

## RESEARCH ON THE MILK SECTOR TO REALIZE ROMANIA'S RESILIENCE

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### *Abstract*

*Ensuring security and resilience in the Romanian dairy and dairy sector is possible only through thought, planning and exercise to absorb, return and then adapt existing production capacity and warehouses to disruptive threats. As it is known, milk is a universal food that is administered both in the first days of birth and throughout life, to children, adolescents, the elderly and adults, to people with various diseases but also to the healthy. Ensuring the safety and resilience of milk is linked to a highly developed animal husbandry, located as close as possible to large urban agglomerations. Investments in this sector are the key to successfully overcoming threats of any kind. The aim of the paper is to analyze the current situation regarding the territorial distribution, by development regions, of the investments made in the milk and dairy products industry, as well as their use, in order to establish areas of interest for possible new investments in this field.*

**Key words:** development regions, processing capacity, production achieved, resilience.

### INTRODUCTION

Food security and resilience are closely linked to the emergence of a new world, dominated by risks and threats. In the face of various risks: natural disasters, pandemics, zoonoses, damaged infrastructure, war, etc., leading factors recognize that risks and threats cannot be avoided, so food security can never be fully ensured (Marin et al., 2019).

The main purpose of the paper is to establish and interpret the current situation regarding the territorial distribution, by development regions, of the investments made in the milk and milk products processing industry, as well as their use, to establish areas of interest for possible new investments in this area. respectively in the upstream and downstream areas of this processing industry - farms for raising and exploiting domestic animals and respectively – storage / marketing units for dairy products so as to achieve the uniform and efficient provision of the necessary food Romanian adds throughout the national territory.

### MATERIALS AND METHODS

The data were taken from the National Agency for Veterinary Sanitary and Food Safety (ANSVSA) - the projected capacity of authorized economic agents, the County Agricultural Directorates (DAJ) - the number of animals and milk and dairy products marketed in 2021 and the latest data published by the National Institute of Statistics (INS).

The data were statistically processed by counties, by development regions and then at the national level.

Data on herds and milk production were grouped according to the national specifics of their exploitation into two groups: "Cattle" species, including cows and buffaloes exploited mainly for milk, and "Sheep + goats" species, including sheep and goats. also exploited for milk production.

The researches followed the productions made and the potential to provide dairy products to the population under normal living conditions, but also in case of risks and threats that cannot be avoided.

In particular, the ability to achieve resilience at county, regional and national level in the milk and dairy sector was pursued, as well as the possibilities for intervention to cover the desired needs.

## RESULTS AND DISCUSSIONS

Table 1 and Figure 1 show the distribution by development areas of the herds of the main animal species exploited mainly for milk production in Romania (INS, period 2020-2021)

Table 1. Distribution of livestock on the dairy sector of Romania (heads)

Development regions	"Cattle"	"Sheep+goats"
N-E	253171	1245269
S-E	159236	1325088
S	124890	964973
Bucharest-Ilfov	3302	31009
S-V	129251	773987
V	121070	1633583
Center	251278	1874549
N-V	198969	1734536
<b>National total</b>	<b>1241167</b>	<b>9582994</b>

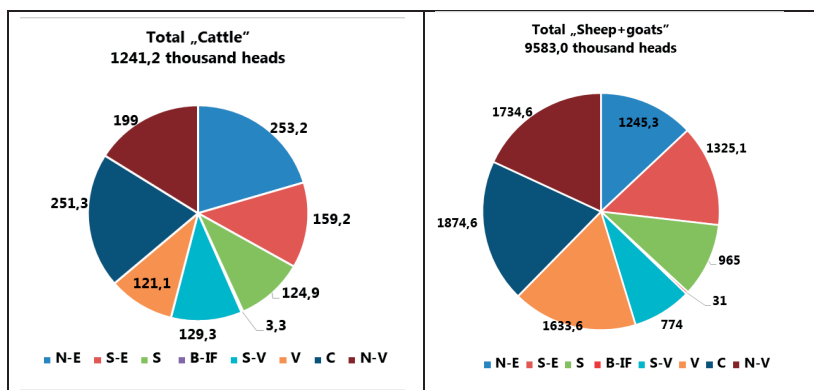


Figure 1. Territorial distribution of the number of animals exploited in the Romanian dairy sector

It can be seen that out of the national total of 1241167 heads, most animals of the "Cattle" species exploited mainly in the direction of milk production are raised in the N-E region (253171 heads), followed by the Central regions (251278 heads) and the N-W regions. (198969 heads), S-E (159236 heads). The rest of the development regions register less than 130 thousand heads/region. The region with the lowest number of animals is Bucharest-Ilfov with only 3302 heads.

In the group "Sheep + goats" at national level there are a number of 9282994 heads raised and exploited and in the direction of milk production. By development regions, the situation is as follows: the Central region has the highest number (1874549 heads), the N-V region has

1734536 heads, the V region has 1633583 heads, the S-E region has 1325088 heads and the N-E region 1245269 heads. The rest of the developing regions recorded less than one million heads per region. The smallest number of animals (31009 heads) is registered in the Bucharest-Ilfov region.

In region V, a significantly higher numerical weight can be observed in the group of "Sheep + goats" species than in the numerical weight of "Cattle", an aspect certainly determined by the tradition of sheep breeding and exploitation in the western part of Romania.

In general, it can be seen that the areas with the highest share of dairy animals are Transylvania, Northern Moldova and Banat.

Table 2 and Figure 2 show the distribution by development areas of the milk products of the two groups of animal species, productions capitalized on the market of milk and dairy products in Romania (DAJ period 2020-2021).

The territorial distribution of merchandise milk production shows a logical correlation directly proportional, in both groups of species, with the herds of animals raised and milked in the areas of development pursued.

Table 2. Territorial distribution of capitalized productions on the Romanian milk market in 2021 (tons)

Development regions	"Cattle" milk production	"Sheep + goats" milk production	Total production of milk
N-E	384379.8	32291.4	416671.2
S-E	197182.9	56895.1	254078.0
S	307813.4	56449.1	364262.5
Bucharest-Ilfov	20864.5	2847.0	23711.5
S-V	119697.6	33427.3	153124.9
V	247332.6	51779.4	299112.0
Center	722732.5	63356.7	786089.2
N-V	625308.0	29519.1	654827.1
<b>National</b>	<b>2625311.3</b>	<b>326565.1</b>	<b>2951876.4</b>

As a result, the highest total milk production is as a result registered in the Centre, N-V, N-E, S, V, S-E regions, and the lowest were recorded in the S-V and Bucharest-Ilfov regions. Comparing the distribution by development areas of milk production obtained on the two groups of species "Cattle" and "Sheep + goats"

(Figure 2) there is a more uniform distribution of milk production products obtained in the group "Sheep + goats" and a relative change in the ranking of developmental areas compared to the ranking obtained based on the number of animals (Figure 1) within each group of species.

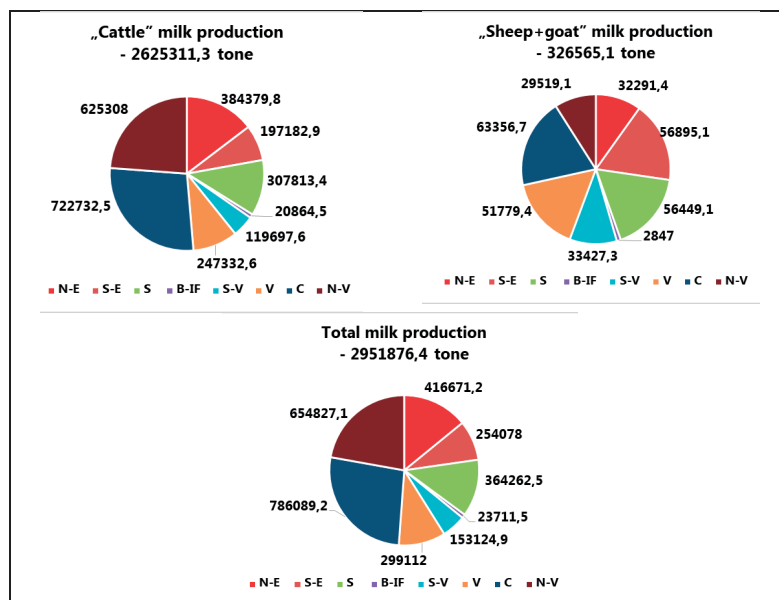


Figure 2. Territorial distribution of capitalized productions on the Romanian milk market in 2021 (tons)

Table 3. Distribution of estimated quantities of milk and milk products per capita by production of milk goods and authorized capacity processing in 2021

Development areas	Milk production	Authorized processing capacity	The difference: 2 - 1	Population INS/2011 (number)	The amount of milk estimated/inhabitant (kg)	
	tons				After production	After capacity
N-E	416671.2	258632.4	- 158038.8	3302217	126.18	78.32
S-E	254078.0	47187.4	- 206890.6	2545923	99.80	18.53
S	364262.5	172360.8	- 191901.7	3136446	116.14	54.95
B-IF	23711.5	96252.0	+ 72540.5	2272163	10.44	42.36
S-V	153124.9	5189.6	- 147935.3	2075642	73.77	2.5
V	299112.0	216814.0	- 82298	1828313	163.60	118.59
Centru	786089.2	626860.0	- 159229.2	2360805	332.98	265.53
N-V	654827.1	224166.8	- 430660.3	2600132	251.84	86.21
<b>National</b>	<b>2951876.4</b>	<b>1647463.0</b>	<b>- 1304413.4</b>	<b>20121641</b>	<b>146.70</b>	<b>81.88</b>

At 31.12.2021 at national level, the authorized capacity of dairy factories was 1647462.96 tons (Table 3) of which the highest authorized production capacity was registered in the Center region, N-E region, N-W region, V region, region S, and the lowest capacities were registered in the regions of Bucharest-Ilfov and S-V. It should be mentioned that in the southern area of Romania, respectively the S-V region, in Dolj and Olt counties and respectively in re-

gion V, in Caraş-Severin county, there are no milk processing units. From the point of view of the resilience of these areas, it can be seen that this product can be made exclusively on the basis of collaboration with neighboring counties in case of adverse and disruptive events.

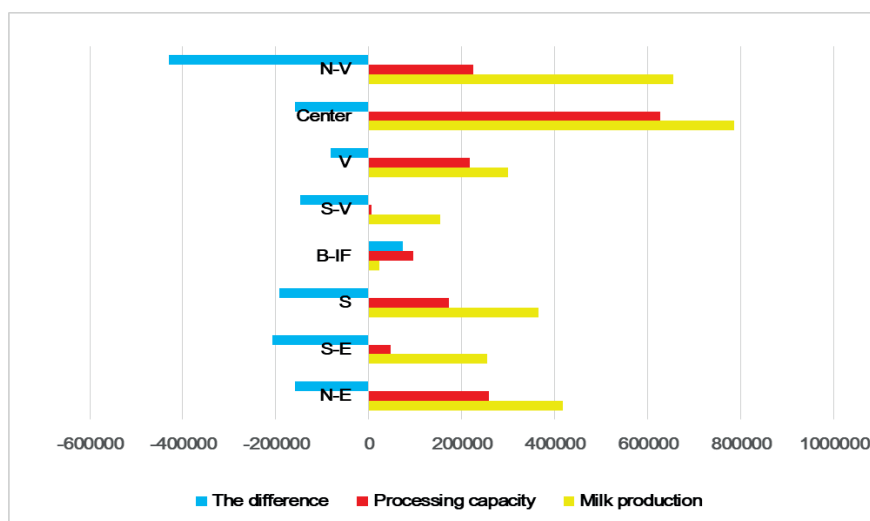


Figure 3. Territorial distribution of milk production and authorized processing capacity in 2021 (tons)

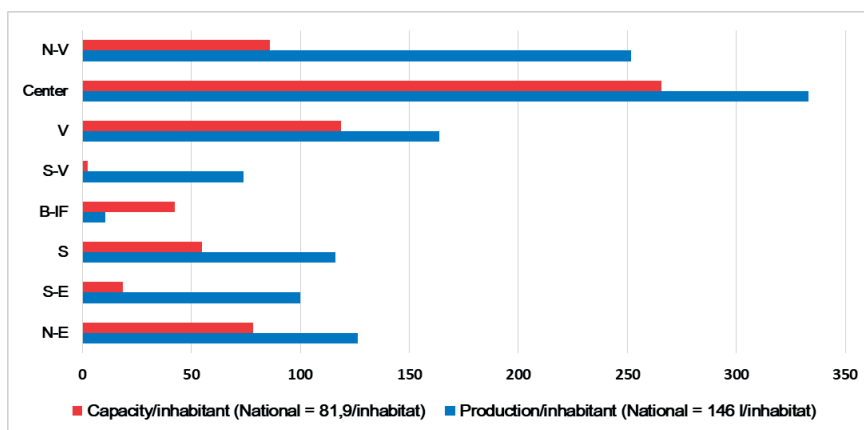


Figure 4. Distribution of quantities of milk and dairy products per capita estimated by production of milk goods and authorized processing capacity in 2021 (kg/capita/year)

From the statistical data processing it can be seen that at the national level a quantity of 146.70 liters/inhabitant is ensured (INS, for the period 2020-2021). From the point of view of the evolution of the estimated quantity of milk per inhabitant on the development areas, it can be observed that it is closely related to the areas with an advanced animal husbandry.

The highest quantities of milk per capita (Table 3) are found in the Center, N-V, West, N-E region, and the smallest are found in the Bucharest-Ilfov and S-V regions.

From the point of view of the estimated quantity of milk/inhabitant (Figure 4) it can be seen from the statistically processed data are very small, the lowest estimated quantities were recorded in the SV region (2.50 kg/inhabitant), SE region (18.53 kg/inhabitant) and even B-IF region (42.36 kg/inhabitant).

The highest estimated quantity was recorded in the Center region (265.53 kg/inhabitant).

As a result, the implementation of the resilience program in the milk and milk products sector cannot be achieved at national level, mainly due to the small quantities of milk and dairy products, with the exception of the Center region.

## CONCLUSIONS

Comparing the capitalized productions, estimated from the level of farms and the authorized processing capacities in the milk and dairy

products sector, a very big difference can be observed, we can say even double at national level.

The application of the resilience program on the basis of the capitalized production at the farm level can be appreciated as it could be achieved quantitatively but not with efficiency and practical almost impossible given the perishable nature of raw milk.

As regards the authorized processing capacity in the milk and milk products sector, the resilience program cannot be implemented.

As a result, in the current situation, if Romania were subjected to threats of any kind, it cannot apply an efficient resilience program through the authorized production capacities in the dairy sector.

The way out of this situation can be achieved only through investments in new processing capacities, correlated with investments in the production of raw milk, in the areas of deficient development areas.

Until the implementation of this program, the solution may be to build warehouses with sufficient storage capacity to fill the deficit (*Regulation 854/2004*). It should be noted, however, that this solution may not be viable for fresh dairy products.

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