, fruits and vegetables subsectors also suffers from poor variety management.

Plant management

In the phase of plant growing, there is a serious gap in knowledge and technology in terms of crop management, application of fertilizers, pesticides and other chemicals, which significantly reduces productivity and quality of production. For example, a simple thing, most fruit trees in EaP countries are tall, which causes difficulties during fruit harvesting and in maintaining the trees. During recent years, there is a notable increase of investments in establishing new orchards with effective varieties and modern orchard management approaches, e.g. better choice of effective varieties (shorter and more convenient trees, better marketability of fruits), distance between trees, use of drip irrigation system. Fruit varieties used in EaP countries are limited and often do not comply with the demands and requirements of domestics and international markets. At the same time, the lack of frost resistant and diverse marketable apricot varieties is another major constraint binding the development of the sector.

Crop harvesting and post-harvest treatment

There is lack of knowledge and skills about harvest planning, crop harvesting and handling, due to which the produce loses its marketability and competitiveness. Poor harvesting and post-harvesting practices negatively affect the quality of fresh fruits, shorten product shelf-life, and reduce the final product price and the profit margin of the whole supply chain. Fresh fruit exporting companies often choose to organize and carry out the picking, sorting, grading operations by themselves. Due to the export to high-value market they do not trust farmers' skills in conducting these operations.

Storage

As noted earlier, there is shortage of cold storage facilities for fruits and vegetables, especially, in Armenia, Azerbaijan, Georgia, and Moldova.

Marketing

Fruits are marketed through: (i) direct sales to a large number of final consumers at farmer markets; (ii) through middlemen/distributors; and (ii) through retailer/supermarket chains, which is carried out either directly or through middlemen/distributors. Large commercial scale fruit producers are able to export their produce, while most of the small- to medium-size farmers prefer to not engage in export activities, but sell their produce to exporter firms.

The low level of cooperation among farmers does not allow farmers of fruit to reach and benefit from economies of scale, and significantly lowers the possibilities and motivation for making effective investments in production and storage facilities.

One of the problematic issues that exporters often face is related to the inability to ensure stable supply of good quality fruits. Small farmers tend to not grade their produce and often cheat and supply low quality produce under the first layers of fruits in boxes. In effect, there is no cooperation and trust between farmers, middlemen and/or exporters, due to which eventually exporters face difficulties, while distributing and/or selling the produce in the export markets.

Another important characteristic that affects the fruit marketing is the seasonality in countries. Often due to geographical concentration of orchards (e.g. Ararat valley in Armenia) and due to limited varieties, the harvest season is short. Short harvest season significantly affects the prices and the logistics of fruit marketing. For

instance, often transportation companies apply differentiated prices for fruit transportation to export markets, depending on the harvest and prices of fruits in the market. Often, prices for transportation of fast-perishable fruits (e.g. apricots, figs, berries) are higher than for other fruits. Due to increased supply of fruits during high season prices go down, lowering farmer profit margins. The seasonality issue can be addressed in a number of ways, i.e. (i) good harvesting and post-harvest treatment and cold storage during the high season and marketing off-season; (ii) smart selection of fruit varieties (early- or late-ripening varieties) that can allow prolonging the harvest season and/or have harvest off-season.

Knowledge and skill constraints: there is a serious lack of knowledge about effective techniques and practices in virtually all the stages of fruit production, especially among smallholders, including: orchard preparation and management, variety selection and management; production technologies; harvesting and post-harvest treatments. Old and ineffective practices are still in place. The extension services provided by the governments are not sufficient and cannot meet the demands of the market. Due to highly fragmented production, the transfer of knowledge becomes more difficult.



Brief information about the global organic production and markets

The advantages and benefits of organic farming are widely known, and many countries and businesses adopted strategies to promote organic farming as a way of conducting a viable, profitable economic activity, as well as a sustainable farming.

The global organic agri-food sector is dynamically growing and is a lucrative sector that attracts significant investments in developed as well as developing countries. In 2017, the world's total area under organic farming was 69.8 million ha (20 percent increase from 2016), of which 39.5 million ha in Australia, 12.6 million ha in the EU, 3.4 million ha in Argentina, 3 million in China, 2.08 million ha in Spain and 2.03 million ha in the USA. There are 2.9 million organic farmers in the world. ³⁰

In 2017, the size of the global organic market was around Euro 92 billion. Having in mind higher than conventional agri-food prices, the competition in organic markets is very intensive. The countries with the largest market for organic food are the USA (Euro 40 billion), followed by Germany (Euro 10 billion), France (Euro 7.9 billion) and China (Euro 7.6 billion). Switzerland has the highest per capita consumption worldwide, followed by Denmark, Sweden, Luxemburg, and Austria. In Denmark, 13.3 percent of the food market is organic.

The total area under organic farming in the EU has been increasing, and in 2017 covered 12.6 million hectares of agricultural land – 7 percent of the total EU

Box 1. Organic agriculture in the EU

Organic crop farming. The total area under organic farming in the EU continues has been increasing, and in 2017 covered 12.6 million hectares of agricultural land – 7 percent of total EU utilized agricultural land. The highest share of land under organic production is in Austria, where 23.4 percent of total agricultural area is under organic production. Austria is followed by Estonia, Sweden and Italy with 19.6, 19.2, and 14.9 percent shares of organic land are in Romania, Ireland and Malta (with 1.9, 1.7, and 04 percent shares, respectively).

In terms of absolute area, Spain, Italy, France and Germany are the leaders, with 2 million ha, 1.9 million ha, 1.74 million ha, and 1.14 million ha organic farmland areas, respectively.

Organic livestock. Bovines and sheep are the most popular species reared using organic methods. In 2017, there were in total 4.3 million organic bovines in the EU out of 88.4 million.

Latvia, Austria and Sweden have the highest shares of organic bovines, dairy cows and "sheep and goats". Latvia had the largest shares of both the organic population for "sheep and goats" (34.1 % of total sheep and goat population) and for the organic bovine population (23.6 %). Austria had the second highest share of organically reared bovines (21.7 %), followed by Sweden (21.2 %). Concerning the shares of organic dairy cows, Austria (21.2 %) had the highest followed by Sweden (16.4 %) and Latvia (12.7 %). For most EU Member States organically reared pigs accounted for only a small share of the total pig population, with the highest share in Denmark at almost 3 %.

Organic market. Switzerland has the highest per capita consumption worldwide, followed by Denmark, Sweden, Luxemburg, and Austria. In Denmark, 13.3 percent of the food market is organic

Source: Eurostat - <u>https://ec.europa.eu/eurostat/statistics-</u> explained/index.php/Organic_farming_statistics_

³⁰ Source: The World of Organic Agriculture, Organics International, 2019.

https://www.organicwithoutboundaries.bio/2019/02/28/organic-agriculture-statistics-book-2019/ Switzerland Research Institute of Organic Agriculture (FiBL)

utilized agricultural land in 2017. Austria, Estonia, Sweden, and the Czech Republic are the leaders in the EU in terms of share of organic farmland, with the highest share in Austria (23.4 percent). In 2017, there were more than 4.3 million organic bovine animals in the EU. Latvia, Austria, and Sweden had the highest share of organic animals. For more details see box 1.

Key organic products and the area on which these products produced are as follows:

- Cereals (3.5 million ha), green fodder (2.5 ha), oilseeds (1.2 million ha), dry pulses (0.4 million ha), textile crops (0.4 million ha).
- Coffee (1 million ha), olives (0.7 million ha), nuts (0.4 million ha), grapes (0.3 million ha), temperate fruits (0.3 million ha), tropical and subtropical fruits (0.3 million ha).³¹

Organic production and markets in EaP countries

Certainly, for EaP countries organic farming is a good opportunity for entering into rich markets with high-end agri-food produce. As a rule, in the international market, prices of organic agri-food products are significantly higher from prices of non-organic products (10-100 percent above conventional product prices).

The domestic production and the market in EaP countries are young, and consumers are price-sensitive and have low purchasing power. Therefore, organic producers often, being unable to export or sell their products at higher prices in the domestic market, apply conventional prices to organic products. This, of course, discourages further investments in organic agri-food production.

Having this in mind, for short- to medium-term, at least, the driving force behind the growth of organic farming will undoubtedly be the export market.

Table 29. Land under organic agriculture in EaP countries, 2017³²

	Armenia	Azerbaijan	Belarus	Georgia	Moldova ³³	Ukraine
Agricultural land under organic, 000 ha	1.43	37.63	1,490	1.5	30.14	289
Agricultural land certified organic, 000 ha	0.73	20.32	n.a.	1.0	21.39	n.a.

Governments of EaP countries promote the production of organic farming and recognize organic farming as a promising sector to be supported and promoted in their countries, to pursue both economic and environmental objectives. Main organic products produced and exported from the countries include:

- Armenia There are around 60 certified crop producers and 7 beekeeping entities.³⁴ Key organic products fresh and canned fruits (apricots, peaches, plums, cherries), juices berries, fresh, canned and frozen vegetables (eggplant, pepper, tomatoes), alfalfa, wheat, mushroom, honey. Main export market for Armenian organic exports are EU countries (Germany, France, Hungary, Netherlands).
- Azerbaijan The number of organic farms was 297, and the number of organic processors was 34 in 2014. Key organic products include: cereals, fruits (temperate and subtropical), vegetables, oilseeds. Additional products with less land coverage are: olives, grapes, pulses, citrus. Main organic products certified as organic are rose oil, pomegranate, persimmon and hazelnut, plus fruits, berries and medicinal and aromatic plants collected in the wild. Main export markets are the EU and USA markets.
- Belarus In Belarus, there are two dozens of certified organic farms. Organic production berries, juices, birch sap, flax.

³¹ Source:

³² Source: FAOSTAT, <u>http://www.fao.org/faostat/en/#data/GV</u>

³³ For 2018, the Ministry of Agriculture reports 73.4 thousand hectares of organic crop land.

https://unctad.org/meetings/en/Presentation/ditc-ted-08102018-nger-forum-Moldova.pdf

³⁴ Source: Operators register, Ecoglobe, <u>http://ecoglobe.com/wp-content/uploads/2013/12/List_of_Operators_ENG.pdf</u>

- Georgia Georgian organic agri-food sector involves over 100 business entities, mostly focused on wine, tea and nuts. Among registered organic operators in Georgia, there are three livestock and dairy producers, and two dozens of beekeepers that are yet listed as conventional.³⁵ Key organic products wine, tea, hazelnuts, wild plants, berries and fruits, rose oil, honey,
- Moldova wine, walnuts, dried fruits, sunflower seeds, sunflower oil, soybeans and wheat for animal fodder. *Moldova's* organic agri-food sector includes about 140 companies specialized in the cultivation of organic products *in Moldova*. Main export market for Moldovan organic exports are the EU countries (the Czech Republic, Poland, Germany, Italy, Slovakia, Austria, Netherlands,). In 2013, registered exports of organic products amounted to more than 80,000 tons with a value of EUR 31.5 million.
- Ukraine There are over 150 certified organic producers operating in the country. Ukraine is becoming an important supplier of certain organic products to the mainly European, and also other markets (in USA, Canada, Switzerland, Asia). Most popular organic production includes cereals, beans, oilseeds, berries, essential oils, mushrooms, nuts and fruit juice concentrates

Specific issues in organic supply chains

For long-run sustainable development of organic farming, it is essential that organic farming is viewed not only as a way of earning high profit margins in rich markets, but also, and very importantly, as a philosophy of life, as a sustainable way of living and development. It has to be kept in mind that organic farming requires a systemic supply chain approach, where all the stages and participants of the supply chain are engaged in organic production.

Many of the issues to be addressed in the organic agri-food production sector are similar to those present in conventional agri-food production. However, there is a number of factors, challenges and opportunities that are specific to organic production. Below are some of these factors that must be addressed jointly by public and private sector participants to further the development of organic agriculture.

Organic certification. Organic products are subject to more regulations, control and inspection. In addition to all the inspections and controls applied to conventional agri-food products, organic products shall undergo a special organic certification and controls. Organic certification is an important process in organic agriculture that needs to be carried out in compliance with internationally accepted standards. Farmers and post-harvest businesses seeking to sell their products in developed countries must hire an organic certification organization to annually inspect and confirm that these farms and businesses adhere to the organic standards established by various trading partners. Organic certification is necessary, first, to be able to enter foreign markets, and, second, to be competitive and earn the trust and high reputation among demanding consumers in sophisticated markets. Certification in organic agriculture may be a long and costly process, and requires additional specific knowledge and skills on both sides: the farmers/producers as well as the certifying agency.

Exported products have to be certified to the standards of the importing country, for instance, the standards listed in the EU Regulation 1235/2008³⁶ or other private standards (e.g. Bio Suisse, Bioland or Naturland) for the EU and Switzerland, and the US National Organic Program for the US and elsewhere. EU requirements in relation to organic production and labelling are defined in the EU Regulation 834/2007.³⁷

The cost for this service can be expensive, although it varies in relation to farm size, volume of production, and the efficiency of the certification organization.³⁸ At present, to enter international markets, organic

³⁵ Source: Operators register, CaucasCert, <u>http://caucascert.ge/files/OperatorEng250619.pdf</u>

³⁶ COUNCIL REGULATION (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91

³⁷ COUNCIL REGULATION (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91.

³⁸ IFOAM recommends that certification costs a maximum of 5 percent of sales value, but where local certification organizations exist it is estimated that costs can be reduced to 2 percent of sales value.

producers in EaP countries often need to use services of foreign certification bodies, which increases the costs of compliance for businesses. There are three organic certification bodies in EaP countries (in Armenia, Georgia and Ukraine) whose certificates are recognized by the EU. Organic certification bodies in EaP countries registered in the EU regulation 1235/2008, include:

- Ecoglobe, Armenia <u>www.ecoglobe.com</u>
- Organic Standard, Ukraine <u>www.organicstandard.com.ua</u>
- Caucascert Ltd, Georgia <u>http://www.caucascert.ge</u>

More demanding market and consumers. Main consumers of organic agri-food production are developed, high income countries, where high requirements for quality and safety of agri-food products are applied by national authorities. In addition, the consumers of organic products are knowledgeable, sophisticated and demanding. , in addition to compliance with quality and safety requirements, more sophisticated competition and marketing skills, strategies, and efforts from producers and traders to enter and stay in foreign export markets.

More intensive knowledge and skill requirements, and more efforts. Organic farming is more knowledgeintensive than the conventional farming, as producers have to understand not only the specific farming technologies and practice, but also certification processes and also specific market information. In addition, farmers and exporters need to strengthen their knowledge of export procedures from the farm to the buyer in target international markets (e.g. specific logistics, and transport requirements).

Currently, there is a scarcity of high-quality organic farming professionals in the EaP region. Small- to mediumsize organic farmers receive advice mainly through projects and a small number of private consultants, though some large organic producers may have their own agronomists. Public extension services are weak and often do not possess the knowledge and resources to provide adequate support to farmers. As a result, organic products do not always meet the quality requirements of international standards.

The capacity building among public and private participants in organic supply chain is decisive. In this regard an important reference for training and capacity building is the *Codex Alimentarius Guidelines for the Production, Processing, Labelling and Marketing of Organically Produced Foods.*³⁹

In the context of capacity building, it is also necessary to develop and effectively implement high quality courses in college/university curricula.

Farm management and productivity issues. Organic farmers may experience some loss in yields when converting their operations to organic production.⁴⁰ "There is a period of time between the discarding of synthetic inputs and sufficient biological activity being restored to the land (e.g. growth in beneficial insect populations, nitrogen fixation from legumes) during which pest suppression and fertility problems are typical. The degree of yield loss varies, however, and depends on factors such as the inherent biological attributes of the farm, farmer expertise, and the extent to which synthetic inputs were used under the previous management system. Where soil fertility is low and biological processes have been seriously disrupted, it may take years to restore the ecosystem to the point where organic production is possible. In such cases other sustainable approaches, which allow judicious use of synthetic chemicals, may be more suitable start-up solutions. One strategy to survive the difficult transition period involves converting farms to organic production in partial instalments so that the entire operation is not at risk".⁴¹

³⁹ The Codex Alimentarius Guidelines are intended to facilitate the harmonization of requirements for organic products at the international level, and may also provide assistance to governments wishing to establish national regulations in this area. The Guidelines include general sections describing the organic production concept and the scope of the text; description and definitions; labelling and claims (including products in transition/conversion); rules of production and preparation, including criteria for the substances allowed in organic production; inspection and certification systems; and import control.

⁴⁰ For instance, a UN Environment's scoping study established that yields in Moldova for organic agriculture are 20-40 per cent lower than those of conventional agriculture (UNEP 2011).

⁴¹ Organic Agriculture, FAO, 1999, http://www.fao.org/3/x0075e/x0075e.htm#P101_9116

The success of organic farming may be dependent upon operations of neighboring farms as well as other participants of the supply chain (for instance, suppliers of organic fertilizers) and those outside the supply chain. For primary and processed products to be considered as organic, the inputs used for the production also should be organic or comply to strict technical requirements. This includes, for instance, seeds, fertilizers, and pesticides used for organic crop farming, as well as feed/fodder and medicaments and other inputs used in animal husbandry, dairy production, fish farming and beekeeping.

With fragmented land structure with many neighboring small farmers it may be difficult to become and remain organic, when neighboring farmers use synthetic fertilizers and pesticides and pollute water and soil. Therefore, there may be requirements related to the distance from the non-organic land plots. In addition, in many countries, organic farming may suffer due to existence and non-sustainable operation of mining industries which pollute the soil, water and air.

Institutional framework. There is a need to enhance the systems of organic certification in EaP countries. As noted above, there are only three internationally recognized organic certification bodies in the region. In addition, there is scarcity of professional institutions with a capacity to assist farmers throughout the production, post-production and marketing processes in EaP countries. There are only a few professional organizations offering services to organic farms.

In terms of public services, the ministries of agriculture or other corresponding state agencies shall strengthen their capacities to be able to design and enforce a well-enforced normative framework that would allow reducing/eliminating fraud, such as misuse in labelling, which erodes trust among consumers, media and

retail. EaP Countries do not maintain state registers of organic producers and organic certification bodies.

In the international context, there are a number of organizations that develop standards and collect and process statistical information about global organic production and markets, particularly:

- UN FAO UN Food and Agriculture Organization
- Codex Alimentarius
- IFOAM (Organic International) International Federation of Organic Agriculture Movements
- FiBL Switzerland The Research Institute of Organic Agriculture
- USDA Organic USA Department of Agriculture

International trade procedures and requirements. Organic agri-food products are subject to more regulation and controls. Tariff and non-tariff regulations, i.e. customs duties, phytosanitary and veterinary controls, other SPS and TBT measures, applied to organic products are similar to those applied in relation to conventional agri-food products.

However, organic products are subject to additional strict quality and safety standards, labelling and other marketing

Box 2. Import of Organic agri-food products to the EU

Currently there are two different systems for importing organic products into the EU:

1. Equivalent Third Countries

Countries whose system of organic production complies with the principles and production rules set out in the EU organic regulations and whose control measures are of equivalent effectiveness to those laid down in EU organic regulations. Today some products categories from 13 countries are deemed to meet these conditions: Argentina, Australia, Canada, Chile, Costa Rica, India, Israel, Japan, Republic of Korea, Switzerland, Tunisia, the United States and New Zealand. For each country, the regulation specifies which product categories, origin and production standards are accepted, as well as the competent authority and recognized control bodies in that country.

2. Control Bodies/Authorities recognized for the purpose of equivalence

For countries where there is not an equivalent organic regulation, a list of Control Bodies and Control Authorities competent to carry out controls and issue certificates for the purpose of equivalence is defined in Annex IV of Commission Regulation (EC) No 1235/2008. This system came into force on 1 July 2012 and facilitates the import of organic products from these countries. A third system based on Control Bodies/Authorities recognized for the purpose of compliance was supposed to enter into force in 2011/2012 but has been continuously postponed. Currently it is foreseen to enter into application in 2019/2020.

The import system is governed by Implementing Regulation (EC) No 1235/2008.

Source: IFOAM. <u>https://www.ifoam-eu.org/en/organic-</u> regulations/import-export-rules requirements, organic certification and inspection, not only by state agencies but also by private market participants. Thus, various markets have strong preferences for certain organic labels (e.g. the BioSuisse label in Switzerland, Soil Association in the UK, KRAV in Sweden, USDA Organic in the USA). Depending on the importing country, organic products may also be required to comply with fair trade, climate-neutral or other additional product certification. Organic markets also require the inputs used in the production to be organic as well. This includes, for instance, seeds, fertilizers, and pesticides for plant origin products, and feed and medicaments for animal origin products.

Compliance with these stringent requirements, of course, opens attractive market opportunities. However, they often may be too burdensome and costly for small- and medium-size farmers and processors.

Organic farming and sustainability. Organic agriculture is environmentally friendly, sustainable production. It also may have positive impacts on community development.

The positive impact of organic agriculture practices on air, soil, water and biodiversity offers opportunities to implement international environmental agreements such as Agenda 2030 for Sustainable Development with its 17 SDGs, the Convention on Climate Change (the Kyoto Protocol), Convention on Biological Diversity (Decision III/11 on the conservation and use of agricultural biological diversity) and national strategies to implement the Convention to Combat Desertification.

Organic agriculture, with its emphasis on local resources and local ecological knowledge, combined with the market demand for organic products, as well as the opportunity to develop agritourism, creates new cooperation and income generation opportunities for organic farmers.

5. HIGHLIGHTS ON SELECTED ISSUES

This section provides highlights on a number of issues or solutions in more detail and with reference to relevant local and/or international experiences. The selection of the issues is based on the topics discussed in the paper: some of the issues/solutions may be common among countries, or critical for further development, or can be replicated in countries, or involve innovative practical solutions, or involve cross-country cooperation opportunities.

5.1 Solutions to promote high quality (experiences of Western Balkan and EU countries)

For further development of agri-food sector in EaP countries, there is an urgent need to not only increase the productivity (or yield) of agricultural production, but also to significantly improve the quality and safety of agri-food products. High and consistent quality is a key for both domestic and international competitiveness of agri-food products.

As noted in EaP countries, the structure of farming (with prevalence of non-professional small fragmented holdings) and certain inefficiencies in market operation and infrastructure

Improving and maintaining high quality and safety of agri-food production is a critical challenge for further development and for achieving domestic and international competitiveness.

may press down the motivation among participants of a supply chain (e.g. dairy, vine and wine, fruits) to produce and buy high quality products and to invest in technologies and practices necessary for achieving high productivity and high quality in agri-food sector.

The promotion of productivity and high quality may be carried out at different levels and by using various tools, including:

- Setting out effective standards defining agri-food product quality and safety standards. Important to
 note that standards and requirements may be defined at national level by relevant central level state
 agencies as well as at sector/industry or even company level by private sector entities or industry
 unions or associations.
- Designing and implementing mechanisms to enforce and promote such standards among participants of supply chains. Such mechanisms may include, for instance: (i) paying premium for high quality; (ii) penalties and punishment for not complying with quality and safety requirements; (iii) establishing effective traceability systems for
- Establishing proper labeling requirements for marketing agri-food products, creating effective inspection and control systems in the market to protect consumer rights, and preventing violations of quality and safety requirements, and take corrective action.

Below are interesting practical experiences related to the promotion of high quality and cooperation among farmers from the milk/dairy sector in the Western Balkan countries and vine/wine sector in the EU countries.

Milk collection and quality improvement in Western Balkan countries

The experience in the milk/dairy sector in Vojvodina region of Serbia is interesting and includes: (a) proactive dairy processors, who invest in milk collection equipment, (b) effective contract relationships between farmers, milk collectors and dairy processors, (c) effective record keeping that allows ensuring traceability in the milk supply chain, which is critical for quality control, (d) an effective payment system, where the payments for the milk supplied is made by the dairy company through banks to the farmers account, based on not only the volume, but also the quality of milk (see box 3 and 4).

The experience in Montenegro is interesting in terms of quality control as well as quality-based price formation in the milk supply chain through the effective use of national dairy testing laboratory. The mandatory laboratory test results are used as a basis for identifying price premiums for higher quality of milk.

This involves also the establishment of sound criteria by the state for evaluating the quality of milk and identifying the price premium (see box 4).

It has to be noted, however, that, unlike South Caucasian countries, governments of Western Balkan countries provide state subsidies in the dairy sector, including price premium payments for higher quality milk from the state budget (see box 4). Despite this essential difference between state involvements in the dairy market as well as the difference in farming structure in the countries, the experience of peer countries of the Western Balkans provides interesting and useful highlights that EaP could consider, while designing solutions for the development of their dairy sectors.

Box 3. Milk collection practice in Serbia, Vojvodina region

Throughout decades, dairy farmers and dairy processors have developed an effective mechanism of milk collection and quality control, which works as follows.

The milk is collected by a milk collector, a person contracted and paid by the dairy processor. The collector may be a farmer. The processor provides the cooling tanks and other equipment necessary for milk collection, testing and record keeping. The processor rents the space, which usually is in the territory of the milk collector, where the milk collection facility is located. Milk collectors incur the utility costs (electricity, heating) in the milk collection facility, and minor costs for running the collection point and keeping hygiene. The milk collection point may have capacity of 1-3 tons.

The milk collector carries out the preliminary milk tests, including tests for the presence of antibiotics, water content, freshness of the milk, etc. Importantly, the collector is responsible for record keeping. Every day, each batch of milk supplied by farmers is numbered and recorded in a journal kept by the collector. The collector makes also records about the amount of collected milk in a notebook kept by farmers. This double entry record keeping allows achieving traceability of milk, which is critical for controlling the quality of milk.

The dairy processor contracts farmers to supply milk to a given milk collection point. The dairy pays farmers monthly, based on the records kept by milk collectors. The payment is made through banks on farmers' bank accounts.

The milk from the collection points is collected by dairy processor's trucks.

Then the processor carries out detailed safety and quality tests of the milk (in terms of their compliance to safety and quality requirements) after it arrives in the dairy facility. In case of detection of irregularities, the processor can find out the source of the irregularity by using the records kept by the milk collector.

Another interesting mechanism applied for quality control in the dairy sector (particularly in cheese production) is the **certification of traditional cheese production by the private sector itself**. In mountainous areas of Montenegro, there is a production of local traditional cheese - Pljevaljski cheese - a white cheese produced from unpasteurized cow milk. The cheese matures for at least three weeks until it achieves its characteristic flavor and creamy texture.

To ensure high quality of Pljevaljski cheese as well as for branding purposes, the Union of Cattle Farmers of North Montenegro has developed requirements and procedures to be followed by farmers if they wish to use the certified brand name od Pljevaljski cheese for marketing their production.⁴² Farmers who ensure compliance with those requirements and procedures receive a corresponding certificate, which, in practice, helps them to sell their product at a higher price in the market.

In terms of milk and final product safety and quality management, it is worthwhile mentioning also about the practice by some dairy producers to implement *different safety and quality standards applied in their export or domestic markets*. Thus, one of the largest dairy companies realized its product in four markets where different standards of safety and quality were applied (EU, EAEU, domestic market, organic product market). In order to optimize the logistics costs and quality control along the supply chain, the dairy processing company applied *segmentation of farmers in terms of their capability to ensure high quality of milk*. Farmers who were capable of supplying high quality milk suitable for production of dairy products destined for the EU market (where the highest safety and quality requirements were applied) received higher price. The logistics

⁴² Currently, there is an ongoing procedure for protection of geographic origin for Pljevaljski cheese.

of milk supply was organized in a manner to ensure effective and timely aggregation of the milk of the same quality from those farmers (and delivery to the production facility). The latter was important for reducing the costs of transportation as well as the costs of shifting production lines (from one standard to the other).

Box 4. Milk quality improvement measures in Montenegro (and other Western Balkans countries)

To establish an effective link between milk quality and price, several Western Balkan countries (Montenegro, Serbia, Bosnia and Herzegovina, Kosovo) use direct state support as a leverage. To understand the essence of the scheme below is the example of Montenegro discussed. The other countries also apply similar schemes.

Under this scheme applied since 2003 in Montenegro, the payment for row milk is based on such parameters as: butterfat content, protein content, Somatic Cells Count (SCC), Total bacteria count (TBC), presence of added water, lactose, total solid matter, instead of just butterfat content previously used.

There are four classes of milk, depending on its quality characteristics, and for each class of milk the government established a payment to farmers per liter of milk:

- Extra class
- 1st class
- 2nd class
- 3rd class

The analyses of these safety and quality parameters are carried out by the national Milk laboratory, which belongs to the Biotechnical Faculty in Podgorica. The lab is properly equipped with sufficient capacity for the whole sector. The dairies are obliged to implement criteria for determine raw milk price according to the mentioned parameters. The dairies are obliged to send samples of milk from each farm with which they buy milk to the National Milk Laboratory for testing two times per month. The National Milk Laboratory provides dairy companies with sterile bottles for sampling and special equipment for transporting samples.

Direct support for market milk production refers to the premium per liter of milk delivered in the amount of EUR 0.06 per liter. The requirement for premiums that supplied milk per farm is minimum 400 liters per month. Additional support in the amount of EUR 0.01 is envisaged for dairy producers who produce more than 5,000 liters of milk per month. Support is given to amounts above 5,000 liters. Furthermore, support for the quality is given in the amount of EUR 0.03 per liter of delivered cow's milk for milk with less than 100,000 bacteria's and less than 400,000 somatic cells in ml, EUR 0.01 per liter of delivered cow's milk with more than 100.000 but less than 200,000 bacteria's and less than 400,000 somatic cells in ml, EUR 0.02 per liter of delivered goat and sheep milk with less than 1.5 million microorganisms in ml.

There are other support measures aimed at improving the competitiveness of the milk production sector. The dairies are supported to implement hygienic and other standards, i.e. HACCP and GAP, up to 50% of their costs are covered from the budget.

The dairies are supported to make farm investments, i.e. up to 50% of investments costs may be covered from the budget.

Premium per head for cows and heifers for all farms rearing more than four heads, and only for the number of animals above this minimum. The criterion is fulfilled if a farm keeps this number of head for a minimum of six months. The basic premium per head for breeding cows and heifers amounts to EUR 70.

Transformation to high quality production in Languedoc-Roussillon region, France⁴³

The experience of Languedoc region of France is related to transformation from low quality bulk wine production and marketing to high quality high-end wine production as well as cooperation between grape producers.

Wine production is France's second-largest export sector, and it directly or indirectly employs more than 558,000 people. It is the agriculture-and-food sector with the largest surplus and the sector with the second-largest surplus overall, after aerospace and ahead of chemicals/perfumes. Some 30% of the wine produced in France is for export.⁴⁴

Recognized for its quality, French wine is a significant source of attractiveness, as shown by the success of the wine tourism sector. It attracts more than 10 million people a year to their regions, 39% of them are foreign tourists.

Languedoc-Roussillon is a large and diverse wine region in the south of France. It is the largest French wine producing area in terms of volume. About a quarter of all the wine-producing vines in France are located in Languedoc-Roussillon. During the 1970's the Languedoc-Roussillon was known more for overproducing cheap jug wine. In the late 1970s the Government initiated vin du pays scheme to encourage quality-conscious growers to reduce yields.



Figure 14. Languedoc-Roussillon region, France

The problem was that there were never enough quality-conscious growers. But those who were formed a new generation of elite winemakers. They combined modern technology with the best traditional practices, including the use of some ageing with new oak, to create exciting new wines in the early 1980s.

Old vineyards with Grenache variety were ripped out and replaced with high-yield grape varieties such as Carignan. As other growers observed the vastly increased prices that their pioneering neighbors were attracting, more of them switched from selling in bulk to domain-bottling. Since then, Languedoc Roussillon has slowly been recovering its status as a quality producer by reducing yields and going back to blending in more Grenache.

In twenty-year period (between mid-1980s to mid-2000s) the focus on quality have led to the reduction of wine production in Languedoc by about 45%, from 29 million hectoliters to 16 million hectoliters (or from 3.9 billion bottles to around 2.1 billion bottles of wine). However, the reduction of quantity was well compensated by the increased prices for high quality produce.

The region with 235,000 ha vineyards, has developed a very effective system of farmer cooperatives, which have established their own crushing-destemming and grape must storage facilities, as well as small wineries. There are 200 cooperatives, each of which serves, on average, 100 grape growing farms. The grape produced in the Languedoc region is processed in 3000 wineries in the region.

These small wineries have become an important tourist attraction and additional source of income for the region. Small wineries, which serve their small regions may have also significant spill-over and side effects, in

⁴³Sources:

^{- &}lt;u>http://www.diplomatie.gouv.fr/en/french-foreign-policy/economic-diplomacy-foreign-trade/facts-about-france/one-figure-one-fact/article/france-the-world-s-leading-wine</u>

 <u>http://about-france.com/wines.htm#Languedoc</u>

⁻ http://winefolly.com/review/languedoc-roussillon-wine-region/

⁻ The Sotheby's wine encyclopedia, Tom Stevenson, 5th edition, page 286

⁴⁴The main export market for French wine is the EU - 54% of wine export goes to Europe. France's main customers, in terms of value, are Britain, Germany, Belgium, the Netherlands, the United States, Russia, Canada and Japan.

terms of **tourism development**. These wineries combined with restaurants with local food, the beautiful landscape, and local traditions and culture become a very attractive destinations for tourists.

There are seven controlled geographical indication (Appellations controlées, in French) in the area, the bestknown of which is Corbières, and possibly the best average quality of which is Fitou. Wines of controlled or protected geographical indication (AOC wines⁴⁵) account for some 10% of the region's production, but the proportion is increasing as Languedoc producers concentrate more on quality, rather than quantity, and strive to reposition their wines higher up the market. Thanks to the long hours of summer sun, grapes ripen well and quickly in this region, which means that Languedoc wines are rich and full bodied, and often have high alcohol content. The wines of Roussillon are very similar, this area being particularly noted for its fortified wines such as Banyuls.

Example of cooperative rules

The cooperative has 140 members. The members meet once per month. The cooperative makes wine from grapes grown by its members and sells in the market, mostly in bulk. Wine bottling is carried out in small amounts. The cooperative sells to three main customers.

Some of the cooperative members keep their wine for own consumption.

Thanks to collaboration, farmers were able to obtain modern, sophisticated technologies and equipment, and learn effective production practices, which allows them to get the maximum from the grape they grow. With the traditional knowledge and modern technologies and practices, cooperative members are able to produce unique high-quality wines. Saint Basil della Silvi cooperative` Langedoc-Roussillion, France



The cooperative started mainly with smallholders, but with

time larger producers joined the cooperatives. The wright of

the voice of cooperative members depend on the size of the vineyard owned by the farmer:

- Small-size vineyards one person one voice
- Medium size vineyards one person four voices
- Large vineyards one person seven voices

Vineyard sizes in the cooperative range from 0.5 to 5 hectares.

Membership contract is for five years. If a member wishes to withdraw before the end of the contract, he/she can do it through the court.

The cooperative is run by five employees. During the harvest season the cooperative hires additional 20 employees. The cooperative decides the date of the harvest, and members cannot change this date. The specialist of the cooperative inspects all vineyards before the harvest. He/she provides also advice to farmers.

After sales, the cooperative pays farmers within twelve months. The last payment is made one month before the next harvest.

The cooperative, in collaboration with five other cooperatives, and with the assistance from the EU, established a wine making facility. This facility bottles 20 percent of wine produced by cooperative members, while the remaining 80 percent is sold to large winemakers.

It is interesting to note that years ago there was a case, when the cooperative was unable to sell the wine it produced. The problem was solved my making spirit out of wine.

Figure 15. Languedoc-Roussillon region, France

⁴⁵ French expression for "controlled designation of origin" - appellation d'origine contrôlée (*AOC*), is the French certification granted to certain French geographical indications for *wines*, cheeses, and other agricultural products.

5.2 Cooperation as a key to addressing the challenges of small farmers

The problems related to small size of vineyards and wine producers discussed above are not unique to the EaP region. Many countries in Europe faced very similar problems. European farmers tackled the problem through establishing effective cooperation, and developing wine making and storage infrastructure. Below is an example from Germany related to vine and wine sector.

Grape farm cooperation in Baden region, Germany

Baden region is noted for its red and white pinot wine variety. In Baden region, around 80 cooperatives make 80% of Baden wine, and 120 independent wineries market the rest.⁴⁶

About fifty years ago grape growers in Germany faced problems very similar to those faced by smallholder grape growers in EaP countries today, i.e. difficulties in selling their produce in high season, setting effective prices and





Baden: 3rd largest winemaking region
in GermanyIf the second s

Figure 16. Baden grape growing region, Germany Source: <u>http://www.winesandvines.com;</u> http://www.zoomvino.com/wineries/germany/baden

collecting payments from buyers. Smallholder grape growers had limitations in the market similar to that of the current situation in EaP countries. Grape growers had a limited ability to achieve economies of scale and limited bargaining power and skills to market their produce profitably. These problems hindered the development of the sector as a whole.

These challenges were addressed after clear understanding and acceptance of the need for producer cooperation and initiation of the formation of grape farmer cooperatives. The development of cooperation among grape growers spurred the sector development.

A key element of cooperation, which was critical for addressing the existing market imperfections, was the establishment of

grape crushing-destemming and grape must/juice storage facilities by cooperatives. In addition, many of the cooperatives established their own small wine making and bottling facilities, and sell their own produce in the market (figure 16) to serve grape farms in nearby villages. The processing of their grape production, thus helped to solve the problem of dependency on selling grape to large wineries at low prices, and to retain the additional value created through the processing to members of cooperatives. Unlike fresh grapes, the grape must/juice could be stored for much longer periods and be marketed off the harvest season.

⁴⁶ In 2014, 36 cooperatives had their own wine making facility and sales, 8 cooperatives had no wine making facility but did sell grapes; and 32 cooperatives had no wine making facility and no sales.

For further development of the dairy sector it is critical to break the vicious circle in the sector described above. The followings are key entry points for breaking the vicious circle, having in mind the circumstances in EaP countries dairy sectors and markets:

- Design and practical implementation of effective demonstration-solutions toward productivity enhancement and supply chain management, and demonstration of positive effects of these solutions to dairy farmers and dairy processors to promote of good farming practices, high quality milk production and its use in dairy production. This should be done through establishing *tailor made dairy hub solutions* in countries in cooperation with selected enthusiastic dairy processors and farmers, who are interested in increasing productivity and improving quality. These may be, for instance, dairy processors involved in export activities and/or processors who intend expansion of their production,
- 2. but face a challenge of insufficiency and low quality of milk supply.
- 3. *Educate and raise awareness among businesses* about the medium- to long-run risks of not investing in quality. The competition in domestic and export (the Russian) markets will get more and more intense and, thus, ensuring higher quality with low cost will become critical for competitiveness. Businesses which do not invest in quality and knowledge today will lose their competitiveness markets in the future.
- 4. *Educate and raise awareness among consumers* about the importance of using safe and good quality dairy products and the possible negative effects of low quality and unsafe dairy products. This will increase the demand for quality dairy products and quality sensitivity in the market, i.e. dairy producers will be able to charge price premium for higher quality, sufficient for covering costs of buying high quality milk.

It may be worthwhile considering the establishment of **dairy hub solutions** in bordering regions of countries (e.g. Armenia and Georgia, Georgia and Azerbaijan), where dairy production is an important economic activity. It can provide an effective platform for promotion and implementation of cross-country sourcing and investment solutions. It can be particularly effective in addressing the challenges described above, i.e. (i) enhancement of milk production and supply, in relation to quality, quantity and seasonality of milk supply; and (ii) improvement of fodder/feed production and supply; (iii) improvement of the competitiveness of dairy products (cheeses) in international and domestic markets.

Box 5. Dairy hubs - international experience

Dairy Hub programs have been implemented in various countries of the world, e.g. Russia, Nicaragua, Bangladesh, India, Kenya, Sri Lanka, etc.

In Bangladesh, where traditional smallholder farmers with little access to technical services or the commercial market prevail, the dairy hub concept has been introduced and implemented in close cooperation with local dairy processing company PRAN RFL GROUP, since 2010. Under the project, milk yield per cow increased from 4.75 liter/day to 9.9 liter/day, i.e. more than doubled (increased by 110%) during October, 2010-December, 2014, in farms involved in the project. At the same time, milk collection at the dairy hub per day increased from 2000 liters to 35,700 liters, while monthly farm income increased by 145%. There has been a ten-fold increase in the number of farmers who moved from producing milk for family consumption to commercial milk production. In December 2014, the number of dairy farms joining the dairy hub initiative was 1794 farms.

In Nicaragua, the project started in October 2012, with 22 farmers (one cooperative). It was implemented as a joint venture between the dairy company CENTROLAC, beef processor SAN MARTIN, and VENTURE DAIRY, who established together the Cattle Hub/Nicaragua. In one and half year time, after the beginning of the project, the average productivity in dairy farms involved in the project more than doubled, and increased from 3.5 liter per cow-day to 7.9 liter per cow-day. Calves were weaned at 2 months of age, rather than nursing the cows for 8 months (as it was before the project). The number of farms benefiting from services of the Cattle Hub increased to 160 smallholder farms. The project was supported by professionals from De Laval and Tetra Pak.

The cross-country coordination via simultaneous and coordinated promotion and establishment of dairy hubs in countries would multiply the positive effects of dairy hub solutions. This approach would be beneficial in many respects and would help to achieve important synergies and cost savings. Particularly, simultaneous and coordinated design and implementation of dairy hub solutions would:

- allow (i) identifying concrete options for cross-border sourcing and investment, (ii) highlighting the logistical, administrative and/or other issues that need to be addressed for cross border private sector partnership; (iii) building confidence and trust among agribusinesses in establishing partnerships and investing in the other country;
- create broader opportunities for agribusinesses on both sides of the border in terms of: (i) broadening the spectrum of possible business models options for cooperation and better utilization of economies of scale; (ii) alleviating seasonality issues in forage and milk supply; (iii) the utilization of peer competition effect;
- play a critical facilitating role in:
 - the process of establishing effective import/export/transit procedures to facilitate crossborder trade between Armenia and Georgia as well as with the rest of the world (specifically the EAEU, and the EU);
 - improvement of cooperation and coordination of veterinary services (and fight against diseases) in neighboring countries;
 - the process of harmonization of milk and cheese safety and quality standards; as well as of product/production certification and trade procedures;
- allow cost savings in terms of capacity building, and design and operation of model dairy hub solutions;
- help to achieve more effective learning through comparing the experience of the two countries, which is and identifying better solutions.

The lack of knowledge about effective and sustainable technologies and practices across virtually all the stages of agri-food supply chains, especially among small and medium size entities, is a binding constraint limiting the development of agri-food sector in the EaP countries. Despite, the improvements through efforts of governments and international donor community, the knowledge and skills gap still remains problematic.

The underlying reasons for this persistent lack of knowledge are related to the structure and composition of agriculture and farming, which goes back to Soviet history and the policies carried out by the countries after the collapse of the Soviet Union. During Soviet Kolkhoz and Sovkhoz system there were, in effect, no professional farmers, but peasants who were employees of Kolkhoz and Sovkhoz farms guided and instructed by agronomists and economists. Agricultural machinery also was operated and managed by Kolkhoz and Sovkhoz specialists. After the collapse of the system in most of the EaP countries the land was transferred to a large number of smallholder peasants who, in effect, had no or very little knowledge and skills in farm operation. At the same time, the services of agronomists, economists, mechanists, chemists, and etc. became scarce and

Box 6. Armenia - effort to improve the quality of cattle breeds

For purposes of improving cattle genetics, the Government of Armenia supported the import of high quality pure breeds within the framework of Program of the Develeopment of Cattle Breeding. In addition, a number of projects toward the improvement of cattle genetics and promotion of artificial insemination have been financed and implemented by international donor organizations.

Under the Program of the Develeopment of Cattle Breeding*, the Government (with donor assistance) imported pure breeds and sold them to government-selected private farms. During 2007-2015, the Government imported over 2,500 high quality pedigree heifers (Holstein, Simmental, Swiss) and sold to over 70 private entities. This was expected to significantly improve the overall herd quality in the country. However, the effects of the program have been limited so far due to a number of reasons:

- To some extent, the government involvementt in trade in pedigree animals discouraged the active engagement of private holdings in similar activities. There was still low availability and accessibility of quality animals for private entities.
- small- and medium-size farmers were not ensured easy access to crossbreeding their animals with pure breeds to improve the genetic characteristics of their animals.
- due to the lack of animal husbandry knowledge and skills among farmers, animals performed much worse than their potential, and many of the imported animals and those born as result og cross-breeding coud not survive (due to shock from poor feeding, housing conditions, and treatment).
- * Government Decision No 336-A of 22 March, 2007

outdated. The very large number of stallholders makes the transfer of knowledge and skills a practically very difficult task.

The lack of knowledge leads to ineffective and inefficient functioning of agri-food supply chains, low quality of products and services, negative impact on the environment, poor marketing, and unsustainable strategies. Importantly, the knowledge and skills also inhibit or reduce the potential impact of reform efforts by governments and international donor community. An illustrative case, in this regard, was seen in Armenia, where the expected positive impact of the government program (to improve the genetic quality of cows through importation of high-quality pedigree heifers) was weakened due to, among others, the inability of farmer community to treat properly high-quality animals (see box 6).

The table 30 below lists knowledge and skills that need to be developed across various stages of the agri-food supply chains.

Table 30. Knowledge requirements across agri-food supply chains

Plant production	Animal husbandry	Food processing
 Soil preparation and cultivation Orchard management Variety selection and management Plant/canopy management Crop rotation Use of fertilizers and pesticides Farm management and production technologies Harvesting and post-harvest treatment Good Agricultural Practice (GAP) 	 Animal care & treatment Good feeding practices Herd management Farm management Good Hygiene Practices Artificial Insemination Good grazing practices Pasture management Milking practices Milk storage and transport Good Agricultural Practice (GAP) 	 Good Manufacturing Practice (GMF) Good Hygiene Practices (GHP) HACCP ISO quality management standards Financial management
	Cross-cutting knowledge and skills	
	 Product marketing (export) Product branding Financial literacy/management Sustainable farming and manufacturing practices 	

5.5 Market diversification and expansion

Market diversification is important for agri-food sectors of the EaP countries not only to minimize the risks of concentration and dependency on one large market (the Russian market), but also for capturing opportunities of higher profit margins in new and more lucrative markets. The market diversification also stimulates firms to improve their competitiveness in terms of costs and quality.

In the last two decades EaP countries experienced the negative consequences of high dependency on one large market.

Effective market diversification and expansion requires a systemic approach and concerted action by multiple public and private stakeholders. The necessary steps and measures shall be taken, among others, along the following lines:

- market research and determination of potential target markets, potential export partners
- clarification of official procedures of exporting to the target country, e.g. the need to obtaining special permission
- identification of the **formal and informal** quality and safety requirements applied (by the official authorities and/or by industries). Note that often the private sector sets its own standards for quality and safety to be followed, which may be stricter than the requirements applied by state authorities
- if necessary, taking measures to ensure products' compliance with quality and safety requirements of the export market (this may include investments in new technologies and practices)
- if necessary, expansion of the production volume to meet the market demand (this may include investments in facilities, machinery, equipment)
- enhance competitiveness, including: (i) ensuring high quality of the product; (ii) if necessary, improvement of production processes to cut costs and achieve a competitive price
- promotion and marketing efforts (including advertisement)
- establish and operate effective export logistics and distribution channels.

Ability to comply with export market requirements: The ability of the businesses, especially SMEs to comply with the formal and informal quality and safety requirements in export markets. Responding to the new market demands, particularly to premium markets, will require the exporters' ability to comply with the importers' SPS and quality requirements, and further investments, which will be conditioned to the SMEs access to financing. The extent to which businesses can comply with such requirements will be critical in the ability of taking advantage of new export opportunities.

To increase product competitiveness and enter certain markets (in particular, the EU and EAEU markets where strict food quality and safety standards apply, and food producers are required to apply HACCP),⁴⁷ there is a need to enhance productivity and to improve product safety and quality indicators. This can be achieved through:

- i. the introduction and application of GAP, GHP, GMP, HACCP, standards of Codex Alimentarius,⁴⁸ and other international standards, requirements and systems; and
- ii. enhancing human capacities necessary for the effective implementation of those relevant practices and standards.

 ⁴⁷ "Comparative Analysis of Certain Requirements of Food Legislation in the European Union and the Customs Union of Russia, Belarus, and Kazakhstan." IFC. 2015. World Bank Group, Washington, DC. <u>https://openknowledge.worldbank.org/handle/10986/22385</u>
 ⁴⁸ Official website of Codex Alimentarius: <u>http://www.fao.org/fao-who-codexalimentarius/standards/list-of-standards/en/</u>.

Compliance costs: While entering foreign markets, the cost of compliance relative to the value of production may be high, businesses may choose not to participate in the new export opportunities. This relates particularly to compliance to market requirements, including (i) official quality and safety standards (see more in the section 5.6 – Market requirements – quality and safety standards); and (ii) market requirements set out by the private sector and consumers. This effect can be mitigated, for instance, by promoting SMEs to participate in exporter associations.

It is also important that public authorities undertake necessary official procedures for ensuring access to foreign markets. This may require negotiating simplified import/export procedures, agreeing mutual recognition of certificates of food safety, accreditation and certification of testing laboratories, etc. (see box 7).

Box 7. Simplifying procedures of exporting Georgian wine to Japan

Georgia undertook targeted measures in order to simplify procedures for importing Georgian wine to Japan. Four Georgian laboratories have been added to the list of foreign laboratories registered in Japan, which will significantly simplify Georgian wine import procedures in Japan. Prior to making this decision, additional customs and inspection of the wine exported from Georgia to Japan increased compliance costs and caused procedural difficulties, which in turn, resulted in a high price of the wine.

In order to resolve these problems, the National Wine Agency consulted with the Embassy of Japan, which requested a suggested list of Georgian laboratories, that they thought appropriate to register in Japan. Furthermore, the Georgian diplomatic missions held discussions with the representatives from Ministry of Health, Labor and Welfare of Japan to officially register these laboratories with appropriate agencies. Following months of negotiations about specifications and technical details, the Japanese side registered the following laboratories: Wine Laboratory LTD, Norm LTD, MultiTest LLC, and Expertise + LLC.

Choice of product type: For successful entry into new markets, in addition to quality and price competitiveness, the right choice of product type is essential for not only marketing, but also for logistics purposes. For instance, factors that significantly affect the cycle of cheese production, and the timing for logistical arrangements are related to types of cheeses in terms of the milk used, the renneting and fermentation processes, and time required for cheese maturation. Cheese maturation time may range up to six months. For instance, maturation of Armenian Lori cheese (a type of white salty cheese) requires two months, Dutch cheeses like Gouda and Cheddar – two and half month, and firm cheeses like Emmental cheese – six months.

In addition to classification based on the type of milk from which they are made (cow, sheep, goat milk), cheeses can be classified based on renneting/fermentation process (renneting and lactic acid fermentation). Cheeses with renneting represent the largest class of cheeses; they include firm, semi-firm, soft and salty cheeses. The production process is affected also by the level of processing of milk used for production, i.e. if cheeses are from raw or pasteurized milk. Cheeses made from raw milk shall undergo maturation process for at least two months, before being offered for sale in the market. Non-mature cheeses should be consumed within few days, while mature cheeses can be kept for weeks.

As noted earlier, for enhancing the quality and safety of agri-food products as well as production processes, it is of high importance to adopt and implement effective standards and regulations. In addition to official standards adopted by public authorities, often the private sector sets its own standards for quality and safety in the market, which may be stricter than official requirements.

In order to improve intra- and inter-EaP trade and expand export markets in Europe, Asia and the Middle East, the EaP businesses and governments shall consider adopting implementing regulations and making investments to promote the implementation of sophisticated safety and quality management standards and practices such as

- GAP Good Agricultural Practice,
- GHP Good Hygiene Practice

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- GMP Good Manufacturing Practice,
- HACCP Hazard Analysis and Critical Control Point system
- Codex Alimentarius standards
- EU requirements and the standards.

An essential factor affecting the design,

Box 8. Adopting GAP and Halal practices at MHP holding in Ukraine to expand exports

MHP is a leading poultry producer in Ukraine that accounts for more than half of total chicken production in the country. Over 80 percent of MHP's chicken sales are domestic, but the company is expanding internationally.

In 2013 the company received a \$50 million loan from the International Finance Corporation (IFC) to expand its production and diversify exports into European, Middle East markets, perhaps beyond.

IFC helped the fast-growing company build the greenest farming operation in Ukraine, and introduce high standards of production to meet market requirements in potential markets, particularly the EU market.

To achieve these objectives, MHP, with the support of IFC improved resource efficiency and certified its farms to Good Agricultural Practice (Global GAP), and to inspire more environmentally-friendly farming operations in Ukraine.

The adoption of the standards and good practices allowed MHP to become the first Ukrainian poultry producer to tap European markets. In 2015, exports to EU countries increased by 65% compared to the previous year, and amounted to 27,285 t.

Furthermore, to open distribution warehouses in different parts of the world: UAE, Egypt, others, the company has Halalcertified some of its production facilities.

adoption and implementation of standards and technical regulations are the commitments of EaP countries undertaken within the framework of regional cooperation and/or integration agreements. EaP countries may benefit from the fact that some of them are members (Armenia, Belarus) of the EAEU, while others (Georgia, Moldova, and Ukraine) have Association Agreements (AA) with the EU, i.e. Armenia and Belarus are committed to harmonizing their quality and safety standards, as well as their conformity assessment procedures to those of the EAEU, while Georgia, Moldova, and Ukraine are in the process of harmonization with the corresponding EU requirements. Although this may create certain difficulties for EaP intra-regional trade, countries may learn from each other's experience of complying with strict market requirements, and adoption and enforcement of standards. Armenia's situation is especially interesting, having in mind that while being an EAEU member, Armenia also signed a Comprehensive and Enhanced Partnership Agreement (CEPA) with the EU and undertook regulatory harmonization commitments under CEPA. Azerbaijan is neither a member of EAEU nor has AA with the EU, and can benefit and learn from the two groups of countries.

Regional arrangements

Food safety and quality regulations and standards are critical for achieving efficiency in production as well as for effective competition and marketing of agri-food products domestically and in international markets.

There are similarities as well as differences between EaP countries in relation to policies and practices related to food safety and quality management. The difference is mainly due to regional agreements to which EaP countries are members, particularly:

- Armenia, Belarus (EAEU members): the legislation is in line with the main principles of the WTO SPS Agreement and EU best practices (e.g. HACCP, risk analysis, etc.) and at the same time adheres to the EAEU-level system of technical regulations and SPS, which is based on so-called "GOST" "SanPiN", and "SNiP standards, etc.⁴⁹ Many of these standards are not harmonized with Codex⁵⁰ and Armenian and Belarusian law do not clearly set out the requirement to "base national food standards on international standards" as is required by the WTO SPS Agreement. This issue is further compounded by the fact that the law does not set out provisions on "mutual recognition" and "equivalence" for conformity assessment procedures, which impedes a comparison between the Armenian, Belarusian standards currently in force and those in non-EAEU countries. Important institutional issues, such as the division between risk management and risk assessment, are also not sufficiently elaborated in the law, and current inspection processes may be duplicative and/or ineffective.⁵¹
- Georgia, Moldova, Ukraine (countries that signed DCFTAs with the EU). These countries committed to approximate their legislation and standards with those of the EU in terms of EU best practices (HACCP, risk analysis, data management, etc.). The legislation in the countries contains principles of the WTO SPS Agreement and EU best practices (e.g., HACCP, risk analysis, etc.) and they declared a removal of the Soviet-based GOST system. However, the process of approximation of the legislation with the EU and international standards will take time. The approximation of the national legislation with the WTO and the EU principles and best practices gained new impetus after the conclusion of the EU–Georgia DCFTA in 2014.⁵² Legislative approximation programs with 272 normative acts of the EU in the spheres of food safety, animal health and plant protection are intended to take place between 2015 and 2027.

In order to improve intra- and inter-EaP trade and expand export markets in Europe, Asia and the Middle East, the EaP businesses and governments shall consider adopting implementing regulations and making investments to promote the implementation of sophisticated safety and quality management standards and practices such as HACCP, GAP (Good Agricultural Practice), GMP (Good Manufacturing Practice), Codex Alimentarius standards, etc.

Highlights on regulations and standards

EU standards. Having in mind the importance of the EU market for EaP countries, below is a list of selected EU regulations/standards which define the quality and safety requirements for agri-food products discussed in this paper. The EU requirements in terms of practices to be followed are often more detailed, stricter and foresee higher precision in terms of product safety, description of practices and sequence of actions, and the compliance to requirements.

Wine requirements.

- EU Regulation 606/2009, on the categories of grapevine products, oenological practices and the applicable restrictions
- EU Regulation 555/2008, on implementing the common organization of the market in wine as regards support programs, trade with third countries, production potential and on controls in the wine sector

⁴⁹ The EAEU system is based on Soviet standards and essentially relies on end product certification. It fundamentally differs from the approach of the WTO SPS Agreement and EU New Global Approach, which is based on preventive measures and process-based standards, such as risk analysis, HACCP, traceability, etc.

⁵⁰ According to the former Chief of Russian Rosselkhoznadzor Agency Mr. Onishenko, only about 40% of EAEU food standards are compliant with Codex. See "The harmonization of Eurasian Economic Union sanitary and phytosanitary measures and technical regulation for agricultural goods with the provisions of the WTO for the international trade development" (<u>http://www.fao.org/fileadmin/user_upload/reu/europe/documents/PS2015/Djamankulov_en.pdf</u>).

⁵¹ The SPS Agreement requires that SPS measures are based on "scientific evidence", but this first requires an independent risk assessment. Different methodologies are required for different product groups, and methodologies must be based on standards, guidelines and recommendations of Codex, OIE and IPPC. With no methodologies for risk assessment elaborated in the law or regulations, the "scientific evidence" principle would likely not be satisfied.

⁵² WTO Trade Policy Review for Georgia (2016) (WT/TPR/S/328/Rev.1), paras. 3.135-3.151.

- Milk and milk products
 - Council Directive 2002/99/EC forms the legal basis for all animal health rules governing the production, processing, distribution and introduction of products of animal origin for human consumption
 - EU Regulation 178/2002, Regulation 852/2004, Regulation 853/2004, Regulation 854/2004 and Regulation 882/2004 form the legal base for the public health rules for trade and introduction into the EU.
- Fruits and vegetable standards:
 - Regulation 543/2011, laying down detailed rules for the application of Council Regulation 1234/2007 in respect of the fruit and vegetables and processed fruit and vegetables sectors.⁵³ This regulation sets out market standards for certain fruits and vegetables, including apples, citrus fruit, kiwi fruit, lettuce, peaches and nectarines, pears, strawberries, sweet peppers, table grapes, tomatoes. See annex 6.
 - EU 1121/2008, establishing the standard import values for determining the entry price of certain fruit and vegetables
 - UNECE fresh fruits and vegetables standards⁵⁴.
- Organic production requirements: EU requirements in relation to organic production and labelling are defined in the EU Regulation 834/2007.⁵⁵

Organic agri-food requirements. Organic products are subject to more regulations, control and inspection. In addition to all the inspections and controls applied to conventional agri-food products, organic products shall undergo a special organic certification and controls.

Exported products have to be certified to the standards of the importing country, for instance,

- Codex Alimentarius Guidelines for the Production, Processing, Labelling and Marketing of Organically Produced Foods
- EU requirements in relation to organic production and labelling are defined in the EU Regulation 834/2007⁵⁶ and the EU Regulation 1235/2008⁵⁷
- private standards (e.g. Bio Suisse, Bioland or Naturland) for the EU and Switzerland,
- US National Organic Program for the US and elsewhere
- USDA Organic certification requirements.

There is more discussion on organic agri-food standards and certification process under the Section 4.4 – Organic Supply Chains.

Halal certification. As discussed above, Middle Eastern and other Muslim countries are becoming an important market for agri-food export from EaP countries. Therefore, it is important for countries and private businesses to introduce and apply Halal standards in their production process.

Halal certificate is a document that guarantees that products and services aimed at the Muslim population meet the requirements of Islamic law and therefore are suitable for consumption in both Muslim-majority countries and in Western countries where there are significant population group who practice Islam (France, Germany, United Kingdom, Spain).

⁵³ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011R0543&from=en

⁵⁴ UNECE – UN Economic Commission for Europe. <u>http://www.unece.org/trade/agr/standard/fresh/ffv-standardse.html</u>

⁵⁵ COUNCIL REGULATION (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91.

⁵⁶ COUNCIL REGULATION (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91.

⁵⁷ COUNCIL REGULATION (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91

Halal certification is a process which ensures the features and quality of the products according to the rules established by the Islamic Council that allow the use of the mark Halal. It is mainly applied to meat products and other food products such as milk, canned food and additives. Specifically, for meat products Halal certifies that the animals were slaughtered in a single cut, thoroughly bled, and their meat have not been in contact with animals slaughtered otherwise and, especially, with pork. Products that are Halal certified are often marked with a Halal symbol, or simply the letter M (as the letter K is used to identify kosher products for Jewish population). See more details in FAO Guidelines for use of the term Halal http://www.fao.org/3/y2770e/y2770e08.htm

5.7 Agri-food supply chains and SDGs

The agri-food sector has multiple impacts on all the three aspects of sustainable development – economic, environmental, and social. It is directly and indirectly linked to the 2030 Agenda for Sustainable Development (the 2030 Agenda) and its 17 Sustainable Development Goals (see box 9). The 17 Sustainable Development Goals are listed below:

17 Sustainable Development Goals (SDGs)

- o SDG 1: End poverty in all its forms everywhere
- **SDG 2: End hunger,** achieve food security and improved nutrition and promote sustainable agriculture)
- o SDG3: Good health and well-being (Ensure healthy lives and promote well-being for all)
- SDG 4: Quality education (Ensure inclusive and equitable quality education)
- SDG 5: Gender equality (Achieve gender equality and empower all women and girls)
- **SDG 6: Clean water and sanitation** (Ensure availability and sustainable management of water and sanitation for all)
- SDG 7: Affordable and clean energy (Ensure access to affordable, reliable, sustainable and modern energy for all)
- **SDG 8: Decent work and economic growth** (Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all)
- **SDG 9: Industry, innovation and infrastructure** (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation)
- o SDG 10: Reduced inequalities (Reduce inequality within and among countries)
- **SDG 11:** Sustainable cities and communities (Make cities and human settlements inclusive, safe, resilient and sustainable)
- SDG12: Sustainable consumption and production (Ensure sustainable consumption and production patterns)
- o SDG 13: Climate action (Take urgent action to combat climate change and its impacts)
- **SDG 14:** Life below water (Conserve and sustainably use the oceans, seas and marine resources for sustainable development)
- SDG 15: Life on land (Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss)
- SDG 16: Peace, justice and strong institutions (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels)
- **SDG 17: Partnerships for the goals** (Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development).

Agriculture and food production activities are related to many SDGs. At the same time, SDG implementation is affected by government and municipality policies aimed at improving agriculture productivity to ensure availability and accessibility of food for all; promoting modernization and sustainable technologies in agriculture; enhancing administrative capacities in policy making as well as knowledge among farmers. The SDGs affected by agriculture and food production activities are related including but not limited to:

- SDG 2 End hunger
- SDG 5 Gender equality
- SDG 8 Decent work and economic growth
- SDG 11 Sustainable cities and communities

- SDG 12 Sustainable production and consumption
- **SDG 15** Protect, restore and promote sustainable terrestrial ecosystems. Sustainable agriculture plays an important role also in ecosystems protection.

Governments of EaP countries have undertaken various initiatives to promote sustainable farming practices, though sustainable agricultural practices are not yet widely applied in the EaP countries. Organic agriculture is getting more and more popular. Examples of such initiatives include leasing or low interest rate programs, where farmers could lease/buy agricultural machinery and equipment with down payment and interest rates significantly lower than in the market. There are specially designated programs to support the use of environmentally friendly technology such as drip irrigation.

Engagement of communities and municipalities in SDG implementation

The effective engagement of local communities, the private sector and households in the SDG implementation is of utmost importance for their realization. To effectively engage local communities in the implementation of SDG targets, it is of high importance to enhance local community institutional and human capacities and empower them to be more proactive.

The engagement of municipalities can be enabled through effective translation of national and international development strategies and goals (including SDGs) into the local realities and context. It. is crucially important that communities/municipalities can see their link to global activities and goals. They need to know and understand clearly how their local activities, projects or behaviors can contribute to those goals, and, similarly, how their communities will concretely benefit from the attainment of SDGs. In this regard, due consideration shall be given to "localization" and "visualization" of SDGs and their relevance to community realities.

Active municipal engagement is required for reliable and disaggregated data collection and monitoring activities (SDG 17.18). Many SDG indicators can effectively be collected and analyzed at municipality level. For effective "data engagement" of municipalities there is a need: (i) to make necessary legal institutional arrangements

Box 9. Agenda 2030 for Sustainable Development

The 2030 Agenda for Sustainable Development (the 2030 Agenda) is a global plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. It was adopted by Heads of State and Government and High Representatives, at the United Nations' Headquarters in New York in September 2015.

The Sustainable Development Goals (SDGs) are part of the 2030 Agenda and comprise a collection of 17 global goals and 169 targets, adopted by UN's 193-member states, including Armenia and Georgia. These goals build on the Millennium Development Goals and set out to complete what they did not achieve.

The 2030 Agenda is a blueprint to achieve a better and more sustainable future for all. They SDGs address global challenges, including but not limited to poverty, inequality, climate change, environmental degradation, prosperity, and peace and justice.

The SDGs are integrated and indivisible and balance the three dimensions of sustainable development:

- economic,
- social, and
- environmental.

The Goals and targets set out to stimulate action in areas of critical importance for humanity and the planet, namely:

"People

We are determined to end poverty and hunger, in all their forms and dimensions, and to ensure that all human beings can fulfil their potential in dignity and equality and in a healthy environment.

Planet

We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.

Prosperity

We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.

Peace

We are determined to foster peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.

Partnership

We are determined to mobilize the means required to implement this Agenda through a revitalised Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focussed in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.

The interlinkages and integrated nature of the Sustainable Development Goals are of crucial importance in ensuring that the purpose of the new Agenda is realised. If we realize our ambitions across the full extent of the Agenda, the lives of all will be profoundly improved and our world will be transformed for the better." to establish administrative registers at community level, (ii) design and adopt data items (based on SDG indicators) that are simple, user friendly, measurable and "not-difficult-to-collect" at community level. It is important to also introduce at community level the Human Rights Based Approach to Data (HRBAD), that draws from internationally agreed principles for statistics and echoes the call for a data revolution for sustainable development, which upholds human rights and is based on the principles of participation, transparency, privacy and accountability.

Water use efficiency (SDG targets 6.4)

Despite the reduction of water withdrawal, Armenia and Azerbaijan still remains waterstressed countries. The largest share of water withdrawal is attributed to agriculture. Agricultural water withdrawal comprises more than 84 and 72 percent of total water withdrawal in Armenia and Azerbaijan respectively.⁵⁸ Agriculture is a major water user also in Georgia, with 58.2 percent of total water withdrawal.

In Armenia, due to various inefficiencies in the irrigation infrastructure as well as in the management of the irrigation water, water losses in the irrigation system are significant. More than half of irrigation water is lost and does not reach the farmer and the field (irrigation water loss was 59 percent in 2012). The challenge of water use efficiency is related also to aquaculture - one of the dynamically developing and export-oriented sectors in Armenia – which, however, exploits significant amounts of underground water

Box 10. Water stress

The level of water stress is about freshwater withdrawal as a proportion of available freshwater resources - the ratio between total freshwater withdrawn by major economic sectors and total renewable freshwater resources, after taking into account environmental water requirements. This indicator is also known as water withdrawal intensity and will measure progress towards Sustainable Development Goal (SDG) Target 6.4. According to FAO methodology, countries are defined as water-stressed if they withdraw more than 25 percent of their renewable freshwater resources, as approaching physical water scarcity when more than 60 percent is withdrawn, and as facing severe physical water scarcity when more than 75 percent is withdrawn. In 2017,

Armenia withdrew 36.6 % of its total freshwater resources, and the water stress in Armenia was 57.43%.

Source:

http://www.fao.org/nr/water/aquastat/didyouknow/index2.stm

resources. Most of the fish farms in the country (which are located in Ararat valley) still use precious underground water with a single-pass system, where water is not recycled and is used only once. Aquaculture facilities consume precious clean water, and often there is competition and even conflict for water between aquaculture, agriculture and rural communities.

	Armenia	Azerbaijan	Belarus	Georgia	Moldova	Ukraine
Total water withdrawal per capita (m3/inhab/year)	971.7	1,300	153.4	443.8	257.9	223
Agricultural water withdrawal as % of total water withdrawal	83.6	72.54	29.48	58.19	3.38	32.1
Industrial water withdrawal as % of total water withdrawal	5.3	23.9	31.54	22.06	82.86	43.33
Municipal water withdrawal as % of total water withdrawal	11.1	3.5	38.98	19.75	13.7	24.57
MDG 7.5. Freshwater withdrawal as % of total renewable water resources (%)	36.65	36.8	2.5	2.87	8.68	5.59
Agricultural water withdrawal as % of total renewable water resources (%)	30.63	26.7	0.7	1.66	0.3	1.8
SDG 6.4.2. Water Stress (%)	57.43	56.4	4.78	5.94	15.82	12.69

Table 31 Water use in FaB countries⁵⁹

⁵⁸ Source: FAO AQUASTAT: <u>http://www.fao.org/nr/water/aquastat/data/query/results.html</u>

⁵⁹ Source: FAO AQUASTAT: http://www.fao.org/nr/water/aquastat/data/query/results.html

Municipalities may help to reduce water losses and water stress, through improvement of physical irrigation infrastructures. However, for further addressing and effectively tackling this challenge, it is vital at this stage to raise awareness about and promote wider use of efficient water technologies and practices such as drip irrigation in crop production, and water recycling technologies in aquaculture. The promotion of such technologies requires and also provides opportunities for multi-stakeholder cooperation and public-private partnership. Innovative approaches should be encouraged through policy and other incentives at national and municipal levels. In addition, education, training and awareness raising about water efficiency, freshwater ecosystems and ambient water quality among all participants and stakeholders play an important role in aching SDG 6.

For estimating the potential impact of drip irrigation, the results of experiment/study carried out in India is taken as a basis. Thus, based on the experience in India, besides savings in water (40%) and electricity (6,290 kwh/ha), the drip irrigation reduced the use of other inputs, e.g. fertilizers (31%), and enhanced crop yield by 52%. On the whole, its application in brinjal (eggplant) resulted in 54% higher net returns over the conventional method of irrigation. Benefit-cost ratio in drip irrigation was quite attractive making it a viable option for sustainable management of irrigation water.⁶⁰

Food loss and waste across the supply chain (SDG target 12.3)

Food waste and loss is a serious challenge in many countries, including EaP countries. Food waste and loss may be caused by various reasons and may represent a significant share of production. To illustrate, a report on food loss and waste in Armenia conducted in 2014 revealed that the cereals sector experiences around 15 percent losses, while losses in the roots and tubers sector were estimated at 19 percent. The lowest losses were reported in the fruit and vegetable sector. It was also highlighted that the cold chains are rather weak and contribute to food losses due to produce spoilage.⁶¹

	Ag. production	Post-harvest handling & storage	Processing and packaging	Distribution	Consumption
Cereals	15%	5%	6%	7%	5%
Roots and tubers	19%	6%	0%	3%	1%
Fruit and vegetables	6%	4%	3%	4%	3%
Meat	1%	0.1%	1%	1%	1%
Fish and seafood	20%	0.1%	0.2%	3%	1%
Milk	2%	0.1%	4%	2%	1%
Eggs	23%	1%	0.1%	0.1%	0.1%

Table 32. Food loss and waste (FLW) percentages along stages of the supply chain, Armenia, 2013

The main causes of food waste and loss were identified as outdated storage facilities and access to refrigerated storage and cold storage. Farmers do not have sufficient funds to keep produce in commercial storage facilities. Instead, they often use poor storage techniques and insufficient know-how. Knowledge on post-harvest handling and treatment of agricultural products was also estimated as contributing to the situation with food losses. Some quality issues also have been highlighted as contributing to the rejection of produce by supermarkets.

⁶⁰ "An assessment of the economic impact of drip irrigation in vegetable production in India", 2018, A Narayanamoorthya, M Bhattaraib and P. Jothic, Agricultural Economics Research Review 2018, 31 (1), 105-112. The paper, using survey data from Indian state of Tamil Nadu, assessed the potential benefits of drip irrigation in brinjal, a widely cultivated and consumed vegetable in the country. The findings indicate that besides savings in water (40%) and electricity (629 kwh/acre), the drip irrigation reduces use of other inputs, e.g. fertilizers (31%), and enhances crop yield by 52%. On the whole, its application in brinjal results in 54% higher net returns over the conventional method of irrigation. Benefit-cost ratio in drip irrigation is quite attractive making it a viable option for sustainable management of irrigation water.

⁶¹ Source: <u>http://www.fao.org/3/a-au842e.pdf</u>

As an average low-income country, FLW in Armenia is much higher at the beginning of the supply chain (agricultural production stage) than at the end (in distribution or consumption steps).

Main suggestions and recommendations on FLW reduction are:

- Educating and providing technical assistance to farmers in the process of harvesting;
- Training all supply chain actors to implement post-harvest handling and storage procedures and create infrastructure for delivering fresh food to consumers;
- Improving processing and packaging procedures and technologies;
- Advocating the creation of farmers' cooperatives;
- Developing or changing traditional marketing systems;
- Providing cold storage facilities and improving hygiene conditions at the distribution stage, especially on open markets;
- Improving storage conditions and promoting food purchase planning at household level

Market operation and sustainable development

Agricultural and food production may suffer from inefficiencies in the agricultural production and in markets. Low level of mechanization of agriculture as well as limited use of modern technologies and practices result in low labor productivity and low incomes of farmers, which leads to limited opportunities to ensure a satisfactory quality of life through the farming and high levels of poverty.

The prevalence of fragmented smallholders in agriculture, who more often than not are non-professional and non-commercial, creates additional logistical complexities, increases the transportation costs and, thus, the overall cost of production. Small farmers have a weak bargaining power in the market and are highly dependent on market prices dictated by medium and large processors. Primary producer-processor relationships are usually not contract-based, due to which farmers often face problems related to collection of payment for milk from middlemen or processors. This latter issue is a very acute factor that negatively affects the functioning of the milk market today.

The ineffective price formation process in agricultural markets leads to a distorted quality-price relationship, which discourages farmers from improving the quality (as well as processors from seeking high quality primary products and producing high quality products). As a result, food products are often of low quality and are thus priced less reducing competitiveness of processors and their margins.

In terms of gender involvement, it is important to note that a large proportion of the female workforce is employed in agriculture, while only every third male being in this sector. The misplacement of skill and lower rate of representation is likely to hit the sub-segment of the market by more women being engaged in small scale farming, so when devising programs, it is important to factor the gender dimension as it has implications on the choice of activities that would lead to positive change. This section provides selected recommendations and potential action items for municipalities, having in mind the scope of functions of municipalities and limitation they may have in policy reform, i.e. the focus is on actions and measures that practicable within the scope of municipality functions. For convenience of the reader, the recommendations and actions are grouped under the following categories:

- Enhancement of knowledge and skills
- Improvement of product quality and safety, and sustainable technologies and practices
- Improvement of farms/orchards/fields/vineyards
- Development of market infrastructure (storage facilities, marketing facilities, roads, etc.)
- Promotion of farmer cooperation

6.1 Enhancement of knowledge and skills

The enhancement of knowledge and skills among participants of agri-food chains, including farmers, processing companies, intermediaries (middlemen), storage facilities, etc., is vital for further development of agri-food sector. As noted earlier, the transfer and dissemination of knowledge and skills is often impeded by the prevalence of large number of stallholders in agri-food supply chains. The difficulties are: (i) of organizational and logistical nature, i.e. the transfer of practical knowledge to hundreds of thousands individual farmers is itself a practically difficult task; and (ii) related to the fact that the majority of smallholders are not interested or motivated in learning and implement good farming and manufacturing practices.

Strategies and measures that municipalities may adopt/apply towards enhancing knowledge and skills may include, among others, the following:

- Strengthen extension services in the public sector, including in municipalities. Municipalities shall work actively with state extension services to request and obtain the services needed in their communities. Municipalities may employ at least one well-trained specialist, who is able to understand the challenges and opportunities in agri-food supply chains and organize knowledge dissemination activities in close cooperation with the private sector, relevant government agencies and the donor community.
- Encourage and stimulate the suppliers of agricultural inputs and machinery (e.g. suppliers of 0 fertilizers, pesticides, various tractors and machinery), service providers (e.g. veterinarians) and medium- to large-size food processors (e.g. producers of cheese, wine, canneries, etc.) to become agents for knowledge accumulation and transfer. These entities, as a rule, are good agents for the transfer of global knowledge to local farmers, since they have more external/international exposure and chances to learn new technologies and approaches, and, at the same time, they are in direct contact with various players in the agri-food supply chain inside and outside their countries. Food processors (e.g. dairy processors, canneries, wine producers, meat processors) are motivated agents since they are interested in obtaining good quality raw materials (milk, grapes, fruits and vegetables, meat, etc.) for their production, and therefore motivated to transfer the knowledge to farmers and monitor the implementation of the good techniques and practices. To this end, municipalities may offer certain privileges (such as allocation of space, provision of infrastructures and utilities, involvement in regional projects with the Government or donor community) to those farmers/processors/service providers and other business entities that are committed to applying and disseminating knowledge about advanced technologies and good practices. Another very important agent of knowledge and skills accumulation, development and transfer can be farmer cooperatives (discussed below).
- Prepare high-quality information materials about modern good approaches and practices in farming and food-processing (with focus on local/regional peculiarities) and dissemination of those materials among farmers, processors and other participants in supply chains.

6.2 Focus on quality and compliance with market requirements

As discussed in this paper, the product quality is a common challenge across EaP countries and across all product supply chains. For achieving long-run viability and sustainability of agri-food productions it is critical to raise the quality level of agri-food products to higher levels that would allow to be competitive in foreign as well as domestic markets. In practical terms, the focus on high quality would imply:

- promoting the use of high quality and high-performance varieties of fruits and vegetables, as well as animals with high genetic qualities;
- development and enforcement of effective safety and quality standards (official as well as commercial standards designed by cooperatives or farmer/processor unions);
- o promoting good farming and processing practices that can ensure good quality.

While it is understood that many of the agri-food quality and safety requirements are usually set by central governments or national agencies, local communities/municipalities may also support initiatives towards promoting high quality production. To this end is it important to:

- have close collaboration with and practical support to enthusiastic farmers and food processors, who are ready to experiment and apply new, advanced practices, including shift to new varieties and/or create effective blends, restructuring orchards/vineyards, organic farming, etc.
- promote, by various means available in the arsenal of municipalities, farmer cooperation to establish and implement higher standards of quality characteristics for fresh and processed agri-food products; to promote the use of high-performance species/varieties, promoting organic farming.

The experience of Languedoc-Roussillon, region in France and cheese producers in Montenegro (see the case studies presented above) are interesting examples of how the production can be shifted from average quality mass production to high quality and high-end production. The Languedoc-Roussillon region is well known also for being able to transform from low quality mass production of wine to high-end, high-quality wines, with well-implemented state support policies. Similarly, the development of dairy cooperatives and unions of milk producers results in reducing costs for milk production, driven by cattle keeping and feeding, veterinary services, equipment for milking and milk storing, etc.

6.3 Improvement of farms/orchards/vineyards

For the development of agri-food production, it is critical to make effort towards expansion and improvement of farms/orchards/vineyards, and promote wide use sustainable technologies and practices, i.e. economically viable and environmentally friendly practices. The activities that municipalities may consider for promoting and encouraging the improvement of farms/orchards may include:

- Improvement of mapping, recording and classification of land plots in their communities to help better planning of fields, orchards (this would require effective cooperation with the regional governments and national cadastral services). Municipalities shall ensure the availability and accessibility of high-quality information about existing land plots, their classes and structure for potential investors.
- For the wine, dairy and other sector, work closely with the private sector and central authorities towards identifying, mapping and promoting wines with Geographical Indication (GI) in local and international markets (see Annex 5, for GIs registered in the EU). In this context, countries could learn from the experience of Georgia in registering GIs for wine, cheese and other products.
- For medium- to long-run perspective, municipalities shall carry out regular dialogue with landholders to find out effective mechanisms to promote and facilitate land consolidation in their communities; this is critical for addressing the challenges related to small and fragmented farming structure in EaP countries.
- Establishing effective and transparent mechanisms for renting and/or selling pastures/grazing land under the ownership or control of municipalities. In this context, it is important to establish clear good

practice requirements to be followed by entities renting or buying the pasture land. This is to help addressing the issue if feed/fodder supply in the animal husbandry sector, and, thus, milk supply for dairy sector.

 In addition to the above, farm investment shall be promoted towards reducing the negative effects of unfavorable weather conditions. For example, this may be achieved through the promotion of the use of hail and frost protection systems (protection nets, anti-frost fans, anti-frost sprinklers, variety selection to better match climate, etc.), and drip irrigation systems. In addition, attention should be paid to the development of effective insurance system in agriculture.

6.4 Improvement of market infrastructures

In a number of agri-food supply chains in EaP countries, the development of infrastructure (e.g. milk collection points, dairy-hubs, grape crushing-destemming, and grape must/juice storage facilities, small processing and packaging, wine making and bottling facilities) is essential for helping farmers and the market to function effectively. The availability of quality premises helps farmers to hedge and get effective prices for the produce, i.e. make grape must/juice and store in high season and sell in low supply season for a better price. This helps also to get stronger bargaining power against large, influential processors. In addition, well developed storage facilities may galvanize the promotion of cooperation among farmers, and help them to ensure standard quality of produce.

Municipalities may support the development of market infrastructures and application of advanced, environmentally friendly technologies, through:

- encouraging investments by the private sector into such an infrastructure. To this end municipalities
 may, for instance, (a) establish simple and easy procedures for allocating space/land to the private
 sector for installing/building the infrastructure; (b) support farmers and cooperatives, who are ready
 to effectively build and utilize the infrastructure and use certain good practices and standards of
 farming and processing.
- supporting the private sector to investment in storage and processing facilities by extending roads and utility services (gas, electricity) to selected areas where the private sector expresses interest establish such infrastructures and processing facilities (e.g. milk collection points, dairy farms, cold storage facilities, processing facilities); this would require investments from municipalities for extending utility infrastructure. For instance, in some cases the economically and logistically viable location of planned storage or processing facilities may be outside the current coverage infrastructure and utilities such as road, electricity, water, gas. By extending such infrastructure to these locations, which often may require small investment, municipalities can encourage private sector investments.

6.5 Promotion of farmer cooperation

As the international experience demonstrates, farmer cooperation is critical for ensuring viable and competitive farming activity, especially in areas with prevalence of smallholders. The case studies in this paper discuss interesting and relevant experiences of farmer cooperation and state support in the EU and Western Balkans countries. Farmer cooperation and effectively targeted state/municipality support in these regions helped to ensure viability of small-size farming and food processing. Strategies and measures municipalities could take to promote farmer cooperation may include:

- Establishing public-private dialogue forums and/or mechanisms that would allow having regular, effective stakeholder interaction aimed at identifying challenges and opportunities, and designing and implementing solutions and projects, and experience sharing.
- Designing and offering incentives for farmers and other business entities in the agri-food supply chain to promote cooperation. This may include: (i) creating simplified procedures for cooperatives; (ii) providing space and facilities; (iii) providing (renting or selling) community land (pastures) to cooperatives that are willing and able to introduce sustainable agriculture technologies and practices; (iv) preparing promotion material and demonstration materials of positive impact of cooperation.
- Enter into public-private partnership initiatives, particularly, aimed at (i) development of market and other infrastructure (e.g. storage facilities, farmer market space; roads, pasture improvement); (ii) promotion and implementation of sustainable technologies and practices (e.g. drip irrigation; sustainable farming and grazing; pasture management).
- Support the cooperatives and private sector entities to organize and participate in exhibitions, fairs and other similar events to promote local brands in domestic and international markets.

ANNEX 1. METHODOLOGY NOTES

The overall objective of this assignment set out in the TOR is to provide a "...market overview on agriculture sector produce" of Eastern Partnership (EaP) countries. The overview is expected to include:

- o industry overview, with focus on subsectors with export potential
- o overview of market trends and requirements in the focus subsectors
- identification of initiatives that local authorities may undertake to overcome existing constraints/gaps and meet requirements in identified subsectors.

A note on the TOR

From the TOR, it is understood that in the context of the project, the ultimate role of the study is to provide an agri-food context to support local authority policies, measures or actions to stimulate business generation and economic development.

Is has to be noted that there are many critical business and economic development issues (some of which may be identified and highlighted in this study) that are often related to and require actions solely by private businesses themselves or by the national level government and are out of the scope of local authorities. Another feature of the assignment is that it involves multiple countries and multiple sub-sectors (or supply chains), which adds complexity to the analysis in terms of defining the scope of the study, the choice of a proper format and structure of presentation, and the selection of key focus areas. In this context, the study may include some points/areas that are relevant not to all countries, but some individual countries.

Approach and methods

To effectively serve the objectives of the project, in this study special attention will be paid to achieving high level of clarity and focus, relevance and practicability. For this purpose, the following approaches will be applied in the study:

- comprehensive, but focused
- use of selected products/supply chains as pivots for the analysis
- practicability
- attention on sustainability.

Comprehensive view, but focused

Based on the main objective of the project, the analysis will aim at providing a comprehensive but focused view of the agri-food landscapes in the EaP region to serve as an effective background material for key project stakeholders.

To this end the discussion will provide a picture of the agri-food landscape in EaP countries, with focus on essential features of agri-food production and markets and with focused highlights only on key issues to be considered or addressed. The picture of the agri-food landscape will include, particularly:

- **the production**, i.e. the structure of agriculture and farming, key agri-food products, farming technologies and practices, the role of agri-food in the economy,
- the market, including the structure and performance characteristics of agri-food markets in EaP countries

- **trade**, i.e. international agri-food trade, including key features and trends in intra- and inter-regional agri-food trade
- policy and institutional framework, including public and private sector policies, regulations, practices and institutions.

Another technique for being comprehensive, but focused will be the discussion based on selected agri-food supply chains, since such a discussion is more specific and practical, and enables reflecting policy and/or business operation issues in the real life.

The comprehensive approach with regard to agri-food supply chains implies viewing the agri-food supply chain in its entirety involving all stages and participants along the chain. For instance, while discussing the issues in the cheese supply chain, consideration shall be given to upstream stages such as animal farming, milk production and collection, grazing and feed production, and breeding and genetics, as well as downstream stages such as wholesale and retail markets, intermediaries, industrial users such as hotels and restaurants, and final consumers. This approach is beneficial not only for forming an accurate picture of the food chain and its operation, but also for identifying the root causes of problems and designing viable and sustainable solutions to challenges and opportunities.

Use of selected supply chains as pivots for the analysis

As noted above, there will be a focused discussion based on selected agri-food supply chains, to achieve more specificity and practicality. The main focus will be on products and their supply chains high export potential. However, attention may be given also to products/supply chains with high commercial potential that may have significant impact on the economic and/or social life of a country or a region within the country.

For the selection of supply chains, the spatial aspect within and among countries shall be given due consideration. For instance, there may be significant differences between different regions within one country, while similarities may exist between some regions in different countries in terms of main crops and products, farming structure, landscape and climate, infrastructural and logistical issues, etc.

Attempt will be made also to identify any supply chains that may provide interesting opportunities for crosscountry cooperation and trade. The discussion may include products/supply chains that exist in multiple countries. For instance, wine supply chain, cheese supply chain. But there may be products/supply chains specific to one country.

Practicability

Based on the main objective of the project, there will be a focus also on the types of measures and activities that local authorities may undertake to promote business generation and economic development in their municipalities or regions. Wherever applicable, there will be a discussion on how business-, industry-, national-or international-level issues can be translated into the local context, i.e. into measures and actions to be implemented at local authority level and/or through public-private cooperation. The discussion will highlight issues that are general and related to all countries, as well as issues that are specific to one country or group of countries.

Upon availability of sufficient cases and examples, municipality level measures and actions may be grouped or categorized. This may be useful for municipalities in practical terms, while designing their action plans. For instance, an indicative list of categories may involve:

- business and investment environment actions, which may include: (i) direct actions within the scope of municipality functions towards improving regulatory and administrative environment, and (ii) indirect actions through involvement of national government actions/decisions;
- *capacity building actions,* including (i) enhancement of institutional and human capacity in public agencies, (ii) general awareness raising actions, and (iii) enhancing capacity of businesses
- *infrastructure actions,* e.g. (i) actions to improve infrastructure and logistics, which may or may not involve investment projects; (ii) actions to support businesses in addressing logistical issues in their production as well as marketing operations

- *cooperation actions, e.g.* (i) development of stakeholder dialogue forums and mechanisms; (ii) publicprivate investment projects; (iii) cooperation with local and international donors and other organizations to attract technical and financial assistance
- *financial action, e.g.* actions aimed at ensuring adequate financing for development initiatives via cooperation with the central government, private financial and investment entities, international organizations and donors.

Attention to sustainability issues

Wherever applicable, the study will draw attention on the importance of the sustainability of agriculture and food supply chain. It may be justified to include a brief discussion about the relevance of agri-food supply chains to UN Agenda 2030 and its Sustainable Development Goals (SDG). Reference to SDGs is to raise the awareness at local level and ensure that authorities understand the link and importance of their policies and actions for achieving sustainable development objectives.

Outline of the study

Having in mind the objectives of the project, and based on the approaches and methods discussed above, the suggested outline for the review is as follows:

5. Bird's eye view on agri-food landscape

 This section is to provide a brief picture of the region's agriculture and food in EaP countries, including selected information relevant to the study such as: the structure of agriculture and farming, key agrifood products, farming technologies and practices, the role of agri-food in the economy, agri-food trade, relevant aspects of policy and institutional framework, other country specific features.

6. Selected agri-food supply chains and markets

• This section will include more detailed discussion about the structure and operation of selected supply chains in EaP countries. The selection criteria, as discussed above, will be export potential, commercial potential, potential economic and social impact, cross-country cooperation opportunities.

7. Highlights on selected issues/solutions

This section will be based on the discussion in the other parts of the paper. A number of issues or solutions will be selected and discussed in more detail.

8. Notes on links with sustainable development

This section will include a brief discussion about the relevance of agri-food supply chains to UN Agenda 2030 and its Sustainable Development Goals (SDG). Examples of sustainability challenges and sustainable solutions in agri-food sector in EaP countries.

ANNEX 2. BRIEF COUNTRY PROFILES

ARMENIA

Agriculture's role in the economy

In 2018, the agricultural production of Armenia was \$ 1.7 billion, which accounted for about 14% of the country's GDP. Agriculture's role in employment is significant with 32.2% of labor force. Rural area in Armenia is home for almost 38% of total population. Agriculture's contribution to foreign trade is notable with agriculture exports accounting for 27.9%, and the import for 17.8% of the total.

The structure of farming

In Armenia, most of the arable crop land and perennial land is in private hands. Over 72.7% of arable land, 93.6% of perennial land (includes orchards and vineyards), and 7.2% of pastures and hay land are under private ownership.

Armenian agriculture is characterized by a large number of small size private farmers or, it would be more accurate to say, rural households involved in farming activities. Land structure is very fragmented. There are about 340,000 rural households (land owners) with an average of 1.3 ha agricultural land.

Key agricultural products

As of 2017, 51.6% and 48.4% of agricultural output was from plant growing and animal husbandry sectors, respectively.

Plant production includes, particularly:

- vegetables (mainly cabbage, cucumbers, tomato, carrot, onions, garlic)
- fruits (mainly apricots, peaches, apples, pears, plums, cherries pomegranates)
- grapes for wine and table grapes
- cereals (wheat, barley, oats)
- potato.

Animal husbandry includes, particularly:

- cattle breeding
- sheep breeding
- milk and dairy production
- poultry.



Armenia, structure of agriculture, 2017, %

Vegetables;

Key export products and markets

Key exported products include:

- o Vegetables (tomatoes, cucumber),
- o Alcohol (Armenian brandy (cognac), vodka and wine),
- Tobacco products (cigarettes)
- Meat (mostly sheep meat)
- o Confectionery (chocolates).

The main export market for dairy products and meat and meat products is the Russian market, which contributes for the lion's share of export of alcohol, and vegetables and fruits. The key market for sheep meat is Iran. Tobacco products are exported to a wide range of countries, including the Middle East countries.

Resource use

Land: There is scarcity of land resources, and, at the same time low utilization of those scarce resources. Only 32% of total agricultural land (including arable land, pastures, etc.) is utilized; and 79% of arable land is utilized, and less than 30% of arable land is irrigated (as of 2017).

Water: Despite the reduction of water withdrawal throughout many years, Armenia still remains a water-stressed country (see box 11). The largest share of water withdrawal is attributed to agriculture. Agricultural water withdrawal (including agriculture, aquaculture and forestry) comprises around 84% of total water withdrawal in the country m³, including losses.^{62,63} Due to inefficiencies in various the irrigation infrastructure as well as in the management of the irrigation water, water losses in the irrigation system were significant. More than half of irrigation water is lost and does not reach the farmer and the field, while the other half is used

Box 11. Water stress

The level of water stress is about freshwater withdrawal as a proportion of available freshwater resources - the ratio between total freshwater withdrawn by major economic sectors and total renewable freshwater resources, after taking into account environmental water requirements. This indicator is also known as water withdrawal intensity and will measure progress towards Sustainable Development Goal (SDG) Target 6.4. According to FAO methodology, countries are defined as water-stressed if they withdraw more than 25 percent of their renewable freshwater resources, as approaching physical water scarcity when more than 60 percent is withdrawn, and as facing severe physical water scarcity when more than 75 percent is withdrawn. In 2017, Armenia withdrew 36.6 % of its total freshwater resources, and the water stress in Armenia was 57.43%.

Source:

http://www.fao.org/nr/water/aquastat/didyouknow/index2.stm

inefficiently. In addition to crop farming, the challenge of water use efficiency is related also to aquaculture one of the dynamically developing and export-oriented sectors in Armenia – which, however, exploits significant amounts of underground fresh water resources. Most of the fish farms in the country (which are located in Ararat valley) still use precious underground water with a single-pass system, where water is not recycled and is used only once. Aquaculture facilities consume precious clean water, and often there is competition and even conflict for water between aquaculture, agriculture and rural community population

Technologies, practices and productivity

Machinery and equipment: Agricultural machinery and equipment in Armenia is mostly old and outdated, leading to higher cost of operation, low productivity and food loss. There is also a low use of protection equipment and technologies against natural disasters such as heavy rain, hail, and frost.

The dominant form of machinery access in Armenia is contracting by other farmers, private contractors, communities and cooperatives, with around 95 % of farmers contracting tractor services and 99 % using contractors for harvesting⁶⁴. Only around 5 % of farms do their own cultivating and 1 % their own combining, but these will include many of the large farms, so the share of land worked by farmers with their own machines may be considerably higher.

⁶² Source: Statistical Committee of Armenia <u>https://www.armstat.am/file/article/eco_book_2017_9.pdf</u> and FAO_AQUASTAT: <u>http://www.fao.org/nr/water/aquastat/data/query/results.html</u>

⁶³ Source: FAO AQUASTAT: <u>http://www.fao.org/nr/water/aquastat/data/query/results.html</u>

⁶⁴ Data from the 2014 agricultural census show forms of access for tractors, combines and a range of tractor-drawn implements. Across all tractor-related operations, 5 % of farmers use their own equipment, 92 % use contractors and 3 % are recorded as "renting" their machines. In practice, it seems extremely rare for someone to rent out a machine for another person to operate, so this rental category is probably a mixture of contracting and leasing, which is effectively a form of ownership. The quoted figures of 95 % and 99 % are calculated by excluding the ambiguous "renting" category.

Fertilizer: The level of fertilizer use in Armenia in terms of fertilizer quantity per hectare of arable land was 110 kg/ha in 2016. This is lower than the average level in world (140 kg/ha in 2016) and in the EU (158.4 ka/ha in 2016).

Productivity. Low use of advanced technologies, and techniques and means of production, which leads to low productivity and low quality, and, thus, low competitiveness of agricultural products. See figures 32-35 for international comparison of agriculture productivity. Most of the productivity indicators of animal husbandry, crop farming and horticulture are well below those of the EU average. Low use of advanced techniques and means of production is due to the (a) lack of knowledge about effective farming and marketing practices among farmers, and (b) low level of investments in agricultural production and marketing.

State policies and programs

In general, Armenia pursues liberal policies in agriculture. Prices of agricultural products are not regulated, and there is no (or very little) intervention of the state into the agricultural production and product marketing processes.

The Government of Armenia is in search of more effective and efficient ways to support agriculture and promote sustainable farming practices. Programs and instruments used by the government include particularly:

- Production support, including (i) interest rate subsidies (for loan and leasing); (ii) state supply of inputs (state purchase and distribution of key inputs such as fertilizers, seeds and fuel at preferential prices; support to the irrigation water system⁶⁵); (iii) tax privileges for agriculture (e.g. exemption from VAT for some stages along the agricultural supply chain).
- Support to rural development. For regional development and social cohesion purposes the state implements programs to support households living and operating in remote rural areas (e.g. exemption from taxes).



Figure 19. Armenia, public spending in agriculture

• **Foreign trade (protection of domestic market):** Armenia applied a liberal foreign trade regime. Import tariffs on agri-food products (and domestic price regulation). Armenia is a member of the EAEU and the tariffs on products imported from third countries are set at EAEU level.

One of successful programs to support agriculture was the subsidized leasing program, where farmers could lease agricultural machinery and equipment with down payment and interest rates significantly lower than in the market. There are specially designated programs to support the use of environmentally friendly technology such as drip irrigation⁶⁶.

The public spending in agriculture has been decreasing since 2014 and remains very low in absolute terms. The Government spending in agriculture reduced significantly Russian foreign exchange crisis in 2014 (figure 19).⁶⁷ With limited financial recources, the efficiency of the sending of the budget money becomes critical. Equally important is: (i) to encourage private investments into farms and sustainable technologies and practices; (ii) to enhance knowledge among farmers and food processors about modern advanced technologies and practices, as well as about sustainable practices.

⁶⁵ To support the irrigation sector and maintain its financial viability, the Government of Armenia provides financial assistance to entities involved in water intake and distribution – Water User Associations (WUAs) and Water Supplier Agencies (WUAs). In 2018, the water subsidy amounted to \$ 11.5 million. The water subsidy provided to WUAs and WSAs during 2006-2018 was about USD 170 million.

⁶⁶ Source: Ministry of Agriculture: <u>www.minagro.am/պետական-օժանդակության-ծրագրեր/</u>

⁶⁷ Source: Ministry of Agriculture: www. <u>http://minagro.am/pdf-pages/pjnLpt/</u>

ARMENIA AGRI-FOOD EXPORT

Armenia-World Armenia-Russia		sia	Armenia-Belarus		Armenia-Georgia		Armenia-Ukraine		Armenia-Moldova						
Cigars,		Alcohol, <80%	163	,7	Alcohol, < 80%	5,87		Cigars, cigarettes	13,5	4	Alcohol, < 80%	9,53			
cigarettes Alcohol, <	198.3	Tomatoes	23,1		Chocolate	0,13		Alcohol, > 80%	1,71		Cigars, cigarettes	2,44		Chocolate	0,15
80% Tomatoes, fresh	23,1	Fish; fresh or chilled04	22,2		Flowers; cut	0,12		Chocolate	1,71		Chocolate	1,11			
Fish; fresh or chilled	22,6	Chocolate	11,0		Fruit jams	0,11		Sausages	1,37		Coffe, tea preparati	0,21		Alcohol, < 80%	0,03
Chocolate	16,1	Cigars, cigarettes	9,8		Wine	0,10		Fruit, nuts prepared	0,98		Wine	0,10			
Meat of sheep or	14,3	Fruits, apricots,	9,0		Fruit, nuts prepared	0,07		Coffee	0,89		Fruits jams,	0,09		Fruits, apricots,	
Prepared fruits, nuts	10,5	Cheese and curd	8,0		Bread, pastry,	0,05		Alcohol, < 80%	0,62		Fruit, nuts prepared	0,08		cherries, peaches, plums	0,01
Wine of fresh grapes	9,4	Vegetable preparations	7,9		Fruit juices	0,03		Bread, pastry,	0,60		Sugar confectio	0,08			
Fruits: apricots,	9,3	Cut flowers	7,8		Waters, incl	0,03		Vegetables preparations	0,30		Fermented beverages	0,07		Animals; live	0,00
Vegetable preparations	9,2	Fruit, nuts prepared	6,9		Vegetables preparati	0,02		Sugar confection	0,30		Waters, natural	0,07			
0,0 500,0		0	,0 100),0 200,0	0,	0,00 5,00 10,00		0,005,0010,005,00		0,00 10,00 20,00		0,00 0,10 0,20			

Figure 20. Armenia, agri-food export, 2018, \$ million. Source: UNCOMTRADE

Agriculture's role in the economy

In 2018, the agricultural production of Azerbaijan was \$ 2.46 billion, which accounted for about 5.3% of the country's GDP. Agriculture's role in employment is significant. It employs 36% of the total labor force. Rural area in Azerbaijan is home for 44.3% of total population. Agriculture's role is significant on the import side. It accounts for 20.6% of the total import, and 4.6% of total exports.

The structure of farming

C*

In Azerbaijan, most of the cultivated land is in private hands. Small, fragmented semi-subsistence peasants/farmers prevail in Azerbaijan's agriculture. There are over 1.2 million small size farms (or rural households) involved in agricultural production, the vast majority of which are under private ownership. The average size of these small semi-subsistence farms is 1.9 ha.⁶⁸ There are also over 78,000 cottage farms involved in agricultural production and marketing.

Key agricultural products

The small farms in Azerbaijan are tended to focus on the production of labor-intensive, high-value crops like fruits and vegetables, as well as milk.

Azerbaijan has a comparative advantage in the production of perennial crops such as oranges, apples, pomegranates and olives; in vegetable crops such as tomatoes, cabbage, and chickpeas; in oilseeds like sunflower; and in livestock products such as beef, milk and mutton

Plant production includes, particularly:

- vegetables (tomatoes, cucumbers, chickpeas, carrot, onions, garlic)
- fruits (apricots, peaches, apples, pears, plums, cherries, oranges, pomegranates)
- tea
- olives
- sunflower seeds
- grapes for wine and table grapes
- cereals (wheat, barley, oats)
- potato.

Animal husbandry includes, particularly:

- cattle breeding
- sheep breeding
- milk and dairy production.

Key export products and markets

Azerbaijan's key exported products include:

- Vegetables (tomatoes, cucumbers, onions, garlic, etc.)
- Fruits (apricots, cherries, peaches, apples, pears)
- o Nuts.

⁶⁸ Source: <u>http://azerbaijan.az/portal/Economy/Agriculture/agriculture e.html</u>. Another source indicates notable different figures, i.e. 800,000 smallholders, with 2.6 ha average land. FAO, Value chain gap analysis report: Azerbaijan, 2018, <u>http://www.fao.org/3/ca0009en/CA0009EN.pdf</u>

o Cotton

o Tea

The main export market for agricultural products, particularly, for fruits, vegetables, and nuts is the Russian market (figure 22). Main exports to EaP countries include: tobacco (to Belarus), Fruits (to Ukraine), tea and nuts (to Georgia).

Agri-food exports to the EU was about \$59 million, i.e. about 8.4% of total agri-food export from Azerbaijan. The main export item from Azerbaijan to the EU was tropical fruits, nuts and spices.



Figure 21. Azerbaijan, agri-food export to the EU

Resource use

Land: Land area of Azerbaijan is 8.267 million ha, of which 4.773 ha is agricultural land.

Water: Azerbaijan still remains a **water-stressed country** (see box 11). The largest share of water withdrawal is attributed to agriculture. Agricultural water withdrawal (including agriculture, aquaculture and forestry) comprises around 72.4% of total water withdrawal in the country, including losses.⁶⁹ Due to various inefficiencies in the irrigation infrastructure as well as in the management of the irrigation water, water losses in the irrigation system are significant.

Technologies, practices and productivity

Machinery and equipment: Agricultural machinery and equipment in Azerbaijan is mostly old and outdated, leading to higher cost of operation, low productivity and food loss. There is also a low use of protection equipment and technologies against natural disasters such as heavy rain, hail, and frost.

Fertilizer: The level of fertilizer use in Azerbaijan in terms of fertilizer quantity per hectare of arable land was 14 kg/ha in 2016. This is substantially lower than the average level in world (140 kg/ha in 2016) and in the EU (158.4 ka/ha in 2016).

Productivity. Despite considerable experience in fruits and vegetables and dairy production among the farming population, in many cases their cultivation, harvest, and post-harvest methods are not up-to-date. Low use of advanced technologies, and techniques and means of production, which leads to low productivity and low quality, and, thus, low competitiveness of agricultural products. See figures 32-35 for international comparison of agriculture productivity. Most of the productivity indicators of animal husbandry, crop farming and horticulture are well below those of the EU average. Low use of advanced techniques and means of production is due to the (a) lack of knowledge about effective farming and marketing practices among farmers, and (b) low level of investments in agricultural production and marketing.

⁶⁹ Source: FAO AQUASTAT: <u>http://www.fao.org/nr/water/aquastat/data/query/results.html</u>

AZERBAIJAN AGRI-FOOD EXPORT



Figure 22. Azerbaijan, agri-food export, 2018, \$ million. Source: UNCOMTRADE

Agriculture's role in the economy

In 2018, the agricultural production of Belarus was \$ 3.8 billion. Agriculture represented over 6.4% of the country's GDP, and employed 10.6% of labor force. Rural area in Belarus is home for 21.4% of total population. Agriculture's contribution to exports was 19% of the total, while the contribution on the import side was 14.1%.

The structure of farming

Until 1995, agriculture was almost exclusively state-run via sovkhoz (state farms) and kolkhoz (collective farms). Privatization changed the structure of farming and helped to increase the productivity significantly. However, the state involvement in agriculture still remains high (table 33).

Farming in Belarus consists of large commercial farms (agricultural organizations that are legal entities), small private farms and households. The majority of around 1,400 large commercial farms are

	2016		201	7	2018		
	Number	%	Number	%	Number	%	
Legal entities, of which:	1,469	100	1,509	100	1,357	100	
state ownership	311	21.2	361	23.9	320	23.6	
national	32	2.2	31	2.1	31	2.3	
community	279	19.0	330	21.8	289	21.3	
Private, of which mixed:	1,118	76.1	1,097	72.7	981	72.3	
with state share	593	40.4	674	44.7	644	47.5	
with foreign share	65	4.4	64	4.2	54	4.0	
with foreign ownership	40	2.7	51	3.4	56	4.1	

Table 33. The structure of agricultural organizations⁷⁰

either state owned or with state participation in the ownership. The average size of large farms is around 4,000 ha. The large farms provide the lion's share of agricultural production (79 % in 2018), followed by over 1 million household plots (18.7%), and about 2,000 private farms (with average size of up to 53 ha) accounting for 2.2% of agricultural production.⁷¹

⁷⁰ Source: "Agriculture of the Republic of Belarus": statistical book, 2019, Statistical Committee of Belarus: <u>http://www.belstat.gov.by/upload/iblock/c7c/c7c865ec618cc5f5a9caa14818d8eeb0.pdf</u>

⁷¹ The Constitution of Belarus provides that "...agricultural land is under the ownership of the State." However, the 1999 Land Code introduced two exceptions to the general ban: citizens may own (1) up to one hectare of agricultural land in a household plot; and (2) up to 0.25 hectares of agricultural land under and around a private house. Land in private ownership may be sold, traded, mortgaged, leased out and bequeathed to heir.

In Belarus, in general, agricultural land (other than household plots) is under state ownership.⁷² Citizens are allowed to own up to 1 ha of agricultural household land plot, and up to 0.25 ha land around a private house. The private land accounts for approximately 20% of agricultural land.

Key agricultural products

In 2018, the shares of plant and animal products in total agriculture production were 45.3% and 54.7%, respectively.

The country's main crops are potatoes and cereals (with 8% and 10% shares respectively). Belarus is among the world's ten largest potato producers. Other crops include vegetables and fruits, flax and



Figure 23. Structure of agriculture production

rapeseed, and sugar beet. Key animal products are milk and dairy products, and cattle and poultry meat (figure 23).

Note that small households and private farms focus on plant production (87% and 91%, respectively), while the production of large agricultural entities is mixed (66% animal products, and 34% plant products). Private farms have negligible shares but tend to follow the pattern of household plots. Large farms focus mostly on the production of cereals and forage crops, rapeseed and flax, and sugar beet, as well as meat, milk and eggs. Private and household production is focused more on potatoes, vegetables and wool. Note that animal production is mainly undertaken on large commercial farms, since it requires considerable investments in infrastructure and machinery (dairy and pigs, also poultry), whereas labor intensive products, such as potatoes, vegetables and sheep (wool) are produced on household plots.

Key export products and markets

Dairy sector is the main provider of a wide spectrum of exported products including milk, cream, and yogurts, cheese and curd, butter & other fats and oils.

Bovine and poultry meat and meat products also are important contributors to the country's export.

The main export market for dairy products and meat and meat products is the Russian market (figure 24).

Resource use

Land: The agricultural land⁷³ is estimated at 8.7 million ha (42% of the total area of the country). The total cultivated area is around 5.7 million ha, of which 98 percent (5.6 million ha) consists of temporary crops and 2 percent (0.1 million ha) of permanent crops.

Water: Agriculture, including irrigation and livestock production, accounts for 8% of water withdrawal in Belarus. Water losses are estimated 9.3 %, which is equally distributed over industrial and municipal water withdrawal.⁷⁴

Technologies, practices and productivity

⁷² The Constitution of Belarus provides that "...agricultural land is under the ownership of the State." However, the 1999 Land Code introduced two exceptions to the general ban: citizens may own (1) up to one hectare of agricultural land in a household plot; and (2) up to 0.25 hectares of agricultural land under and around a private house. Land in private ownership may be sold, traded, mortgaged, leased out and bequeathed to heir.

⁷³ Agricultural land is the sum of arable land, permanent crops and permanent meadows and pasture.

⁷⁴ Source: FAO AQUASTAT.

Machinery and equipment: Agriculture in Belarus is well equipped with agricultural machinery (tractors, combines, etc.) having in mind that the country is a producer and exporter of such machinery.

Fertilizer: The level of fertilizer use in Belarus in terms of fertilizer quantity per hectare of arable land was 168 kg/ha in 2018 (147 kg/ha in 2016). This is higher than in the average level in world (140 kg/ha in 2016) and is close to the level in the EU (158.4 ka/ha in 2016).

Soil fertility management and marketing are among the key technical and managerial challenges facing agricultural producers in Belarus. Agricultural land in Belarus has historically been known to provide much less favorable conditions than the Chernozems (black soils) in neighboring Ukraine, Moldova and Russia. Agricultural production therefore requires particular attention and investments into building and maintaining soil fertility with specific regard to organic matter content.

State policies and programs

The state support to agriculture in Belarus is significant and is higher thanthan in the other EaP countries. The main instruments of Belarus agri-food policy include:

Price regulation: Domestic prices regulation along the entire food chain includes such instruments as: setting state prices, capping margins; special additional payments for quality products and products delivered by households.

Foreign trade (protection of domestic market): Import tariffs on agri-food products (and domestic price regulation). Belarus is a member of the Eurasian Economic Union (EAEU) and the tariffs on products imported from third countries are set at EAEU level.

Production support includes: (i) investment support (direct budget investment; budget loans; budget guarantees for bank loans; debt write-offs; interest rate subsidies; direct regulation of banks); (ii) state supply of inputs (state purchase and distribution of key inputs and compensation for some input purchases by farms; subsidized leasing of machinery; preferential prices for fuel); (iii) tax concessions for agriculture; (iv) mandatory and subsidized insurance; (v) production based and direct income support to rural households.

Marketing support which includes, for instance, state procurement of agricultural products.

Agri-food market operation

In Belarus, large commercial farms have limited managerial freedom to react to market signals, while small private farms face particular issues related to marketing. Small volumes, inefficient (hence costly) production, and product quality issues severely constrain marketing options for small private farms and households. This is especially the case for the dairy sub-sector where consumer demand in higher-priced markets requires certain technical arrangements in production and marketing (e.g. related to temperature, smell and animal health management). Russia, key importer of Belarusian dairy exports, requires for example that milk from household farms be collected (and processed) separately from large commercial farms.

Market operation in Belarus is strongly affected by the structure of farming and state policies such as the price regulations and state procurement. Majority of state support programs qualify as so called "amber box" subsidies, as defined by the World Trade Organization, and distort the market operation and producer incentives.

The government of Belarus determines procurement prices for almost all agricultural products at the beginning of each agricultural season. Prices can be regulated by the national government and by regional authorities. In addition, there is a list of socially important products the prices of which are regulated by the state. The list includes such products as: bread flour, bread and bread products; milk, kefir, sour cream and cottage cheese; meat (beef and pork); milk formulas; canned meat-based baby food; sugar and sweeteners for diabetics; and potatoes and horticultural products. The government sets ceiling wholesale prices for the "socially important" products. These prices are reconsidered by the state from time to time.

The system of input supply is still based on state purchases and distribution of key inputs to the farms. These state purchases are made at regulated prices.

Input supply programs are among the financially largest part of the state support to agriculture. These programs include governmental coverage of mineral fertilizer and pesticide costs, the cost of machinery and machinery maintenance and repair, energy costs, the cost of seeds and livestock breeding material, the cost livestock feed, and the cost of land amelioration.

Other EaP countries also apply similar programs of input support. However, there is a critical difference between the program in Belarus and other countries. In Belarus the choice of inputs to be procured and provided at preferential prices to farmers is made by the Government, while in other countries farmers have the possibility to make their own choice.

Belarus-World	Belarus-Russia	Belarus-Armenia	Belarus-Azerbaijan	Belarus-Georgia	Belarus-Moldova	Belarus-Ukraine
Cheese 811, and curd 38	Cheese and 759, curd 25	Milk and cream; 5,85	Butter and other 6,85	Butter and other fats 4,94	Potatoes 2,01	Cane or 17,0 beet sugar 0
Butter and other fats and oils 403 , 36	Meat of bovine animals;	concentr Meat of bovine 2,95	fats and Bovine meat; 2,73	and oils Milk and cream; 2,72	Cheese and curd	Cheese and curd 13,4
Milk and cream; concentr	Butter and other fats and oils 93	Butter and other fats 1,40 and oils	Milk and cream; 1,80	Alcohol, > 1,97	Butter and other fats 1,10 and oils	Poultry meat, fresh,
Bovine meat; fresh or chilled	Poultry meat, fresh, chilled or	Meat & fish flours, meal and	Cheese and curd 1,25	Sausages 0,88	cream; 0,90 concentr	Fish, caviar, prepared 9,98
Poultry 254, meat, fresh, 29	Milk and cream; concentra	Poultry meat, 0,36 fresh,	Poultry meat, 1,15 fresh,	Malt 0,63	caviar, 0,87 prepared	waters, incl. 8,78 mineral
or 184, preserve	Milk and 170, cream 32	Cane or 0,32 beet sugar	Yoghurt, kephir 1,10	Alcohol, <80% 0,40	Yoghurt, kephir 0,68	cream; 8,20 concentra
Cane or 182, beet sugar 49	Prepared or preserved fish; caviar	Alcohol, < 0,20	Sausages 1,06	Meat, prepared or 0,29 preserved	Carrots, turnips, 0,58 salad	Butter and other fats and oils
Milk and 176, cream 75	Buttermilk, curdled milk and	Malt 0,16	Alcohol, < 80% 0,86	Poultry meat, fresh, chilled or	Cereal flours; 0,55 other	vegetables preparation 4,11 s
Rape, colza or mustard oil	Meat of bovine animals; 147, 63	Prepared or 0,11 preserve	Chocolat e 0,68	Cheese and curd 0,27	Alcohol, > 80% 0,54	Alcohol, < 3,91
Meat of bovine animals;	Cane or 119, beet sugar 20	Cheese and curd 0,11	Milk and cream 0,61	Milk and cream 0,24	Malt extract 0,47	Chocolate 3,39
0,0 500,01000,0	0,0 500,0 1000,0	0,00 5,00 10,00	0,00 5,00 10,00	0,0 5,0 10,0	0,00 2,00 4,00	0,00 20,00

BELARUS AGRI-FOOD EXPORT

Figure 24. Belarus, agri-food export, 2018, \$ million. Source: UNCOMTRADE



Agriculture's role in the economy

In 2018, the agricultural production of Georgia was \$1 billion, which accounted for about 6.7% of the country's GDP. Agriculture's role in employment is significant with 42.9% of labor force. Rural area in Georgia is home for almost 41.4% of total population. Agriculture's contribution to foreign trade is notable with agriculture exports accounting for 29.3%, and the import for 15% of the total.

The structure of farming

In Georgia, most of the arable crop land and perennial land is in private hands.

Georgian agriculture is characterized by a large number of small size private farmers or, it would be more accurate to say, rural households involved in farming activities. Land structure is very fragmented. There are about 692 thousand smallholders with an average of 1.3 ha agricultural land. The majority of land holdings (about 67%) are sized under 1 ha, and 23% of land holdings 1-5 ha.

Key agricultural products

As of 2018, 45% and 50% of agricultural output was from plant growing and animal husbandry sectors, respectively. Agricultural services comprise 5% of total agricultural output.⁷⁵

Plant production includes, particularly:

- vegetables (cucumbers, tomato, onions, garlic, pepper)
- fruits (apples, cherries, plums, peaches, pears)
- grapes (mostly for wine)
- melons
- citrus fruits
- cereals (wheat, barley, corn)
- potato

Animal husbandry includes, particularly:

- cattle breeding
- sheep breeding
- milk and dairy production
- poultry.

Key export products and markets

Key exported products include:

- Wine of fresh grapes
- Cigars, cigarillos
- Alcohol < 80% vol.
- o Waters, natural or artificial
- Other nuts, fresh or dried.

⁷⁵ "Agriculture of Georgia: 2018". National Statistics Office of Georgia. <u>https://www.geostat.ge/media/24488/soflis-meurneoba 2018.pdf</u>

The main export market for Georgian agri-food products is the Russian market, which contributes for the lion's share of export of alcohol, and waters. In 2018, around 25% of total agri-food exports from Georgia was destined to Russia.

Other key agri-food markets are the markets of the EU and Ukraine.

Total agri-food export from Georgia was \$ 960 billion, of which over \$130 million was shipped to the EU market (figure 22-26)⁷⁶A large share of wine and other alcoholic drinks produced in Georgia is exported to the EU market (together accounting for around 30% of agrifood export to the EU). Other key exports to the EU include tropical fruits (with 26% share), waters and soft drinks, and vegetable preparations.



Figure 25. Georgia, Agri-food export to the EU

Main exports from Georgia to the EaP market is wine, and other alcohol beverages, waters and soft drinks, tropical fruits (citrus). The largest export markets among EaP countries are Russia and Ukraine.

Georgia signed an Association Agreement with the EU in 2014, which became effective in July 2016. EU-Georgia trade relations are determined by the free trade area set up by the DCFTA part of the Association Agreement. The DCFTA sets up a free-trade area between the EU and Georgia in line with the principles of the World Trade Organization. The DCFTA allows for:

- The removal of import duties for most goods traded between the EU and Georgia
- Provides for broad mutual access to trade in services for both partners
- Both EU and Georgian companies can create a subsidiary or a branch office on a non-discriminatory basis. This means they receive the same treatment as domestic companies in the partner's market when setting up a business.

An important part of the DCFTA is aligning Georgian trade-related laws to selected EU legislative acts. The aim of Georgia's adoption of EU approaches to policy-making is to improve governance, strengthen the rule of law and provide more economic opportunities by widening the EU market to Georgian goods and services.

Overall, the EU is Georgia's main trade partner. Around 27% of its trade is with the EU, followed by Turkey (13.6%), and Russia (11%).

Resource use

Land: There is scarcity of land resources, and, at the same time low utilization of those scarce resources.

Agricultural land is about 2.4 million ha, which also includes pastures and meadows, and forest area is over 2.8 million ha.

Water: Despite the reduction of water withdrawal throughout many years, Georgia still remains a **water-stressed country**, with water stress level of 56.4% (see box 11). The largest share of water withdrawal is attributed to agriculture. Agricultural water withdrawal (including agriculture, aquaculture and forestry) comprises around 72.54 percent of total water withdrawal in the country, including losses.⁷⁷ Due to various inefficiencies in the irrigation infrastructure as well as in the management of the irrigation water, water losses in the irrigation system were significant.

⁷⁶ Source for the figure: Agri-food trade statistical factsheet: Georgia-EU, 2018, European commission.

https://ec.europa.eu/agriculture/sites/agriculture/files/trade-analysis/statistics/outside-eu/countries/agrifood-georgia_en.pdf 77 Source: FAO AQUASTAT: http://www.fao.org/nr/water/aquastat/data/query/results.html

Technologies, practices and productivity

Machinery and equipment: Agricultural machinery and equipment has been improved through a government supported program. However, there are inefficiencies in managing and utilization of agricultural machines and equipment. There is also low use of protection equipment and technologies against natural disasters such as heavy rain, hail, and frost.

Fertilizer: The level of fertilizer use in Georgia in terms of fertilizer quantity per hectare of arable land was 170.8 kg/ha in 2016. This is higher than the average level in world (140 kg/ha in 2016) and in the EU (158.4 ka/ha in 2016).

Productivity. Low use of advanced technologies, and techniques and means of production, which leads to low productivity and low quality, and, thus, low competitiveness of agricultural products. See figures 32-35 for international comparison of agriculture productivity. Most of the productivity indicators of animal husbandry, crop farming and horticulture are well below those of the EU average. Low use of advanced techniques and means of production is due to the (a) lack of knowledge about effective farming and marketing practices among farmers, and (b) low level of investments in agricultural production and marketing.

GEORGIA ARGI-FOOD EXPORTS, TOP TEN PRODUCTS

Georgia-World	Georgia-Russia	Georgia-Armenia	Georgia-Azerbaijan	Georgia-Belarus	Georgia-Moldova	Georgia-Ukraine
Wine of fresh grapes196, 95Cigars, and cigarettes149, 01Alcohol, < 80%129, 80%Alcohol, < 80%110, 17Nuts69,6 8Meat of sheep or goats Bovine animals; live36,4 2 2,3Waters, including natural27,5 3Waters, including nineral27,5 0Meat flours, meal and15,2 2 14,8 4	Wine of fresh grapes114, 54Waters, including natural50,1 9Alcohol, <80%	Nuts14,4 2Soya bean oil-cake and8,80Fruit, nuts sweetene d5,65Alcohol, less than 80%4,20Alcohol, less than 80%2,73Wheat and meslin2,73Waters sweet, includin2,32Bananas, including plantain1,55Citrus fruit; fresh or dried1,32Meat flours, meal1,14	Cigars, and cigarettes99,1 3Bovine animals; live15,2 3Waters wwaters swetened, including11,4 7Potatoes; fresh or chilled4,66 chilledPoultry meat and edible3,43Alcohol, < 80%2,82Sheep and goats; live2,77 2,21 ns notFood preparatio os2,21 1,49Tea1,42	Waters , including natural9,34Alcohol, <80%	Waters, including natural0,5 2Vegetabl es; n.e.c. in0,2 9Waters swetene d,0,2 4Food preparat ions0,1 0Preparat ions0,0 9Alcohol, < 80%	Acohol, < 80%32,5 8volum21,58grapes,18,3Waters, including natural18,3Nuts2,24Citrus fruit; fresh or2,06Fruit, fresh; n.e.c. in1,32Waters swetened0,61,,Food preparati ons0,55ons0,37
0,0 200,0400,0	0,0 100,0200,0	0,00 10,0020,00	0,0 100,0 200,0	0,00 5,0010,00	0,000,501,00	0,00 20,0040,00

Figure 26. Georgia, agri-food export, 2018, \$ million. Source: UNCOMTRADE

Agriculture's role in the economy

In 2018, Moldova's agricultural production was \$ 1.15 billion. Agriculture represented over 10% of the country's GDP, and employed 32.2% of labor force. Rural area is home for 57.4% of total population. Agriculture has a significant contribution to Moldova's export accounting for 46% of total exports. The role is smaller on the import side (with 15.5% of total import).

The structure of farming

The lion's share of agricultural land (around 74%) is private, owned by one million smallholders with an average landholding of 1.4 ha (arable, orchard, vineyard). Small land owners (with land less than 10 ha land) produce over 70% of total agricultural production, and 80% of high value horticultural products. Similarly, the size of animal farms is predominantly small and fragmented (99% of farms with less than 10 cows per farm).

Key agri-food products

Products of plant origin: The climate and soils in Moldova are well suited for growing of most temperate fruits and vegetables, potatoes, cereals and oilseeds. Main crops include the following:

Plant production includes, particularly:

- **vegetables** tomatoes, onions, cabbage, cucumbers, pumpkins, peppers, carrot, red beet, garlic, squash, eggplant, pot herbs, green peas
- **fruits:** walnuts, apples, plums, sweet and sour cherries, pears, peaches & nectarines, quinces, apricots, soft fruit, table and technical grapes
- other: wheat, barley, oats, soya, peas, sunflower seeds, grain maize, sugar beet, tobacco.

Products of animal origin include

- cow milk
- cattle/meat of bovine animals
- sheep and goats
- pigs,
- horses.

Production of many traditional crops such as cereals, sunflower or sugar beet is dependent on scale and mechanization, and therefore can be performed efficiently on larger, field scale operations. In addition, the farmers/peasants lack the experience, technical skills and finance to develop such production successfully.

Key export products and markets

Key exported products include:

- o sunflower seeds
- o sunflower oil
- o wine of fresh grapes
- o maize (corn)
- o fruits and nuts, fresh or dried
- o fruit juices, jams
- o wheat and meslin.

The main export market for Moldova agri-food export in the EU (figure 27)⁷⁸. In 2018, total agri-food export from Moldova was \$ 1.167 billion, of which over \$700 million was destined to the EU market. A large share of sunflower seeds and sunflower oil produced Moldova is exported to the EU market. Other key exports to the EU include wheat and other cereals (together accounting for around 30% of agri-food export to the EU).

Main exports to the EaP market include fruits and vegetables (fresh and prepared), sunflower seeds and oil, wine, brandy and other alcohol beverages. The largest export markets among EaP countries are RussiaRussia and Belarus.



Moldova signed an Association Agreement with the EU Figure 27.1

in 2014, which became effective in July 2016. EU-Moldova trade relations are determined by the free trade

area set up by the DCFTA part of the Association Agreement. The DCFTA sets up a free-trade area between the EU and Moldova in line with the principles of the World Trade Organization. The DCFTA allows for:

- The removal of import duties for most goods traded between the EU and Moldova
- Provides for broad mutual access to trade in services for both partners
- Both the EU and Moldovan companies can create a subsidiary or a branch office on a nondiscriminatory basis. This means they receive the same treatment as domestic companies in the partner's market when setting up a business.

An important part of the DCFTA is aligning Moldovan trade-related laws to selected EU legislative acts. The aim of Moldova's adoption of EU approaches to policy-making is to improve governance, strengthen the rule of law and provide more economic opportunities by widening the EU market to Moldovan goods and services.

Overall, the EU is Moldova's biggest trade partner. Around 70% of its exports are sent to the EU, followed by Russia (8%) and Belarus (3%).

Resource use

Land: Moldova is known for its fertile lands and agriculture - the black soils (chernozem) - that are amongst the most fertile soils in the world. Arable land accounts for around 74% of total land area equal to 3384,6 thousand ha, the highest percentage in Europe.

Water: The water-stress level in Moldova was 15.8% (in 20017). The largest share of water withdrawal is attributed to industry. Agricultural water withdrawal (including agriculture, aquaculture and forestry) comprises a small share of total water withdrawal.⁷⁹ Irrigation system is outdated and needs significant investments.

Technologies, practices and productivity

Machinery and equipment: Agricultural machinery and equipment in Moldova are mostly old and outdated, leading to higher cost of operation, low productivity and food loss. There is also a low use of protection equipment and technologies against natural disasters such as heavy rain, hail, and frost.

⁷⁸ Source for the figure: Agri-food trade statistical factsheet: Moldova-EU, 2018, European commission.

https://ec.europa.eu/agriculture/sites/agriculture/files/trade-analysis/statistics/outside-eu/countries/agrifood-moldova_en.pdf ⁷⁹ Source: FAO AQUASTAT: <u>http://www.fao.org/nr/water/aquastat/data/query/results.html</u> **Fertilizer:** The level of fertilizer use in Moldova in terms of fertilizer quantity per hectare of arable land was 24.4 kg/ha in 2016. This is significantly lower that the fertilizer level applied by peer countries in Europe and the world. In 2016, the average fertilizer application in the world was 140 kg/ha and 158.4 ka/ha in the EU.

Productivity. Low use of advanced technologies, and techniques and means of production, which leads to low productivity and low quality, and, thus, low competitiveness of agricultural products. See figures 32-35 for international comparison of agriculture productivity. Most of the productivity indicators of animal husbandry, crop farming and horticulture are well below those of the EU average. An exception is poultry meat production, where Moldova has a productivity close to the average productivity of Western Europe. Low use of advanced techniques and means of production is due to the (a) lack of knowledge about effective farming and marketing practices among farmers, and (b) low level of investments in agricultural production and marketing.

The small size of land plots leads to inefficiencies in farming, especially for crops that benefit from economies of scale (grains, sunflower, sugar beet). A semi-subsistence type of agriculture is practiced on small and fragmented land plots, with practically no cooperation amongst growers and farmers. The fragmentation of agriculture land limits also the implementation of sustainable and effective methods of agriculture and soil conservation.

There is a lack of farming knowledge and skills among most landowners/peasants and at all stages of the agriculture supply chain. In effect, most of the agricultural production is non-professional. Peasants lack the experience, technical skills and finance to develop effective and efficient production successfully.



MOLDOVA AGRI-FOOD EXPORTS, TOP TEN PRODUCTS

Figure 28. Moldova, agri-food export, 2018, \$ million. Source: UNCOMTRADE

Agriculture's role in the economy

In 2018, the agricultural production of Ukraine was \$ 13.26 billion. Agriculture represented over 10.1% of the country's GDP, and employed 15.3% of labor force. Rural area in Ukraine is home for 30.6% of total population. Agriculture's contribution to exports was significant – 42.7% of the total, while the contribution on the import side was 9.6%.

Importance of agriculture to Ukrainian economy becomes more visible in the context of foreign trade. Over 2010-2017, share of agricultural products in total export increased – from 21% in 2010 to 43% in 2018, while share of agricultural products in total imports fluctuated around 10%.⁸⁰

Agricultural exports have been the largest export category since 2013. In 2017, its share was almost 2x larger than that of the 2nd largest export category (ferrous and nonferrous metals).

The structure of farming

Farming in Ukraine consists of large commercial farms (agricultural enterprises that are legal entities), including medium size private farms, and a large number of households. In 2017, agricultural enterprises provided more than half (56.4%) of total agricultural production, including medium size private farms (with the contribution of 8.7% of the total). Smallholder farms (households) accounted for 43,6% of total agricultural production.

The share of large top-70 agricultural companies in Ukraine operate approximately 6 million ha or roughly 20% of arable land. Of those, the largest company operates more than 600 thousand ha, the smallest one – around 30 thousand ha.⁸¹

In Ukraine, it is not allowed to sell/buy land. Land can be rented from the state or private owners of land.

Key agricultural products

In 2018, the shares of plant and animal products in total agriculture production in Ukraine were 72% and 28%, respectively.

Plant production includes, particularly:

The country's main crops include:

- Cereals (wheat, corn)
- Sunflower seeds
- Sugar beet.

Animal husbandry includes, particularly:

- Poultry
- Eggs
- Cattle breeding
- Milk and dairy production.



Figure 29. Ukraine, agriculture production, 2017

Ukraine is among the top five producers and exporters in the world for a number of crops, including sunflower seeds, cereals (corn, barley, wheat), and soybeans. Key animal products are milk and dairy products, and poultry meat (figure 1).

⁸⁰ Source: National Bank of Ukraine.

⁸¹ Agricultural Sector of Ukraine, 2018, National Investment Council of Ukraine.

Note that in contrast to the pattern in Belarus, in Ukraine, small households' contribution in the production of animal origin products is higher than that of the large and medium agricultural entities. The small household producers accounted for over 54% of animal products in 2017. Households produce most of the high-value crops, including 84 percent of fruits and berries, 94 percent of vegetables, roots and tubers, 73 percent of milk, and 99 percent of honey.⁸² Large farms focus mostly on crop production, and provided 78.3% of total crop production in 2017. Large farms focus mostly on the production of cereals and forage crops, sunflower, soybean, and industrial crops.⁸³

Key export products and markets

Ukraine is one of the leading exporters of agricultural products in the world for a number of crops, including:

- sunflower oil (the first in the world)
- cereals (corn (4th), barley (4th), wheat (6th))
- soybean (7th).

Other key export items include poultry meat and eggs, and dairy products, sugar and confectionary, tobacco and tobacco products.

The main export market for Ukraine's agri-food export is the EU (figure 30)⁸⁴. In 2018, total agri-food export from Moldova was \$ 18.6 billion, of which about \$6.2 million was destined to the EU market. Cereals (including wheat) account for 38% of agri-food exports from Ukraine to the EU market. Other key exports to the EU include vegetable oils, sunflower oilseeds and oilcakes.



Figure 30. Ukraine, Agri-food export to the EU

Ukraine agri-food export to EaP countries in total makes \$1.33 billion (in 2018), which makes over 7% of Ukraine's total agri-food trade. Key products exported to EaP countries are cigarettes, poultry meat, chocolates, milk butter and oils, concentrated milk, soya bean oil cakes. The largest export markets among EaP countries are Russia and Belarus.

Ukraine signed an Association Agreement with the EU in 2014, which became effective in November 2014. EU-Ukraine trade relations are determined by the free trade area set up by the DCFTA part of the Association Agreement. The DCFTA entered into force in October 2017. It sets up a free-trade area between the EU and Ukraine in line with the principles of the World Trade Organization (for several industrial goods and agricultural products). The DCFTA allows for:

- The removal of import duties for most goods traded between the EU and Ukraine
- Provides for broad mutual access to trade in services for both partners
- Both the EU and Ukrainian companies can create a subsidiary or a branch office on a nondiscriminatory basis. This means they receive the same treatment as domestic companies in the partner's market when setting up a business.

An important part of the DCFTA is aligning Ukraine's trade-related laws to selected EU legislative acts. The aim of Ukraine's adoption of EU approaches to policy-making is to improve governance, strengthen the rule of law and provide more economic opportunities by widening the EU market to Ukrainian goods and services.

⁸² World Bank. <u>http://documents.worldbank.org/curated/en/903491559008866876/pdf/Ukraine-Accelerating-Private-Investment-in-Agriculture-Program-Project.pdf</u>

⁸³ Source: UkrStat <u>http://www.ukrstat.gov.ua/druk/publicat/kat_u/2018/zb/09/zb_sg2017_pdf.pdf</u>

⁸⁴ Source for the figure: Agri-food trade statistical factsheet: Ukraine-EU, 2018, European commission.

https://ec.europa.eu/agriculture/sites/agriculture/files/trade-analysis/statistics/outside-eu/countries/agrifood-ukraine en.pdf

In general, the EU is Ukraine's largest trading partner, accounting for more than 40% of its trade in 2016.

Resource use

Land: Ukraine has 42.2 million ha of agricultural land comprising 70% of the country's total area. Out of those, 32.5 million ha is arable land (76% of agricultural land), 5.4 million ha is pastures (13%), 2.4 million ha is grasslands (6%), 0.9 million ha is perennial plantings (2%). Ukraine is rich in Chernozem ("black soil"), one of the most fertile soils worldwide, accounting for about 25% of the global chernozem area. Ukrainian arable land area equals 30% of that of the EU and 2.1% of the world's total arable land area.

In effect, there is no land market as such in Ukraine, because sale and purchase of agricultural land are prohibited by the law. This implies that the establishment of a commercial agricultural company in Ukraine is possible via renting agricultural land from a large number of small-scale private landowners or the state.

Water: Agriculture, including irrigation and livestock production, accounts for 32% of water withdrawal in Ukraine. The water stress level was 12.7% in 2016.⁸⁵

Technologies, practices and productivity

Fertilizer: The use of fertilizers and pesticides in Ukraine has been improving over the last 10 years, however, Ukrainian agricultural producers use 2-3 times less fertilizers (52.7 kg/ha) and 1.5-2 times less pesticides per hectare than their peers in Europe, USA, Canada, India and China.

The reasons for low use of fertilizers and pesticides include, among others, inability to buy agricultural land (hence, reluctance to invest in land productivity above the required minimum), limited access to capital and lower level of intensity of agriculture in Ukraine as compared to peers.

Productivity: Average yields for most crops in Ukraine are still lower than in those in the EU due to a number of factors such as: (i) the insufficient application of fertilizers and crop protection products, (ii) and lack of modern machinery in the fields, (iii) low use of sophisticated production and harvesting techniques. In the animal husbandry sector, Ukraine's productivity is lower than the EU average for milk, eggs and bovine meat, but higher in poultry meat production (figure 10).

State policies and programs

In general, Ukraine pursues liberal policies in agriculture. Prices of agricultural products are not regulated, and there is little intervention of the state into the agricultural production and product marketing processes.

The main instruments of state support to agri-food sector in Ukraine include:

Foreign trade (protection of domestic market and promotion of exports): For promoting exports, Ukraine applies subsidies to agricultural exporters (with total amount of subsidies to be not less than 1% of total agricultural export revenue). In 2017, subsidies to agricultural producers amounted to approx. USD 160 million, or 0.14% of GDP.

Ukraine signed a Deep and Comprehensive Free Trade Agreement (DCFTA) with the EU. It sets terms of trade with the EU, Ukraine's largest trade partner. The DCFTA became effective on January 1, 2016. It provided that most agricultural quotas will gradually increase to their maximum level within 5 years. In mid-2017, EU increased select quotas for Ukrainian agricultural exports to EU.

Production support includes: According to the state budget for 2018, the total amount of subsidies to agribusiness for the current year stands at almost USD 240 million, of which:

- USD 150 million for animal farming,
- USD 38 million for farmers and farmer cooperatives,
- USD 36 million for production of agriculture products,
- USD 11.5 million for planting new gardens and vineyards and other smaller programs.

⁸⁵ Source: FAO AQUASTAT.

Support is provided through various instruments including: (i) investment support (direct budget investment; budget loans; budget guarantees for bank loans interest rate subsidies); (ii) state supply of inputs (state purchase and distribution of key inputs and compensation for some input purchases by farms; subsidized leasing of machinery; preferential prices for fuel); (iii) tax concessions for agriculture; (iv) mandatory and subsidized insurance; (v) production based and direct income support to rural households.

Marketing support which includes, for instance, state procurement and storage of agricultural products.

UKRAINE AGRI-FOOD EXPORTS

Ukra	ine-World	Ukrai	ne-Russia	Ukrain	e-Armenia	Ukraine	-Azerbaijan	Ukrair	ne-Belarus	Ukraine-	Georgia	Ukraine	e-Moldova
Sun- flower	4113 ,36	Cocoa; paste	28,0 0	Cigars, cigarettes	23,1 8	Cigars, cigarettes	28,4 8	Soya beans, whether	127, 92	Cigars, cigarettes	130, 16	Cigars and	39, 45
Maize (corn)	3506 ,06	Wine of fresh grapes	19,7 5	Poultry meat and edible	5,80	Poultry meat and edible	20,3 2	Vegatble oil-cake and other	116, 44	Soya bean oil- cake	16,8 8	Bread, pastry, cakes,	15, 71
Wheat and	3004 ,36	vegetables preparatio ns	7,13	Milk and cream; concent	5,44	Bovine meat; frozen	19,0 5	Margarine	47,6 1	Chocolat e	9,80	Waters, includin g	13, 45
Rape or colza	1010 ,94	preparatio ns Pasta	5,26	beet sugar Bovine	5,12	Cane or beet sugar	17,4 6	Bovine meat; fresh or chilled	38,0 0	Bovine meat; frozen	7,84	Chocola te	9,7 9
Oil-cake and	921, 42	whether or not Soups and	4,44	meat; frozen	5,08	cake and other	14,8 6	oil-cake and other	37,4 7	and other fats	7,81	Butter and other	8,6 5
beans,	831, 19	broths and preparati	4,18	Chocolate Butter	4,93	other fats and oils	8,68	pastry, cakes	- 23,71	pastry, cakes	6,72	and curd Wheat	8,6 3
Barley	92	Ice cream Animals;	3,02	and other fats and	3,62	Chocolate	7,87	Sun-flower seed, oil	18,4 3	meat and edible	6,10	or meslin	8,28
and	43	live, n.e.c. in Coffee, tea,	2,00	Margarin e Bread.	3,58	confection ery	6,92	Chocolate Bovin	16,7 8	cream;	5,95	Poultry meat Food	7,0 2
cigarill	78 216	mate extracts, Cereal	1,93	pastry, cakes,	2,86	Margarine	6,62	meat, frozen Sugar	15.0	Margarin e Waters.	5,69	prepara tions Beer	6,67
beet	50	prepared foods	1,47	Alcohol, <80%	2,82	Nuts	6,41	confection ery	5	including . mineral	5,43	made from	6,5
0,	00 5000,00	0,	00 20,0040,0	0 0	0,0 20,0 40,0	(),0 20,0 40,0	0	,0 100,0200,0	0,0	100,0200,0	0,0	0 50,00

Figure 31. Ukraine, agri-food export, 2018, \$ million. Source: UNCOMTRADE

ANNEX 3. PRODUCTIVITY COMPARISONS

PRODUCTIVITY, ANIMAL ORIGIN PRODUCTS



Figure 32. Productivity comparison animal origin products





Figure 33. Productivity comparison plant origin products



PRODUCTIVITY, PLANT ORIGIN PRODUCTS, FRUITS, GRAPES, BERRIES

Figure 34. Productivity comparison plant origin products



PRODUCTIVITY, PLANT ORIGIN PRODUCTS, VEGETABLES

Figure 35. Productivity comparison plant origin products

ANNEX 4. DAIRY PRODUCT EXPORT FROM EAP COUNTRIES

EXPORT TO RUSSIA		2012	2014	2015	2017	2018
0401: Milk &	Armenia	0.00	0.00	0.00	0.00	0.00
cream; not	Azerbaijan	0.00	0.00	0.00	0.00	0.00
containing added	Belarus	196.59	263.52	185.24	227.88	170.32
sugar	Georgia	0.00	0.00	0.00	0.00	0.00
	Moldova	0.00	0.00	0.00	0.00	0.00
	Ukraine	0.02	0.00	0.00	0.00	0.00
		2012	2014	2015	2017	2018
0402: Milk	Armenia	0.40	3.18	0.10	2.69	0.57
and cream;	Azerbaijan	0	0	0	0	0.04
containing added	Belarus	467.45	616.82	459.87	372.10	213.02
sugar	Georgia	0.00	0.00	0.20	0.00	0.00
	Moldova	0.00	0.00	0.00	0.00	0.00
	Ukraine	35.80	7.80	0.00	0.00	0.00
		2012	2014	2015	2017	2018
0403:	Armenia	0.00	0.00	0.00	0.20	0.60
milk and cream	Azerbaijan	0.00	0.00	0.00	0.04	0.00
yoghurt, kephir	Belarus	54.88	112.22	86.00	133.14	154.45
	Georgia	0.00	0.00	0.00	0.00	0.00
	Moldova	0.00	0.00	0.00	0.00	0.00
	Ukraine	0.00	0.00	0.00	0.00	0.00
		2012	2014	2015	2017	2018
0404: Whey	Armenia	0.00	0.00	0.00	0.00	0.00
consisting of natural	Azerbaijan	0.00	0.00	0.00	0.00	0.00
milk constituents	Belarus	71.63	74.68	48.84	56.03	25.13
	Georgia	0.00	0.00	0.00	0.00	0.00
	Moldova	0.00	0.00	0.00	0.00	0.00
	Ukraine	3.50	5.10	0.10	0.00	0.00
0.405 0.44		2012	2014	2015	2017	2018
0405: Butter	Armenia	0.00	0.50	0.10	0.00	0.10
derived from milk;	Azerbaijan	0.00	0.00	0.00	2.40	1.00
dairy spreads	Belarus	276.00	336.54	267.39	380.95	245.93
	Georgia	0.00	0.00	0.00	0.00	0.00
	Moldova	0.00	0.00	0.00	0.00	0.00
	Ukraine	0.25	26.96	0.18	0.00	0.00
0406: Choose		2012	2014	2015	2017	2018
and curd	Armenia	2.11	4.88	21.54	12.19	8.00
	Azerbaijan	0.00	0.00	0.00	1.30	2.70
	Belarus	568.57	/88.48	629.76	/66.60	/59.25
	Georgia	0.00	0.00	0.00	0.00	0.00
	Moldova	0.00	0.00	0.00	0.00	0.00
	Ukraine	307.76	/9.09	9.53	0.00	0.00

* Source: UNCOMTRADE: <u>https://comtrade.un.org/data/</u>

ANNEX 5. GEOGRAPHICAL INDICATIONS FROM EAP COUNTRIES PROTECTED IN THE EU

GI name	GI name Country		Since		
Sevani Ishkhan	Armenia	Fresh fish	01-06-2018		
Akhasheni	Georgia	Wine	01-04-2012		
Atenuri	Georgia	Wine	01-04-2012		
Gurjaani	Georgia	Wine	01-04-2012		
Vazisubani	Georgia	Wine	01-04-2012		
Kardenakhi	Georgia	Wine	01-04-2012		
Kakheti (Kakhuri)	Georgia	Wine	01-04-2012		
Kotekhi	Georgia	Wine	01-04-2012		
Manavi	Georgia	Wine	01-04-2012		
Mukuzani	Georgia	Wine	01-04-2012		
Napareuli	Georgia	Wine	01-04-2012		
Sviri	Georgia	Wine	01-04-2012		
Tvishi	Georgia	Wine	01-04-2012		
Tibaani	Georgia	Wine	01-04-2012		
Kindzmarauli	Georgia	Wine	01-04-2012		
Kvareli	Georgia	Wine	01-04-2012		
Tsinandali	Georgia	Wine	01-04-2012		
Khvanchkara	Georgia	Wine	01-04-2012		
Chacha	Georgia	Spirit drink from grape	10-11-2016		
Acharuli Chlechili	Georgia	Cheeses	10-11-2016		
Dambalkhacho	Georgia	Cheese	10-11-2016		
Tushuri Guda	Georgia	Cheese	10-11-2016		
Imeruli Kveli	Georgia	Cheese	10-11-2016		
Kobi	Georgia	Cheese	10-11-2016		
Megruli Sulguni	Georgia	Cheese	10-11-2016		
Meskhuri Chechili	Georgia	Cheese	10-11-2016		
Svanuri Sulguni	Georgia	Cheese	10-11-2016		
Sulguni	Georgia	Cheese	10-11-2016		
Tenili	Georgia	Cheese	10-11-2016		
Kartuli Kveli	Georgia	Cheese	10-11-2016		
Chogi	Georgia	Cheese	10-11-2016		
Matsoni	Georgia	Dairy	10-11-2016		
Churchkhela	Georgia	Fruit product	10-11-2016		
Ciumai	Moldova	Wine	01-09-2014		
Codru	Moldova	Wine	18-10-2016		
Divin	Moldova	Spirit drinks	18-10-2016		

Romănești	Moldova	Wine	01-09-2014
Ştefan Vodă	Moldova	Wine	18-10-2016
Valul lui Traian	Moldova	Wine	18-10-2016
Novyj Svit (Novy Svet)	Ukraine	Wine	01-01-2016
Soniachna Dolyna (Soniachna Dolina)	Ukraine	Wine	01-01-2016
Author – Gagik Gabrielyan

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