

# **Moldovan dairy: the difficult way towards the EU market**

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Final draft.

February-June, 2017

## **Disclaimers**

*This document is published as part of the project „Understanding the Association Agreements (AAs) and Deep and Comprehensive Free Trade Areas (DCFTAs) between the European Union and Ukraine, Georgia and Moldova” funded by the Swedish International Development Cooperation Agency (SIDA). The project is led by the Centre for European Policy Studies (CEPS) and conducted in partnership with the Institute for Economic Research and Policy Consulting (IER) in Kyiv, Expert-Grup in Chisinau and Reformatics in Tbilisi.*

*The author would like to express his gratitude to Michael Emerson and Denis Cenușă for their valuable comments and suggestions. However, the views expressed in this publication belong to the author alone and cannot be attributed collectively or separately to the funding donor, the implementing organizations or other individual experts.*

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# Abbreviations

CIS – Commonwealth of the Independent States

DCFTA – Deep and Comprehensive Free Trade Agreement

EU – European Union

FSMS – Food Safety Management Systems

HACCP – Hazards Analysis and Control of Critical Points

ISO – International Standards Organization

M&E – Monitoring and Evaluation

WTO – World Trade Organization

SPS – Sanitary and Phytosanitary Standards

## Executive summary

**As part of the EU-Republic of Moldova Association Agreement, the Republic of Moldova committed to approximate its sanitary and phytosanitary and animal welfare law to that of the European Union. However, approximating the EU legislation is not going to be an easy process.** The Decision no.1/2016 of the EU-Moldova Sanitary and Phytosanitary Sub-Committee modifying Annex XXIV-B to the Association Agreement [2016/1074] adopts the full list of the EU legislation to be approximated by the Republic of Moldova and can be regarded as official Moldova SPS Strategy. The SPS Strategy refers to around 240 directives and regulations including general aspects, veterinary legislation, placing on the market of food, feed and animal by-products, food safety rules, specific rules for feed, phytosanitary legislation, genetically modified organisms and veterinary medical products. Deadlines for approximation cover the time period 2016-2020. It should be mentioned that around 10 pieces of EU legislation are directly relevant for the Moldovan dairy sector, which is the subject of this paper. Unfortunately, we do not have any evidence on the effective degree of approximation of the pieces of legislation due to be approximated in the period 2016-mid 2017.

**As provided by the Association Agreement, the sanitary, phytosanitary and animal welfare law of the Republic of Moldova shall be gradually approximated to that of the Union.** For this, an approximation list of the EU sanitary, phytosanitary and animal welfare law should be defined. The list shall be divided into priority areas based on the technical and financial resources of the Republic of Moldova. Further, according to the Agreement, the Republic of Moldova shall identify its trade priority areas. As revealed by a number of public statements and by official documents, Moldovan officials see, among others, the dairy sector as a priority one. Considering the nature of the dairy products, the food safety rules are expected to be a real challenge when it comes to approximation of the domestic legislation to the European legislation and, especially, to its effective implementation.

**The current situation in the Moldovan dairy sector is complex and dynamic.** The sector faces growing competitive pressures from the outside world, an increased diversity of products available on the shelves, growing production costs, particularly in the milk-production sector, and a more sophisticated and better-informed consumer. The domestic production of milk is shrinking, while the livestock of dairy cows is rapidly declining. Despite the fact that Moldovan producers are not yet able to fully exploit internal market opportunities, the Moldovan authorities have already set the aim to get authorization for exporting dairy products to the EU already by 2018.

**A precondition for the EU exports' authorization is implementation of the HACCP-based food safety management systems by the dairy producers.** The systems need to be audited and certified by third parties with experience and reputation in this area. As a rule, the Hazards Analysis and Critical Control Points (HACCP)-based food safety management systems are certified as part of an internationally accepted standard, such as the ISO 22000 family of standards. In this regard, it should be mentioned that besides the HACCP, a food safety management system can be based on other standards, but the EU recognizes the HACCP as the binding standard. While the costs associated with the implementation of the HACCP *per se* may not be particularly burdensome for the large producers, the international evidence suggests that these may fall as a heavy burden on the small producers from the dairy industry. In any case, the total costs to be supported should also include the full implementation of the programs and standards which are precursors to the HACCP, such as those defining general good management practices or hygienic requirements. Among others, this requires a significant technological upgrade of the dairy plants: according to our conservative estimates, the total volume of upfront investment necessary to bring the milk processing sector in line with all requirements are about 120-170 million Euro. This figure does not include any maintenance or recurrent costs.

**However, this does not mean that those Moldovan dairy producers that already meet or will meet in the near future the EU SPS requirements should wait for the alignment of the entire sector in order to be allowed individually to export to the EU.** According to the Article 12 of the Regulation (EC) no.854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organization of official controls on products of animal origin intended for human consumption, third countries' establishments may be allowed to export to the EU provided that they appear on the lists of allowed establishments drawn up in accordance with the cited article. In order for the Moldovan dairy producers to be included in such a list, the National Food Safety Agency must guarantee that: 1) the authorized establishment, together with any establishments handling raw material of animal origin used in the manufacture of the dairy products, complies with specific hygiene rules as defined by Regulation (EC) No

853/2004; 2) it effectively supervises the establishments and makes available to the European Commission, where necessary, all relevant information on establishments furnishing raw materials; and 3) it has real powers to stop the establishments from exporting to the Community in the event that the establishments fail to meet the requirements. There is also another explicit condition that no Member State should object to the inclusion of Moldovan producers in these lists. This venue of authorizing individual establishments appears as economically the most sound and reasonable strategy for the Moldovan dairy products to get exported to the European Union market.

**A key aspect to be satisfied by any food operator is traceability and safety of the raw material used.** Here, a key problem is the difficulty to enforce and monitor the hygienic and safety requirements in the households' sector producing milk for industrial use. The sector is composed of small herds scattered throughout the country making it difficult to enforce and properly monitor the milk quality, safety and animals' health standards. Any restructure of the households-based milk production sector would necessarily involve costs and sustained efforts. Two figures are helpful to better understand the intimate relationship between milk producing and milk processing sectors in Moldova: on the one hand, 90 percent of the milk used by the domestic dairy industry comes from the households; on the other hand, half of the milk produced by the households is supplied downstream to the milk processing sector.

**A higher level of vertical and horizontal integration is necessary in the dairy sector, in order to achieve reasonable economies of scale and to guarantee the full implementation of the safety standards 'from farm to fork'.** In this regard, the Government may provide the necessary incentives by partially or fully compensating the certified implementation of the HACCP-based food safety management systems by the small producers of dairy, while at the same time increasing the support offered to corporate-based producers of milk. Such a scheme requires adequate protection from corrupt arrangements, though. 'Moving' the livestock from households to the economically more efficient farms or corporate entities involves enormous costs, ranging from 3000 Euro up to 15000 Euro per dairy cow as upfront investment.

**At the same time, considering the demographic, economic and market trends in long term, it is clear that households-based model of milk production is not sustainable.** The Moldovan laws and regulations exempt the households producing milk for own consumption or supplying small quantities of milk to final consumers and/or to local retail markets from the general sanitary and hygienic rules. Moreover, derogations from the general hygienic norms are possible for traditional products, provided that the national authorities and the consumers have been properly informed. The key problem is with the economic sustainability of household-based model of producing milk for industrial use. To preserve this sector, the Government should support the aggregation of small herds in larger ones and to ensure (including through adequate enforcement of the environmental and hygienic legislation) their movement outside the villages, in well-designed facilities that would provide for adequate cattle raising conditions all year round, for provision of quality feed and for the minimization of the environmental impact of the cattle raising. Individual farmers should also be encouraged to cooperate, especially when it comes to provision of fodder and to product marketing, to think of alternative species (such as goat and sheep) and to set up small farmers-controlled dairies.



## Introduction

**The dairy industry plays an important economic and social role in the Republic of Moldova.** By generating an estimated share of 12 percent of the total value-added in the Moldovan food industry, the dairy industry is an economically important sector. Moreover, the sector also has important social ramifications, because the Moldovan dairy producers purchase more than 90 percent of the raw milk used as production input from small farms or individual households. With such a strong inter-sectors relationship, it is clear that any positive or negative shock falling on the producers of dairy should be expected at least partly to be felt by the primary producers of the milk and vice-versa.

**The dairy industry makes thus a very interesting case for the assessment of the socio-economic impact of introducing international Food Safety Management Systems (FSMS).** While adopting the new food safety management standards promises important benefits for the producers and exporters (such as bigger share on the domestic and foreign markets, higher producer prices), as well as for the domestic consumers and public bodies, they come with costs. One source of these costs will be the additional capital investment that will be required in order to respect industry-specific general management standards and to adopt HACCP-based FSMS.

**HACCP represents a preemptive strategy to food management safety.** The key feature of the HACCP– as evidenced by its very name of Hazard Analysis and Critical Control Points – is that of taking systematic preventive approaches to the food safety from biological, chemical, and physical hazards in production processes that can cause the finished product to be unsafe, and of designing measures to reduce these risks to a safe level. In this manner, HACCP attempts to avoid hazards rather than attempting to inspect finished products for the effects of those hazards. Implementing such a system is a novelty for Moldovan dairy producers, especially the smaller ones, and thus may require significant investments modernize the logistics system, to learn and to maintain the new systems.

**The goal of the proposed paper is to undertake a preliminary assessment of potential economic effects (and more on the costs rather than of the more uncertain benefits) of introducing the international FSMS in the dairy industry.** The paper delimitates small producers of milk as a particular subsector which is likely to suffer because of the introduction of more advanced standards in the downstream industry. We rely on data gathered during a focus groups with 12 Moldovan farmers held by Expert-Grup in March 2017 and on interviews with experts from the dairy sector. Unfortunately, we faced difficulties to gather official sector-level aggregated data. The paper includes a set of recommendations regarding optimal policy to support adopting the FSMS and to minimize the negative impact for the milk producers and milk processors.

# 1. Economy of the dairy sector in Moldova

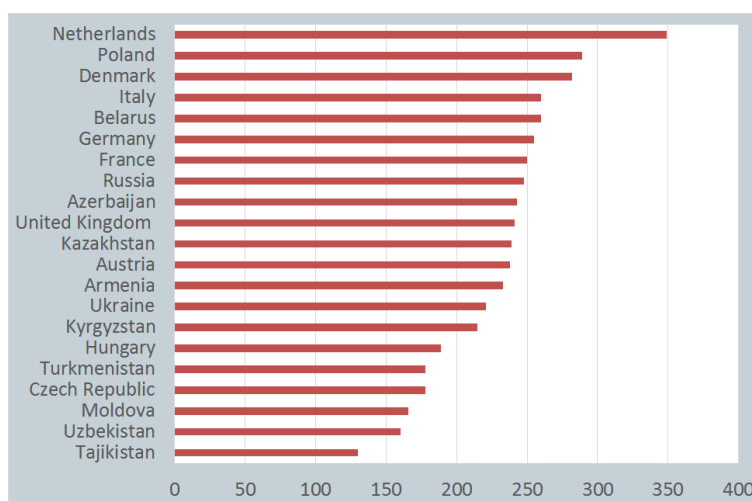
*This chapter makes an economic assessment of the current conditions of the Moldovan dairy sector. It offers the background required to understand the challenges related to adoption of international standards in the area of the food safety management.*

**Current situation on the Moldovan dairy industry and dairy market is both complex and fluid.** The sector faces growing competitive pressures from other countries in the region (mainly Ukraine, Romania, Poland, Germany and Belarus), an increased diversity of products available on the supermarkets shelves and a growing influence of the conventional and social media in exposing cases of defective dairy products. To withstand the competition, the Moldovan producers are sometimes inclined to lobby protective policy measures limiting the international trade (as it has been the case in 2016, when Moldova entered a trade spat with Ukraine over dairy products). However, a better-informed Moldovan consumer is gradually becoming the key driving element of the market, thus slowly but steadily turning the market from being suppliers-driven into a consumers-driven one.

**Guaranteeing safety of the dairy products remains a challenge for the Moldovan market.** According to one of the most recent consumers' survey, the milk and dairy products represent the largest share, of around 32 percent, of the total number of defective food items found in the supermarkets<sup>1</sup>. This directly reflects the challenges encountered by those producers and importers that are not able to keep the pace with the demand coming from the more sophisticated and well-informed consumers.

**The level of consumption of milk and dairy in Moldova is comparatively low....** It is widely known that milk and dairy products provide essential nutrients for the humans, even though there is no univocal scientific evidence on the optimal per-capita level of consumption, with the latter depending on many economic, social and cultural factors. Considering, however, the typical consumption levels of the countries in the wider region (European and Central Asian region) for which comparable data are available, one can conclude that the consumption of the milk and dairy products in Moldova is rather on the low end (**Error! Reference source not found.**).

**Figure 1. Consumption of milk and dairy products in milk equivalent in some European and Central Asian countries, kg per capita per year, the most recent observation available for the period 2009-2013**



*Source: National Bureau of Statistics of Moldova.*

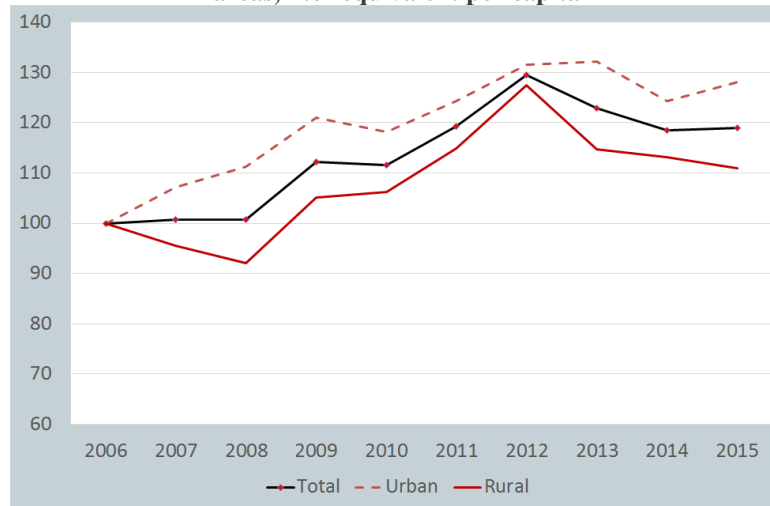
**... but growing and thus promising significant economic opportunities.** With a short-term horizon in mind, the low level of consumption can be seen as a weakness. In a longer-term perspective, however, the low level of current

<sup>1</sup> Magenta Consulting, "Report for the Consumers Protection Agency", December 2016.



consumption reveals a market potential that competitive domestic or foreign firms will exploit. Indeed, the level of domestic consumption of milk and milk products has grown significantly over the recent decade (Even though the growth has somewhat stalled and even reversed since 2012, this is more attributable to declining of milk consumption in the rural areas, mainly as an effect of drought weather which slashed the number of dairy cows and reduced the amount of harvested milk, as revealed by the Figure 2). Growth in income, widening range of products on the shelves and more informed consumers about the benefits of dairy products are probably the main factors behind the growing consumption of milk products in Moldova over the recent decade. These factors will have a persisting influence in the long-term. We also expect that the impact of the drought will gradually vanish, as an increased number of rural households will switch to purchasing milk products on the market rather than producing themselves for subsistence consumption.

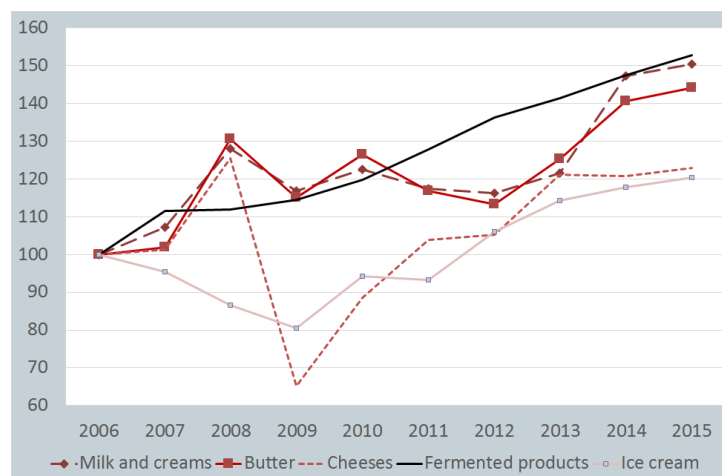
**Figure 2. Evolution of consumption of milk and milk products in the period 2006-2015 in the Republic of Moldova by residence areas, liter equivalent per capita**



Source: National Bureau of Statistics of Moldova and author's calculations.

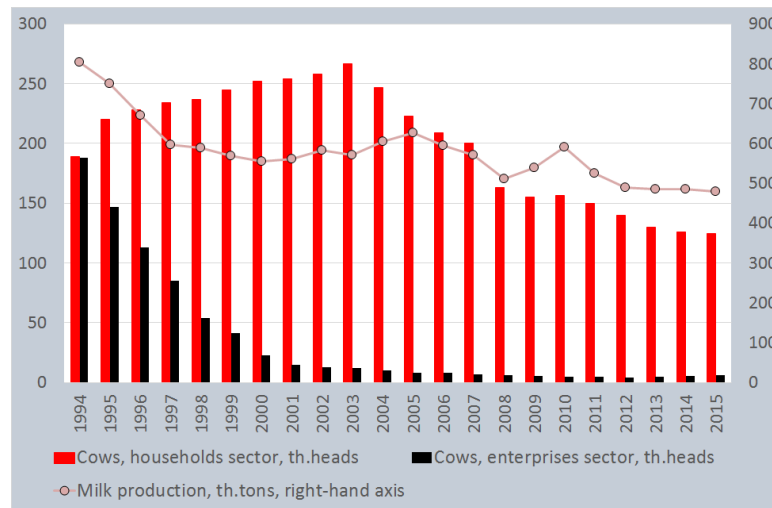
**The evolution of the domestic production of dairy products goes opposite to the production of milk.** Responding to the growing domestic demand, the domestic production of dairy products has grown over the recent decade, even though in a rather unstable fashion (Figure 3). Production of milk and various creams, of butter and of fermented products has grown much steadier compared to production of other key products, such as ice cream and various cheeses. The latter two products face particularly fierce international competition. What is particularly striking, however, is the fact that the generally growing trend of domestic production of dairy products has been paralleled by a steady decline of domestically-produced raw milk (Figure 4).

**Figure 3. Evolution of domestic production of key dairy products, in physical units, 2005=100%**



Source: National Bureau of Statistics of Moldova and author's calculations.

**Figure 4. Evolution of the livestock of cows by sectors and total production of milk in Moldova, the period 1994-2015**

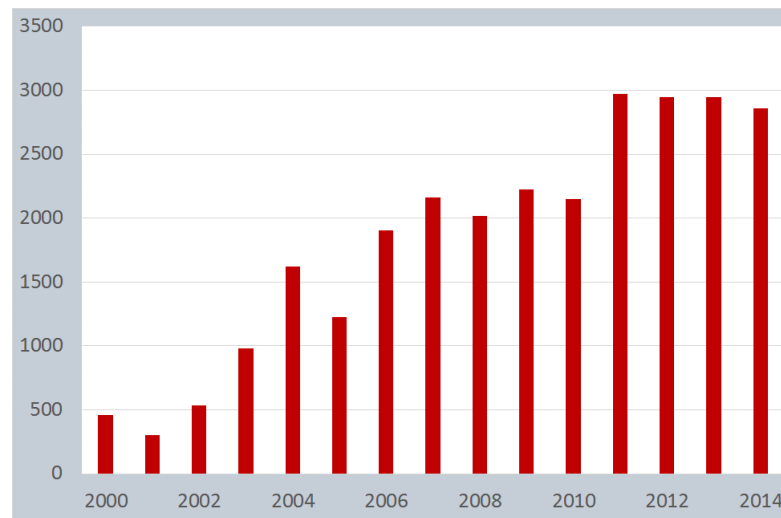


*Source: National Bureau of Statistics of Moldova and author's calculations*

**Loss of domestic production of milk comes entirely on the account of declining livestock of dairy cows.** Decline of dairy cows' stock began in the households' sector in the mid-2000s, due to recurrent droughts, growing costs of high-quality fodder and growing opportunity costs of being self-employed in the agriculture as compared to migrating abroad. In the enterprises sector, the livestock collapse took place even earlier, in mid-1990s. The corporate sector has been simply dismantled following the rather disastrous agricultural reforms in early and mid-1990s, including privatization of the agricultural land and productive assets, which resulted in corporate farms being literally disintegrated piece by piece. It should be mentioned that the entire times series in the Figure 4 covers only the right-bank Moldova. However, similar trends, even though at smaller geographical scale, shaped the livestock in the break-away Transnistrian region.

**The slowly growing dairy cows' productivity has only partially offset the quantitative impact of declining herds.** Moldovan dairy producers have compensated the dwindling domestic supplies with an increased amount of imported raw materials, as revealed by the Figure 5. Over the recent decade, Ukraine has been the main source of the imported raw material for the Moldovan dairy (with around 70 percent of supplies), while Belarus comes on the remote second place (15 percent). Growing quantities of imported raw materials (mainly in form of powder milk) reveal weakening domestic supply chains, and the causality probably goes in both directions. On the one hand, the milk producers are not able to meet the quality and quantity requirements of the dairy producers and the latter substitute domestic supplies with imports. On the other hand, due to structural weaknesses resulting in low productivity, the milk produced domestically is not competitive with imports and thus the domestic milk producers themselves reduce the level of activity. However, completely substituting domestic with imported milk would make the dairy product even less competitive, mainly due to high transportation costs.

**Figure 5. Import of concentrated and non-concentrated milk and cream in the Republic of Moldova, thousand tons, the period 2000-2014**



*Source: UN Comtrade database.*

**A number of structural and technological issues in the milk production sector undermine the competitiveness of the Moldovan dairy products in general.** As revealed by a focus-group with the Moldovan farmers held by Expert-Grup in March 2017, the key weaknesses are the following:

- The cows' livestock is concentrated in the households' sector, and is composed mainly of small herds of 1-2 heads, which makes it impossible to achieve any reasonable economies of scale. These economies would appear starting with 200-250 heads in the farm. In the households' sector, the dairy cows are fed mainly on grass and hay, crop residues and sometimes cultivated fodder. Supplementary enriched feeding is used quite seldom, only when financially feasible.
- Because of distribution of the herd and of the uneven round-the-year supply of high-quality fodder, the production of domestic milk exhibits strong seasonal patterns which makes it difficult to secure stable supplies of milk to the dairy producers. In the winter, there is almost no surplus milk for the households to sell, and the production capacities of the dairy producers get severely underused. In the spring and summer, on the contrary, there is an excess of milk which dairy producers buy at very low price, often below the production costs.
- Poor quality of fodder coupled with genetic degradation of the local breeds results in relatively low yields of milk. The apparent yield of 3.7 tons of milk per dairy cow annually (according to the 2015 statistical data) may be comparable with the corresponding indicators of Romania and Bulgaria, but it is twice below the productivity level in Ukraine and Belarus which are the direct competitors of the Moldovan milk producers when it comes to supplying raw materials at competitive prices to the industrial users.
- The milk-producing households use rudimentary technologies and conditions for raising dairy cattle. Cows are often held in small and cold barns which are insufficiently dry and insufficiently clean. Due to improper barns design, the ventilation and illumination are often missing or inadequate.
- The physical conditions of the cows (such as cleanness), as well as the milking, milk-handling and milk-storage conditions in the households' sector most often do not meet basic safety and hygiene requirements. Sometimes it may happen that cow milk gets mixed with goats or sheep milk.
- The level of training of the farmers is often inadequate for a successful market-oriented milk-producing household, especially in such key aspects as animals' health, feeding, hygienic requirements and milk quality monitoring.

**The weaknesses revealed in the households-based milk production sector severely limit the farmers' financial resources which are required to meet increased quality requirements in the downstream industry.** If Moldovan producers decide to adopt international food safety management systems, this will require them to implement more effective strategies to secure timely provision of high-quality and safe milk to be used as input. Currently they collect the milk through a national network of 620 collection points, but this mechanism is increasingly getting costlier and not

offering the desired level of safety. Reducing the costs and securing the milk traceability would be possible either through stronger vertical integration with milk producers (i.e. dairy producers will invest in own herds) or through producers relying even more on imported raw material, which would either make the production costlier or reduce quality (if using lower-quality powder milk or other alternative ingredients). This will leave the milk-producing households with the option of producing even more for own consumption and / or for small supplies to the local agricultural markets. Alternatively, the households producing milk will have to restructure and to achieve a higher level of horizontal integration in order to be able to meet the processors requirements. With around half of the households' milk being sold to dairy producers, it is clear that, in any case, there are going to be costs to be supported by producers of milk.

## 2. Costs and benefits of the food safety management systems

*This section undertakes a typology of costs and benefits involved by the food safety management systems. It also conducts a preliminary assessment of the better-known costs to be supported by Moldovan producers.*

**Moldova currently exports few products of animal origin to the EU.** Honey, aquaculture products and eggs powder are the only Moldovan products of animal origin allowed to enter the EU market. Honey is exported in significant amounts (around 3500 tons in 2015) and makes the case of a quite successful product, even though challenges still abound. There is only one authorized producer of fishery products and there are zero exports of eggs powder, simply because no domestic producer has the necessary technology for this product. So, in general, it looks like Moldova does not fully exploit existing export opportunities. At the same time, it should be acknowledged that even the combined economic importance of these products is rather marginal.

**Moldova wants to extend the range of exported goods and to export, inter alia, the domestic dairy products.** As stated by Moldovan officials, Moldova aspires to get authorized until end 2018 to export fresh eggs, poultry and dairy to the EU<sup>2</sup>. If Moldovan producers get authorization to export these products to the EU, this will make a significant economic impact because, compared to the economically less significant honey, fish products and eggs powder, the aspiring products make significant shares and quantities of the domestic production. Dairy is a particularly important sector, with significant economic and social ramifications, because it represents an important source of income for rural households. Considering that among the list of third countries establishments allowed to export dairy products to the EU there are 8 firms from Belarus, 10 from Russia and 15 from Ukraine, it looks quite feasible at least for a few Moldovan producers to get exports authorizations. The developmental impact of the exports orientation of the dairy sector as a national strategy is more doubtful, however, simply because the Moldovan producers are still unable to satisfy fully the domestic demand and because even on their domestic market the producers are often unable to withstand direct competition with Ukrainian, Belarusian and, increasingly, Romanian, Polish and German firms. While the price margins may be more attractive in the EU, it would be naïve to expect that the European market would be less competitive than the Moldovan own domestic market. Of course, this should not preclude any current or future particularly successful dairy producers from aspiring to enter the European market.

**However, entering the EU market will require the Moldovan producers to fully meet food safety regulations to guarantee healthy and disease-free products for consumers.** Moldova dairy products would be allowed to enter the EU market only if the national competent authority and producers themselves provide enough and convincing evidence regarding successful implementation of food safety management systems and of sufficient surveillance and monitoring capacity. Over the recent two decades, the compliance with the HACCP-based food safety management systems has become a minimum standard to access the EU food market. The HACCP history started in the late 1960s in connection to the US space program and since then evolved into internationally the most logical tool for ensuring food safety management, by adapting the traditional inspection methods to a modern, science-based and evidence-based system. The principles of the Hazard Analysis and Critical Control Point (HACCP) system were adopted by the Codex Alimentarius Commission.

**One could affirm that HACCP features as core doctrine in the EU food safety legislation.** Current EU legislation, as provided by the Directive 93/43/EEC on the hygiene of foodstuffs requires producers to identify any step in their activities which is critical to ensuring food safety and ensure that adequate safety procedures are identified, implemented, maintained and reviewed on the basis of the following principles, used to develop the system of HACCP. The EU importers have the same requirements regarding their partners from the third countries. The Regulation No 853/2004 on the hygiene of foodstuffs says that the food imported into the Community is to comply with the general requirements laid down in European regulations or satisfy rules that are equivalent to Community rules. Moreover,

<sup>2</sup> Statements made by Mr. Octavian Calmic, Minister of Economy of the Republic of Moldova and Mr. Ghergher Gaberi, chief of the National Food Safety Agency of the Republic of Moldova, as reported by Realitatea TV on 3<sup>rd</sup> of May 2017, [http://www.realitatea.md/piata-ue-ramane-neexplorata--moldova-are-voie-sa-exporte-doar-anumite-produse-de-origine-animaliera---video\\_56885.html](http://www.realitatea.md/piata-ue-ramane-neexplorata--moldova-are-voie-sa-exporte-doar-anumite-produse-de-origine-animaliera---video_56885.html).

some retailers may require additional private standards to be satisfied in order to establish commercial relations with new suppliers.

**Food safety management systems are compulsory in the Republic of Moldova for all business operators in the dairy sector except producers of agricultural raw materials.** The mandatory adoption of the HACCP principles was firstly introduced by virtue of the Law of the Republic of Moldova No.78-XV of 18 of March 2004 of the foodstuff which obliged all food business operators in the sector of food to adopt and implement food safety management systems (FSMS) based on the HACCP principles. For all activities subject to the HACCP a deadline for implementation was set for January 1<sup>st</sup> of 2007. We did not find any official or unofficial information on the number of food business operators that already implemented HACCP-based food safety management systems, although, according to the law, existence of the HACCP-based FSMS is a must in order for the company to get authorization from the National Food Safety Agency. We found indirect evidence that only two companies have implemented HACCP-based FSMS which have been certified as part of the ISO 22000. In order to access the EU market, the HACCP-based FSMS has to be certified as part of an internationally recognized ISO system. Inter alia, this would require that the quality of the milk supplied as raw material also fully meets safety requirements.

**Table 1. Benefits and costs of food safety regulations**

	<b>Benefits</b>	<b>Costs</b>
Farms	Avoided costs of faulty products Higher efficiency Higher revenues	Prevention costs Implementation costs Appraisal costs
Firms	Avoided costs of faulty products Higher efficiency Higher revenues Increased personal motivation Long-term reduction of production costs (due to better management and reduction in losses)	Prevention costs Implementation costs Appraisal costs
Consumers	Avoidance of food-borne diseases Avoidance of income losses Increase working productivity	Monitoring of compliance by producers
Public bodies	Savings on medical care and social security	Enforcement costs Monitoring costs, including cost related to public laboratories equipment

*Source: adjusted based on Romano et al, 2004 and IFC, 2011.*

**Adopting certified FSMS involves both benefits and costs.** There is a growing body of literature evaluating the costs and benefits of the HACCP-based FSMSs. Table 1 cross-tabulates types of costs and benefits of the HACCP for various involved stakeholders (farmers, firm, consumers and public bodies). Even though the HACCP-based FSMS are not mandatory for farmers, still, the latter will have to bear costs related to implementation of the sector-specific and general hygienic requirements, including those related to animal health and rules for safe milk harvesting, storage and transportation. For producers, the most important benefit probably comes from increased revenues, but upfront investment and recurrent costs will be necessary. The costs associated with the implementation and operation of the HACCP-based include three key categories: 1) cost of prerequisite programs (e.g. start up and recurring costs of new equipment, building, renovation); 2) HACCP design and implementation (e.g. costs of development of HACCP plan, training of personnel, HACCP plan validation); and 3) HACCP recurring/operational costs (e.g. cost of record keeping and verification of HACCP plan, corrective actions). Consumers would also gain by avoiding the products of the non-complying firms, but this would require costs related to evaluating and monitoring the level of compliance by the producers present on the market. FSMS also promise gains for the public health system, but public authorities would have to support costs related to enforcement of the regulations at the initial stage and to the need to continuously monitor their observance. Inter alia, this would require setting up laboratories that would be adequately equipped to undertake a vast array of analyses.

**National sanitary and hygienic standards offer exemptions to the subsistence-oriented or local markets-oriented households.** The Order no.173 of 14/07/2006 of the Ministry of Agriculture and Food Industry defines rather stringent sanitary and veterinary norms for the health conditions regarding the production and marketing of raw milk, heat-treated

milk and dairy products. The Governmental Decision no.435 of 28/05/2010 defines the specific rules of hygiene for all products of animal origin. However, these sets of rules and norms are only compulsory for the milk producers supplying milk for industrial use or in larger quantities on the national retail market. Both offer reasonable degrees of flexibility and exemptions. The rules do not apply to small households producing milk for own consumption or supplying small (albeit undefined) quantities of milk directly to the consumers or to the local retailers selling the milk directly to the consumers. Also, some derogations from the hygienic norms are allowed for the traditional food, provided that national competent authorities and consumers are adequately informed about the deviations. In this regard, the provisions of the Moldovan legislation are fully in line with the EU legislation as defined by the Moldovan SPS Strategy approved in 2016 following and updating the Association Agreement. This is to emphasize that neither Moldovan Government nor the European Commission are forcing the small Moldovan farmers to implement costly European legislation.

**Nonetheless, it should be mentioned that, the Moldovan households-based producers of milk used by industrial dairy producers are in a dire situation when it comes to respecting the basic norms of the food safety regulations.**

Most of the corporate producers of milk (in a total number of around 40 establishments) apparently meet the hygienic requirements to a satisfactory degree. However, in case of the households producing milk (in a total number of around 120 thousand units), more than 90 percent of the establishments do not respect the requirements. According to interviewed farmers, the minimal upfront investment necessary for the households' sector to fully meet the hygienic and safety requirements would range from 3000 Euro to 15000 Euro per dairy cow. Based on the lower end estimate, this would make for a total investment of around 300 million Euro per sector. To put this figure in context, in 2016 the total investment in the agricultural sector in Moldova barely exceeded 1 billion Euros level.

**There is no clear evidence available on the potential costs and benefits of the FSMS for the Moldovan dairy producers.** As part of our research, we tried to get evidence on the expected benefits and costs of the dairy firms, however, we did not benefit of support of the Moldovan Association of Milk and Dairy Producers nor of the National Food Safety Agency. According to best of our knowledge, there are only two food operators in the Moldovan dairy sector to hold internationally certified HACCP-based FSMS. According to a dairy expert we interviewed, three other large companies initiated the process of adopting the HACCP-based FSMS, but are still quite far from certifying it.

**There is some relevant international evidence available, however.** For instance, in case of the Ukrainian dairy firms, the total costs associated with introduction of the FSMS in a typical mid-sized enterprise were about 42-45 thousand USD per year, but this does not include the equipment and building investment<sup>3</sup>. According to the (unpublished) Moldovan National Dairy Strategy, the production capacities of most of the producers are outdated and need significant reinvestment. According to our conservative estimates based on the interview with one expert from the sector, the total amount of investment necessary to upgrade the productive capacities to the level required by international standards ranges from 120 to 170 million Euro. Such an investment would require a steady rather seasonal flow of fresh milk. It is clear that Moldovan producers should expect a significant rise of the production costs and more downside pressures on the farm-gate prices of the milk, at least in short-term, before the investment pays back.

**However, this does not mean that those Moldovan establishments that already meet or will meet in the near future the EU SPS requirements should wait for the entire sector's alignment in order to be allowed to export to the EU.** According to the Article 12 of the Regulation (EC) no.854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organization of official controls on products of animal origin intended for human consumption, third countries' establishments may be allowed to export to the EU provided that they appear on the lists of allowed establishments drawn up in accordance with the article 12. In order for the Moldovan dairy producers to be included in such a list, the National Food Safety Agency must guarantee that: 1) the authorized establishment, together with any establishments handling raw material of animal origin used in the manufacture of the dairy products, complies with specific hygiene rules as defined by Regulation (EC) No 853/2004; 2) it supervises the establishments and makes available to the European Commission, where necessary, all relevant information on establishments furnishing raw materials; and 3) it has real powers to stop the establishments from exporting to the Community in the event that the establishments fail to meet the requirements. There is also another implicit condition that no Member State should object to the inclusion of Moldovan producers in these lists. This individual establishments venue appears as economically the most sound and reasonable strategy for the Moldovan dairy products to get exported to the European Union market.

<sup>3</sup> IFC, Advisory Service in Europe and Central Asia, IFC Ukraine Food Safety Project, „Implementing Food Safety Management Systems in Ukrainian Food Processing Enterprises. A cost-benefit analysis”, Kyiv 2011.

**Direct benefits for the public sector and consumers from expected improvements of the epidemic situation following wider-scale implementation of the FSMS are non-negligible.** Acute diarrheic diseases caused by unsafe food are on the rise in the recent years in the Republic of Moldova: the registered numbers of sick persons increased from 9188 registered cases in 2013 to 12333 cases in 2015<sup>4</sup> (however, not all sick persons report their sickness as they often prefer to use popular treatments rather than to see the medical doctor). According to the quoted source, one of the key reasons of this escalation of the epidemic is the formal approach of the National Food Safety Agency in conducting state controls. While the official report does not disaggregate the number of cases by types of food causing the disease, according to available indirect evidence, the milk and the dairy products may be responsible for around 10 to 20 percent of the total food-borne poisoning<sup>5</sup>. In some cases, the employees may take paid health-related leaves, in other cases, they cannot. On the assumption that treatment of one case requires on average 7 working days during which the employee is not productive, the estimated productivity losses caused by unsafe dairy products range somewhere between 1.0 and 1.5 million Euro per year. Based on administratively-set hospitalization tariffs, we estimate that the direct costs for hospital-based treatment of the diseases range between 200 thousand and 300 thousand Euro per year.

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<sup>4</sup> National Public Health Center, National Report on the State Monitoring of the Public Health in the Republic of Moldova for the year 2015, <http://cnspl.md/wp-content/uploads/2014/07/Raport-National-Supravegherea-de-stat-a-sanatatii-publice-in-Republica-Moldova-2015.pdf>.

<sup>5</sup> Cernelea Natalia, Rimis Constantin, Chirilici Alexei, "The comparative hygienic evaluation of the food poisoning outbreaks in relation to the inoffensiveness of food - stuffs in Chişinău municipality", Scientific Chronicles of the Medical-Pharmaceutical State University of the Republic of Moldova, nr. 2(14) / 2013.



### 3. Implementing food safety management systems: policy options

*This chapter delineates the key trends that will shape the Moldovan industry in the near future. It also explores potential policy options of support to the introduction of the FSMS in the Moldovan dairy sector.*

**In Moldova, the implementation of the HACCP-based food safety management systems is mandatory across all food business operators (farmers excluded), but dairy companies are slow at effectively implementing and certifying them according to international standards.** This is going to be a key factor deterring EU in recognizing Moldova as a country exporting safe dairy products. For the larger companies, the costs associated with the implementation and certification of the HACCP-based FSMS alone are not very large (around 40-50 thousand USD, as evidenced by the Ukrainian experience), even though they may be a burden for the small and mid-sized companies. However, when considering the potentially necessary investments which are necessary to satisfy the precursors requirements may be significant. Moreover, in order to reach the EU market, the dairy producers will have to implement more severe traceability standards for the raw milk. This is going to have a negative impact upstream in the milk producing sector, because the necessary investments are unbearable for a typical milk-producing household.

**A policy dilemma that Moldovan government faces is what kind of support, if any, should be provided to the milk and dairy sector in order to successfully implement the FSMS and thus to get Moldova authorized to export dairy products to the EU.** Before choosing the best scheme, it is important for the Government to understand that some market and economic trends will continue anyway, disregarding the chosen policy option. In particular:

- The population of rural communities and small towns will most probably continue to decline, thus shrinking the size of the local markets' potential.
- Due to rising costs, low productivity and negative environmental impact, the current model of households'-based milk production will become increasingly unsustainable.
- The size of dairy cow herds in the households' sector will continue to decline quantitatively, but probably to the benefit of better quality, whereas the livestock in the corporate sector will register only a modest upturn.
- The urban consumers will get richer, more sophisticated, informed and empowered, so they will become more selective and demanding when it comes to quality and safety of the dairy products.
- The domestic producers will continue to face a harsh competition with the Ukrainian, Belarusian, and, increasingly Romanian and other EU producers.
- Despite persistent lobby pressures, the ability of the Moldovan government to introduce tariff and non-tariff trade measures protecting domestic dairy market will significantly erode due to the necessity to deliver on the Moldova's WTO and Association Agreement commitments.

**With these constraints in mind, there are relatively limited options for the Moldovan government.** In fact, when it comes to providing support to the implementation of the FSMS, there are four key options (Table 2). The first option is the status quo which assumes that the Government does nothing and lets the milk and dairy production adjust and evolve on own risks and resources. The key advantage is lack of any immediate financial costs to be supported by the Government. While it is clear that in longer run the Government will face a higher number of applications to the social support program from the part on the rural households losing their income base, this development should be expected under any policy scenario.

**The second key option is to define a support program targeting primarily the dairy producers.** As part of this program the dairy producers may be entitled to get support for the implementation and full accreditation of their HACCP-based FSMS, but should be left to bear any investment costs required for the precursor programs. In this case, the scheme may provide full compensation of the certification costs. Both financially and administratively, such a support scheme should not be very costly, because there would be a small number of applications. One of the key risk related to this option is that, in order to ensure traceability of the raw materials, the dairy producers may be enticed to substitute even more the domestically produced fresh milk with imported fresh or powder milk.

**A third – and the costliest – option would be to target support to the households’ milk producers.** Even though in strong demand from the households-based farmers, such a scheme would be very costly. The investment costs necessary to implement it, in any case, are too high in order to be realistically considered as real option. Even under a slashed version – not all households but only the most ‘promising’ get investment subsidies –implementing such a scheme would be an administrative disaster, due to high number of applicants, subjectivity in defining qualification criteria, risks of corruption and due to small M&E capacities on behalf of the official bodies.

**The most promising support scheme is a mixed one.** Under this scheme, the Government may consider providing full support to the firms producing dairy products for international recognition of their HACCP-based FSMS and increasing the support already provided to the corporate-based milk producers as part of the national Fund for Subsidies to the Agricultural Producers. Such a narrow scope of the program would reduce the M&E costs, while at the same time provide incentives for both horizontal and vertical integration in the dairy sector. This policy will be implemented at the cost of further alienating the non-corporate producers of the milk and there will be probably some risks of corruption. However, considering the defining market trends, the modest envelope of financial resources available to the Government and the rather limited institutional capacities which are necessary for monitoring, evaluation, control and surveillance, a mixed and well-targeted policy support is probably the optimal choice in the long-run.

**Table 2. Advantages and disadvantages of policy options regarding the implementation of the FSMS in the dairy sector**

Policy option	Key advantages	Key disadvantages
Status quo	<ul style="list-style-type: none"> <li>• There are no direct and immediate financial costs to be supported by the Government.</li> </ul>	<ul style="list-style-type: none"> <li>• Politically unpalatable option.</li> <li>• There is no guarantee that Moldovan producers will effectively implement and certify HACCP-based FSMSs.</li> </ul>
Financial support for the certification of the HACCP to dairy producers	<ul style="list-style-type: none"> <li>• Relatively small direct financial costs, as the program will offer subsidies only for the international certification of the HACCP-based FSMS, with all costs related to associated investment to be fully internalized by dairy producers.</li> <li>• Reduced administrative costs, as the program will involve only a small number of dairy producers.</li> </ul>	<ul style="list-style-type: none"> <li>• The scheme does not address the problem of the safety of the domestically produced milk.</li> <li>• To ensure traceability of the raw material, the dairy producers may be enticed to substitute even more the domestically produced fresh milk with imported powder milk.</li> <li>• Complaints from the producers that have already certified independently their HACCP-based FSMS.</li> </ul>
Financial support targeting mainly milk producers	<ul style="list-style-type: none"> <li>• Decline of the domestic production of milk may stop or reverse.</li> <li>• Politically and socially acclaimed policy.</li> </ul>	<ul style="list-style-type: none"> <li>• Very high costs of the entire scheme.</li> <li>• Difficulties to establish and enforce objectively verifiable eligibility criteria for the milk producers.</li> <li>• Would preserve a highly inefficient production model.</li> </ul>
Mixed conditional support to selected small dairy producers and selected milk producers.	<ul style="list-style-type: none"> <li>• There will be easy-to-measure impact on the sector along the entire supply chain.</li> <li>• There will be an incentive for horizontal integration of the milk producers.</li> </ul>	<ul style="list-style-type: none"> <li>• Political pressure from those left outside the scheme.</li> <li>• Corruption risks.</li> </ul>

*Source: author’s assessment.*

## Conclusions and recommendations

**Moldova has declared its aim to get authorized to export dairy products to the EU.** Among other things, this will require the dairy producers to implement internationally recognized HACCP-based food safety management systems. The Moldovan legislation already makes such systems mandatory for food business operators (farmers excluded) and many producers have already defined and implemented such systems independently. However, in order to be allowed on the EU market, the HACCP-based food safety management systems have to be fully certified according to relevant international standards (ISO 22000). Certification requires not only costs related to the HACCP process itself, but also costs related to meeting precursors criteria, such as general good management practices and hygienic requirements.

**The analysis we undertook suggests that the adoption of international food safety management standards in the Moldovan dairy industry will have positive effects, but at least in the short run will involve losses for the milk producers.** The dairy producers will have to implement mechanisms allowing full control over the quality of supplies, which means they will have to switch to business models based on higher level of vertical integration with milk production sector or / and to rely more on imports. This will allow individual producers meeting the EU SPS requirement to export to the EU even if other parts of the sector are not ready. However, this strategy is contingent on the Moldova's National Food Safety Agency capacities to effectively enforce monitoring and control systems that would guarantee that those products fully meet the EU requirements regarding the food safety.

**The costs associated with the HACCP system itself – 40-50 thousand USD as upfront costs plus recurrent expenditures related to maintenance, checks, training and reviews - are not significant for the large dairy producing companies, but are quite sizeable for the smaller ones.** In any case, the continuation of the business-as-usual does not look feasible in the long run if the sector wants to fully harness new export opportunities.

Based on the analysis above, we advise the following:

### **The Moldovan government:**

- to implement a financial support scheme providing full compensations to the dairy producers of the certification of the HACCP system; the support should be granted only after the investment costs for equipment upgrade have been supported by the producer;
- to increase the volume of subsidies to the milk producing corporate farms;
- to ensure that third parties certifying the HACCP are duly qualified and recognized by authorization bodies;
- to provide necessary funds to ensure operational and technical capacities that the National Food Safety Agency require in order to put in place an effective monitoring and control system;
- to further stimulate a higher degree of vertical and horizontal integration of the sector.

### **The dairy producers and their associations:**

- to define, independently or in partnership with the national competent authorities, the guidelines for the implementation of the HACCP in the dairy sector;
- to certify the HACCP only with reputable third-party certifying organizations;

### **The individual farmers:**

- to organize farmers-controlled marketing and production cooperatives, with the aim to increase their negotiating power with their suppliers and to secure provision of high quality feed and other key inputs;
- to improve cows feeding in the cold winter, as this is indispensable for improving the animals' health and productivity;
- to diversify away from primary production and start up small processing plants targeting local markets (rather than exports, which does not sound like a feasible strategy for small producers).

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Our core activities are economic analysis and forecasts, and public policy research. In this area, we offer a wide range of analytical products and services helping our beneficiaries to take decisions supporting the development path of Moldova. Our key competence consists in the ability to provide professional, objective and high-quality research in such areas as:

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- Public finance;
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