

Sheep and wool production in Central and Eastern Europe

Niznikowski R. *, Strzelec E.

Warsaw University of Life Sciences, Ciszewskiego st. 8, PL 02-786 Warsaw/POLAND

* - e-mail: roman_niznikowski@sggw.pl

Wool production in the countries of Central and Eastern Europe is a result of types of sheep bred in the region (Niznikowski et al. 2006). The analysis of wool production considering population size of sheep in CEEC in years: 1990, 1995, 2000, 2005 and 2010 was undertaken accordingly to the data provided by FAOSTAT. In case of the absence of data in analyzed years, information from adjacent years were gathered. These trends especially after 1990, when most of countries in the region went through political and economic transformations, generally expressed the decline in sheep number however this processes took place in quite different ways (Table 1).

Table 1 Sheep population size (heads) in Central and Eastern European Countries in 1990-2010 (FAOSTAT, 2012)

Countries:	Year:				
	1990	1995	2000	2005	2010
Albania	1 646 300	2 480 000	1 939 000	1 760 000	1 806 000
Bosnia and Herzegovina	-	490 000	584 000	902 731	1 046 040
Bulgaria	8 130 310	3 397 610	2 548 880	1 692 510	1 400 250
Croatia	-	452 932	528 675	796 480	630 000
Czech Republic	-	134 004	90 241	148 412	205 923
Czechoslovakia	1 051 320	-	-	-	-
Estonia	-	61 500	28 200	38 100	76 500
Hungary	2 069 200	947 000	934 000	1 397 000	1 223 000
Latvia	-	86 265	29 000	38 600	70 700
Lithuania	-	40 000	13 800	22 149	52 500
Macedonia	-	2 466 100	1 289 000	1 244 000	778 404
Montenegro	-	-	-	-	220 653
Poland	4 158 470	713 172	361 582	315 963	258 262
Romania	15 434 800	10 896 600	8 121 000	7 425 000	9 141 500
Serbia	-	-	-	-	1 475 400
Serbia and Montenegro	-	2 671 000	1 917 000	1 837 000	-
Slovakia	-	397 043	340 346	321 227	376 978
Slovenia	-	29 077	72 533	119 264	138 108
"-" - no data					

The decrease of sheep population was observed in Bulgaria, Macedonia, Poland, and Serbia and Montenegro before 2005. A continuous increase in sheep number during that period of time was practically recorded in Bosnia and Herzegovina and actually in Croatia and Slovenia as well. In the other countries, the decreasing trend in population size was recorded until the turn of 1995-2000, and in some even until 2005, with a subsequent increase of sheep population afterwards. A similar situation was observed in production of wool (Table 2).

Table 2 Production of greasy wool (tonnes) in Central and Eastern European Countries in 1990-2010 (FAOSTAT, 2012)

Countries:	Year:				
	1990	1995	2000	2005	2010
Albania	2 900	4 000	3 400	3 400	3 300
Bosnia and Herzegovina	-	500	730	1 220	1 382
Bulgaria	27 811	8 790	6 976	6 500	7 000
Croatia	-	351	458	758	660
Czech Republic	-	360	250	300	310
Czechoslovakia	6 555	-	-	-	-
Estonia	-	174	71	93	154
Hungary	7 337	3 274	3 369	5 027	4 300
Latvia	-	166	72	94	40
Lithuania	-	78	30	44	109
Macedonia	-	2 952	1 920	1 791	1 025
Montenegro	-	-	-	-	327
Poland	14 783	2 323	1 322	998	950
Romania	38 167	24 323	17 997	17 600	17 600
Serbia	-	-	-	-	2 445
Serbia and Montenegro	-	3 878	2 824	2 872	-
Slovakia	-	1 065	930	834	800
Slovenia	-	46	133	179	188
"- " - no data					

Relations of population status in each year to the previous periods before 5 years are shown on Figures 1 and 2. Analysis of these figures showed that the years 1995 and 2000 were particularly difficult times in sheep production for many countries, which could be presented by the heavily exposed decreasing trends for Poland, Hungary and Bulgaria in 1995 as well as Baltic Countries in 2000. The most stable situation in wool production was observed in Albania, Bosnia and Herzegovina, Croatia, Serbia and Montenegro, Slovakia and Slovenia. In the last mentioned country, the increasing tendencies in this area were latterly observed.

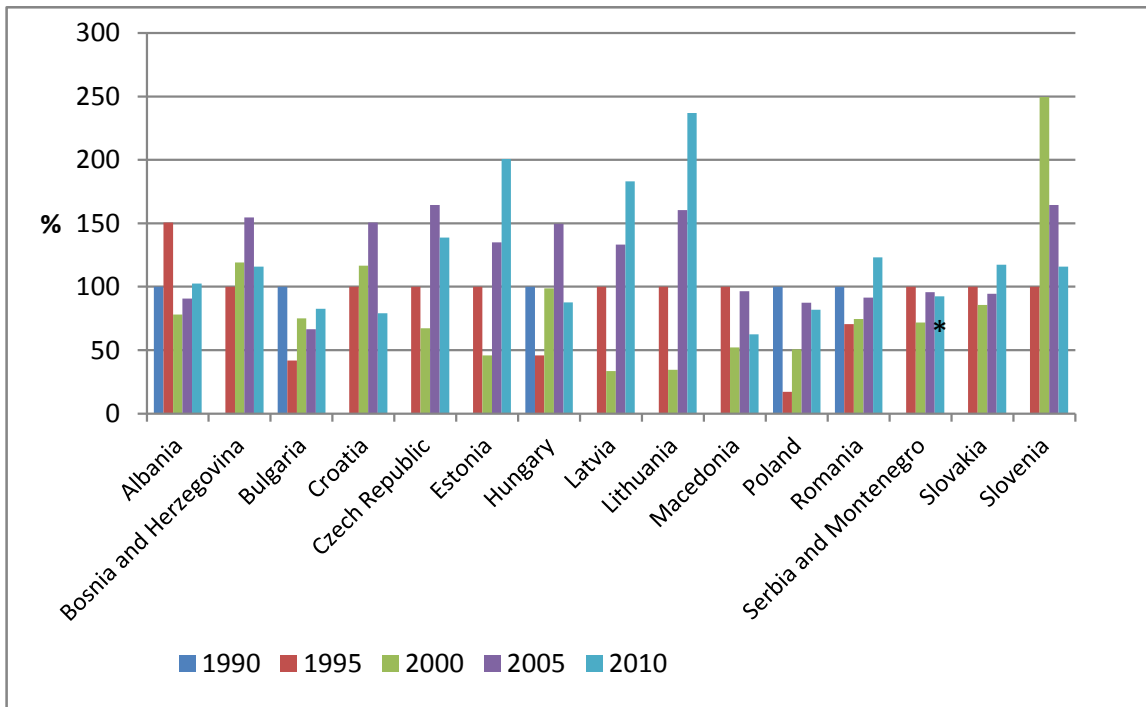


Figure 1 Trends in sheep population (%) in CEEC in 1990-2010 (previous data = 100%) (FAOSTAT, 2012)
 (*- sum for Serbia and Montenegro)

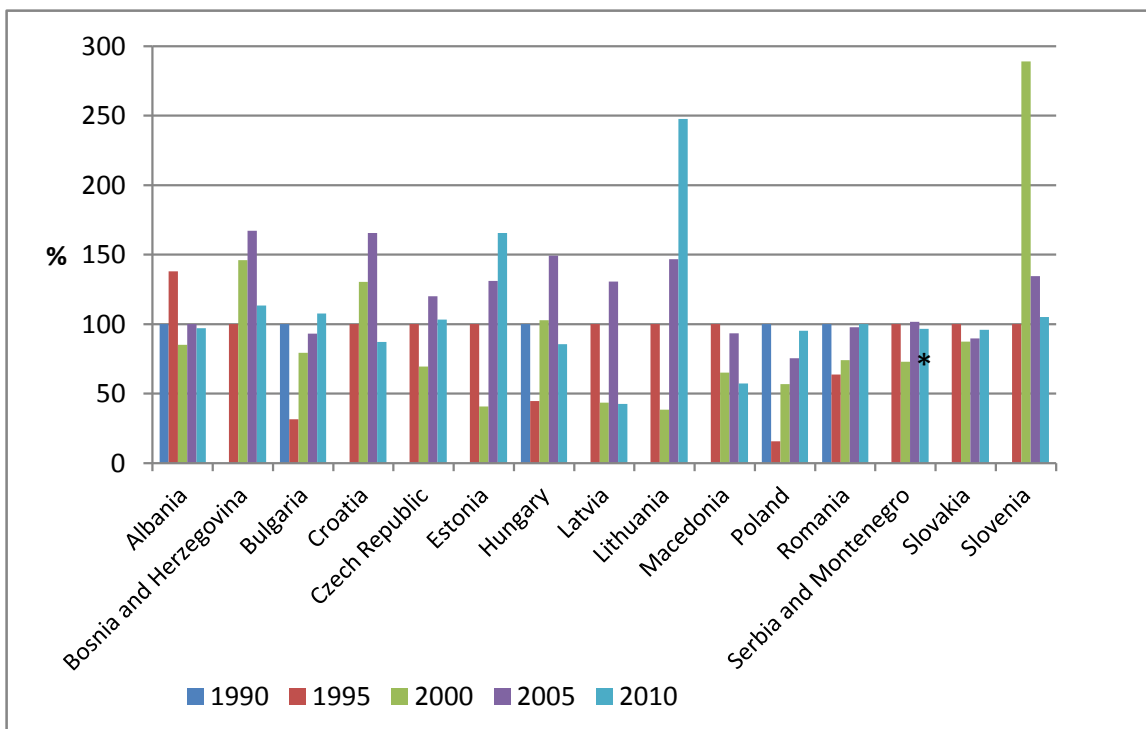


Figure 2 Trends in wool production (%) in CEEC in 1990-2010 (previous data=100%) (FAOSTAT, 2012)
 (*- sum for Serbia and Montenegro)

Data concerning average wool yield per one sheep should be recognized as interesting (table 3). It showed that the highest wool yield (more than 3,0 kg per head) was recorded in Bulgaria, Poland and Hungary. These trends were observed virtually during the whole time: since 1990 to 2010. Similar high wool yields, however at a slightly lower level were observed in the Baltic Countries, Czech Republic, Romania and Slovakia (about 2 kg of wool per statistical sheep). In the rest of the CEE countries the wool yield was presented at lower levels. The interpretation of these data were prepared due to various programmes and strategies in each of these countries. In countries, which presented the highest wool performance, the programmes for wool production under anti-import regimes were forced before the economic transformation, while these programmes promoted the production of wool at national markets. After the political and economic transformation, the subsidies for wool production were removed, thereby leading to a reduction in competitiveness of this commodity in the market for the products purchased from import, and reduced the competitiveness of wool production in comparison to natural fibers derived from plants. As a result, there has been a dramatic reductions in sheep population, as presented in Table 1 and on Figure 1. The wool yield per sheep was maintained at a high production level in CEE countries should be recognized as an interesting fact, despite the radical decline in sheep population. In this respect, the persisting changes were demonstrated regarding to breed structures of sheep, and possibilities of managing wool production as well.

Table 3 Relation of wool production to sheep population size (kg/head) in CEEC in 1990-2010 (FAOSTAT, 2012)

Countries:	Year:				
	1990	1995	2000	2005	2010
Albania	1,76	1,61	1,75	1,93	1,83
Bosnia and Herzegovina	-	1,02	1,25	1,35	1,32
Bulgaria	3,42	2,59	2,74	3,84	5,00
Croatia	-	0,77	0,87	0,95	1,05
Czech Republic	-	2,69	2,77	2,02	1,51
Czechoslovakia	6,24	-	-	-	-
Estonia	-	2,83	2,52	2,44	2,01
Hungary	3,55	3,46	3,61	3,60	3,52
Latvia	-	1,92	2,48	2,44	0,57
Lithuania	-	1,95	2,17	1,99	2,08
Macedonia	-	1,20	1,49	1,44	1,32
Montenegro	-	-	-	-	1,48
Poland	3,55	3,26	3,66	3,16	3,68
Romania	2,47	2,23	2,22	2,37	1,93
Serbia	-	-	-	-	1,66
Serbia and Montenegro	-	1,45	1,47	1,56	-
Slovakia	-	2,68	2,73	2,60	2,12
Slovenia	-	1,58	1,83	1,50	1,36
"- " - no data					

Wool prices were shown in Table 4. Generally, the gradual decrease of prices for raw wool could be observed, excepting the Czech Republic which showed increasing trend in this respect. The highest level of wool prices in whole Central and Eastern European Countries is observed in the Czech Republic. Moreover, the rather high level of wool prices was also reported in Estonia, Latvia and Poland, while in the other countries of the region it should be considered to be too low. It was regarded that the level of wool prices affected the low profitability of sheep farming in the region. According to economists, the level of profitability of sheep farming starts from the amount of 4 EURO per 1 kg of raw wool. The price level in different countries of the region is much lower than this limit, except the Czech Republic, where it was possible to generate this price in 2009. This is probably a result of export of this commodity at favorable prices.

Table 4 Producer prices (USD/tonne) for greasy wool in CEEC in 1991-2009 (FAOSTAT, 2012)

Countries:	Year:				
	1991	1995	2000	2005	2009
Albania	467,8	1 109,4	873,0	1 544,6	1 240,9
Bosnia and Herzegovina	-	-	-	-	-
Bulgaria	174,9	646,6	450,2	623,5	592,9
Croatia	-	305,9	120,8	252,5	348,3
Czech Republic	-	2 566,2	2 006,0	3 894,6	5 414,8
Czechoslovakia	-	-	-	-	-
Estonia	-	2 525,0	906,8	1 469,6	1 780,0
Hungary	414,8	667,6	291,7	447,0	417,9
Latvia	-	712,7	839,2	1 592,7	1 898,0
Lithuania	-	-	-	-	-
Macedonia	-	609,8	279,3	487,4	261,5
Montenegro	-	-	-	-	-
Poland	995,6	1 010,3	549,9	1 079,9	700,0
Romania	1 851,9	719,3	309,7	567,6	583,9
Serbia	-	-	-	-	-
Serbia and Montenegro	-	468,0	151,5	211,5	-
Slovakia	-	847,1	510,0	617,1	578,3
Slovenia	-	850,1	433,7	500,8	565,6
"- " - no data					

It turns out that many of the countries of Central and Eastern Europe export raw wool abroad (Table 5). The export leaders are: Romania, Hungary, Czech Republic, Slovakia, Bosnia and Herzegovina, Croatia, Macedonia and recently Poland. Other countries of the region manage raw wool at a large scale to cover their own needs.

Table 5 Quantity and value of **EXPORT** of raw wool in CEE Countries in 1990-2009 (FAOSTAT, 2012)

Countries:	Items:	Year:				
		1990	1995	2000	2005	2009
Albania	tonnes	0	350*	30	342	40
	000 USD	0	150*	19	190	23
Bosnia and Herzegovina	tonnes	-	0 ^M	0 ^M	1 438	405
	000 USD	-	0 ^M	0 ^M	901	210
Bulgaria	tonnes	0 ^M	358	46*	21	20
	000 USD	0 ^M	377	58 ^F	89	31
Croatia	tonnes	-	335	132	434	12
	000 USD	-	230	54	237	6
Czech Republic	tonnes	-	803	649	842	465
	000 USD	-	2 924	1 018	2 558	1 533
Czechoslovakia	tonnes	360	-	-	-	-
	000 USD	765	-	-	-	-
Estonia	tonnes	-	837	0	0 ^F	0 ^F
	000 USD	-	734	0	0 ^F	0 ^F
Hungary	tonnes	871	5 504	2 516	2 074	0*
	000 USD	2 452	5 363	1 691	1 815	0*
Latvia	tonnes	-	1 473	0	0 ^F	0
	000 USD	-	1 355	0	0 ^F	2
Lithuania	tonnes	-	300	0	0 ^F	0 ^F
	000 USD	-	273	0	0 ^F	0 ^F
Macedonia	tonnes	-	335	176	621	489
	000 USD	-	228	67	420	274
Montenegro	tonnes	-	-	-	-	41
	000 USD	-	-	-	-	40
Poland	tonnes	0	126	409	9	117
	000 USD	0	295	226	18	312
Romania	tonnes	0	1 235	4 530	6 588	10 411
	000 USD	0 ^F	1 295	2 743	6 199	7 799
Serbia	tonnes	-	-	-	-	1 203
	000 USD	-	-	-	-	716
Serbia and Montenegro	tonnes	-	0 ^M	14	1 904 ^R	-
	000 USD	-	0 ^M	6	1 035 ^R	-
Slovakia	tonnes	-	1 347	520	1 374*	5 002*
	000 USD	-	1 843	372	3 140	3 853
Slovenia	tonnes	-	6	520	0	0 ^F
	000 USD	-	7	372	0	0 ^F

* - unofficial figure, M - data not available, F - FAO estimate, R - estimated data using trading partners database, "-" - no data

Wool export destinations were shown in Table 6. From the member countries of European Union belonging to the Central and Eastern European region the raw wool is exported to Belgium, Bulgaria, Greece, Hungary, Netherlands, Italy and Slovakia. In addition, recipients of wool produced in the countries of the region are Turkey, India, China and Pakistan, and other European countries as Ukraine. The latest information showed that interest in purchasing

wool from the Central and Eastern Europe was also occurred in Ukraine, Russia and Belarus. This information were not yet confirmed by the statistical offices (except Ukraine), but in the field such negotiations has been leading recently. This is the way to manage only a part of harvested material. The managing of a substantial part of raw wool has been done through use of wool for local processing and moreover the processing of the yarns for local crafts, or geodetic mats and either technical or clothing felts. In the last period of time, the matter of wool deficits in local markets due to the increasing activity of merchants from Russia, Ukraine or Belarus, interested in the development of raw material imports for their own use was more often discussed. The barrier which came up, aroused due to small quantities of this material and fragmentation of sheep production in most countries of Central and Eastern Europe, excluding such countries as Albania, Bulgaria, Czech Republic, Hungary, Romania and Serbia. This condition makes it difficult to generate higher prices for raw wool.

Table 6 Final markets for an export of raw wool in 2009 by FAO (FAOSTAT, 2012) * - alphabetical order

Countries:	
From:	To*:
Albania	Greece
Bosnia and Herzegovina	Italy, Turkey
Bulgaria	Italy
Croatia	Hungary
Czech Republic	Belgium, Italy
Estonia	-
Hungary	-
Latvia	-
Lithuania	-
Macedonia	Bulgaria
Poland	Hungary, Slovakia
Romania	China, India, Turkey
Serbia and Montenegro	-
Slovakia	Belgium, China, India, Netherlands, Pakistan, Ukraine
Slovenia	-

Many countries of the CEE region imports the raw wool from outside, due to expanded textile industry (Table 7). Among the leading importers the Czech Republic, Bulgaria, Hungary, Poland, Slovakia and Serbia should be pointed out. In this group of countries, a progressive increase in imports of wool appeared only in the Czech Republic, while, generally, the declining trend was observed in other counties of this group. The textile industry uses more and more plant fibres, and the gradual restructuring of manufacturing leads to job cuts. However, this process did not run rapidly so far, because of market needs, which are also gradually modified in this field.

Table 7 Quantity and value of **IMPORT** of raw wool in CEE Countries in 1990-2009 (FAOSTAT, 2012)

Countries:	Items:	Year:				
		1990	1995	2000	2005	2009
Albania	tonnes	0 ^M	0 ^M	0	0*	0 ^F
	000 USD	0 ^M	0 ^M	0	0*	0 ^F
Bosnia and Herzegovina	tonnes	-	220*	155 ^F	12	0 ^F
	000 USD	-	200*	530 ^F	7	1 ^F
Bulgaria	tonnes	1 097	4 072	1 600*	3 710	491
	000 USD	8 232	3 419	1 700 ^F	5 016	580
Croatia	tonnes	-	87	1	0 ^F	0 ^F
	000 USD	-	224	4	0 ^F	0 ^F
Czech Republic	tonnes	-	7 073	19 972	29 629	17 468
	000 USD	-	22 847	39 786	93 393	55 394
Czechoslovakia	tonnes	17 314	-	-	-	-
	000 USD	93 168	-	-	-	-
Estonia	tonnes	-	996	22	0*	0 ^F
	000 USD	-	827	8	0*	0 ^F
Hungary	tonnes	89	4 680	4 531	4 407	361
	000 USD	390	5 430	5 658	13 108	284
Latvia	tonnes	-	521*	24	45	0
	000 USD	-	1 383	100	287	4
Lithuania	tonnes	-	321	0	0 ^F	18
	000 USD	-	1 025	0	0 ^F	57
Macedonia	tonnes	-	725	1	105	32
	000 USD	-	2 468	1	132	46
Montenegro	tonnes	-	-	-	-	-
	000 USD	-	-	-	-	-
Poland	tonnes	2416	11 108	2 789	1 857	351
	000 USD	14 122	22 859	3 521	2 347	594
Romania	tonnes	2 405	540	10	148	339
	000 USD	12 947	357	8	130	281
Serbia	tonnes	-	-	-	-	183
	000 USD	-	-	-	-	68
Serbia and Montenegro	tonnes	-	0	109	43 ^R	-
	000 USD	-	0 ^F	192	36 ^R	-
Slovakia	tonnes	-	1 531	1 561	316*	663*
	000 USD	-	6 360	4 371	476	1 354
Slovenia	tonnes	-	80	1 561	7	0
	000 USD	-	212	4 371	23	1

* - unofficial figure, M - data not available, F - FAO estimate, R - estimated data using trading partners database, "-" - no data

Conclusions

Generally, the production of wool in the countries of Central and Eastern Europe presented different trends in the size of sheep population and wool production. In general, these trends led to drastic reductions in livestock and wool production in 1995-2000, and depending on the country for further growth. However in the few countries in the region the continuous increase or continuous decrease in number of sheep and wool production was observed, which indicated the various systems of economic relations and the role of sheep and sheep farming in the region.

On the background of global trends, the level of wool production per one statistical sheep one was very interesting. This observation could distinguish countries of high wool yield per sheep (Bulgaria, Hungary and Poland), medium (Baltic States, Czech Republic, Romania and Slovakia) and low, which reflected the entrenchment of the wool productivity level despite the lack of pay more attention to this material.

The wool price possible to gain on the specific markets also varied, and it was below the its cost-effectiveness estimated at the level of 4 Euro per 1 kg of greasy wool in most of the CEE countries. In fact, only in the Czech Republic, its level was set at the proper height, which undoubtedly has an impact on the profitability of sheep farming. Managing of wool is a component of its use mainly in the domestic markets, mainly in the handicrafts or manufacture of alternative products.

The export to the markets of both European Union and beyond its territory has become a major source of income. The development of this line of business could contribute to improvement of the profitability of sheep farming in the CEE region.

In many countries of the region characterized by a developed textile industry, the wool was imported from outside the European Union. Wool is imported to CEE countries from countries placed on the southern hemisphere to cover needs of CEEC's textile industries and therefore conditioning the maintenance of employment in the sector.

References:

1. FAOSTAT, 2012. <http://faostat.fao.org/>
2. Niżnikowski R., Strzelec E., Popielarczyk D., 2006: Economics and profitability of sheep and goat production under new support regimes and market conditions in Central and Eastern Europe. *Small Ruminant Research*, 62, 3, 159-165.