

# The Perspectives for the World Sheep Meat Market and its Influence on Future Production Systems and Trends<sup>a</sup>

## - Review -

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**ABSTRACT** : Sheep meat is the most expensive meat in developed countries. Consumption is dependent on cultural factors and will increase as population and incomes grow. In the main exporting countries (New Zealand and Australia), sheep numbers are decreasing as the market for wool is declining. Sheep meat production will develop in small and medium scale commercial systems, close to their markets. (*Asian-Aus. J. Anim. Sci.* 1999. Vol. 12, No. 7 : 1123-1128)

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### INTRODUCTION

For the first time, world sheep numbers are decreasing (Morand-Fehr and Boyazoglu, 1998), while all other farm animal numbers keep growing. Sheep meat remains the most internationally traded, but its share of the meat market is decreasing. Is there a future for sheep meat producers and for which type of husbandry?

### MAIN CHARACTERISTICS OF THE WORLD SHEEP MEAT MARKET

With 1.1 million tonnes in 1996, the international trade in sheep meat and live animals represents only 7% of the total international meat trade. However, among all meats, sheep meat is the most internationally traded (table 1): 15% of world total production is exported. In the past, before Great Britain join the European Union in 1973, 2/3rds of world trade were exports from New Zealand to Great Britain. Today (table 2), EU imports from New Zealand are only 20% of world trade, Great Britain importing only 50% of that amount. In that country, sheep meat production arose after joining the EU, supported by a very favourable "Common Market Organisation". At the same time, consumption dropped, due to the development of poultry, and the increasing gap between poultry and lamb prices. In other countries of the EU, lamb consumption is rising, keeping the EU as a major sheep meat importer.

New Zealand and Australia are the main exporting

countries (80% of world exports in 1996). Their importance has increased recently with the decreasing role of Central and Eastern European Countries, which used to export significant quantities of live sheep to the EU and to South West Asia. But their sheep stocks and meat production collapsed after 1990, and they are not even renewing their stock. Their exports are expected to continue to decrease in the next few years. Latin America (Argentina, Uruguay, Paraguay) was a major exporter in the first half of this century. Its exports are less than 10,000 tonnes/year at the moment. Even Iran and Turkey (which used to export significant amounts of live sheep to other South West Asia countries) have almost stopped their exports. The rest of international trade is mainly live sheep exports from arid zones in Africa and Asia to highly urbanised neighbouring zones.

Together, South East Asia and North Africa is nowadays the main importing zone (30% of world imports). In these countries, demand for sheep meat is very high, due to its specific status in the Islamic religion and the high incomes of an increasing part of the population. But arid climatic conditions and cheap import opportunities do not allow producers to meet the demand. The specificity of the demand in this region results in the high proportion (more than 50%) of live sheep in total imports (about 10 million heads/year).

Northern Asia (Japan and Korea) import significant quantities of cheap mutton for processing, but some South East Asia countries import mutton and lamb to meet the demand from their Muslim population.

The majority of the international sheep meat trade is the result of the demand of Mediterranean and Muslim countries and the supply of New Zealand and Australia (table 3). SWANA countries and the EU (together more than half of world imports) import only 20% of their consumption of sheep meat. They have the potential to be self sufficient (less consumption

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Table 1. World cereals and meat production and trade, 1996

	Production (million t. cwe <sup>a</sup> )	Export <sup>b</sup> (intra-EU trade excluded)		Average export price of bone-in, unprocessed meat		
		(million t cwe)	of which livestock (million t cwe)	(% of Production)	(US\$/t cwe)	(meat/ cereal price ratio)
Cereals	2,072	205	-	10	240	1
Beef and veal	53.9	6.3	1.4	12	1,900	8
Mutton and lamb	7.4	1.1	0.3	15	2,000	8
Pig meat	87.1	2.9	0.3	3	2,900	12
Chicken	49.7	5.4	0.5	11	1,200	5
Turkey	4.7	0.4	0.04	9	1,200	5
Total 5 meats	202.8	15.6	2.5	8	1,900	8

Source: elaborated on the basis of "FAOSTAT" <http://apps.fao.org>.

<sup>a</sup> Carcass weight equivalent; <sup>b</sup> Live animals, bone-in and boneless carcasses and cuts, fresh, chilled or frozen and reserved.

Table 2. World sheep-meat trade. Main streams, 1996

To \ From	New Zealand	Australia	CEEC <sup>a</sup>	Eastern Africa <sup>b</sup>	Others	Total	Of which live sheep
European Union-16	220	20	20	-	10	270	20
SWANA <sup>c</sup>	90	170	20	40	10	330	180
Northern Asia <sup>d</sup>	60	40	-	-	-	100	-
Northern America	20	50	-	-	-	70	-
South-Africa	-	40	-	-	10	50	10
Others	90	60	10	-	120	280	80
Total	480	380	50	40	150	110	290
Of which live sheep	10	100	50	40	90	290	

Sources: elaborated on the basis of "FAOSTAT" and countries customs information.

<sup>a</sup> Central and Eastern European Countries; <sup>b</sup> Somalia and Sudan; <sup>c</sup> South West Asia and North Africa; <sup>d</sup> Japan, Korea, Taiwan.

Table 3. Sheep-meat balances. Main trading zones, 1996

		New Zealand	Australia	European Union (15)	SWANA <sup>a</sup>	World
Production	(000 t cwe)	550	700	1,130	1,140	7,400
	(% world production)	7	9	15	15	100
Exports	(000 t cwe)	480	380	-	-	1,100
	(% world exports)	44	35	-	-	100
	(% domestic production)	87	54	-	-	15
Imports	(000 t cwe)	-	-	270	330	1,100
	(% world imports)	-	-	24	30	100
	(% domestic consumption)	-	-	19	22	15
Consumption	(000 t cwe)	70	320	1,400	1,470	7,400
	(kg per capita/year)	18	19	3.8	4.1	1.3

Sources: ABARE, EUROSTAT, FAOSTAT. <sup>a</sup> South West Asia and North Africa.

and more production would be likely if the price was higher). New Zealand exports 87% of its production and Australia 54%. In these countries the domestic market is not predominant. Export markets are necessary for the survival of their sheep meat production.

The secular trend of growing trade seems to have stopped in the recent years. World exports increased (both in tonnes and in proportion of world production) until the beginning of the 1990's when they reached 18% of world production (at 1.3 million t). They fell to 15% of world production (1.1 million t) in 1996. These characteristics and trends are the results of the specificity of sheep meat production.

### MAIN CHARACTERISTICS OF SHEEP HUSBANDRY

#### A three purpose animal

Sheep is able to produce meat (in competition with all other farm animals), milk (in competition with goats and cows), and wool (its specific produce). Throughout history, sheep-meat is produced from animals mainly bred either for wool, or - in Mediterranean countries - for milk. The animals slaughtered for consumption are culled animals, after their productive life, or, in dairy flocks, very young animals not necessary for flock replacement. Meat is, in these cases, a by-product. Its price is only dependent on demand. But the development of sheep husbandry depends only on the demand for wool and/or for milk.

#### 1) Wool

Today, wool, as all other non-food animal products, has lost its monopoly or strategic position as the sole provider of clothing material (table 4). During the last two centuries, the total quantity of wool used by the textile industry has increased, although the share of wool in the total raw material used has decreased (3% in 1996). Recently, the quantity of wool used has declined from 1.7 million tonnes in 1990 to 1.5 in 1996. This is due mainly to the collapse of the wool industry in the former USSR, from 330,000 t in 1989 to 30,000 t in 1996 (ABARE, 1997a), which was not counter-balanced by the developing Chinese wool industry. Anyway, wool seems to have started with a long decline, as the artificial fibre industry is improving its quality, prices, and diversity. As a consequence, world sheep numbers and wool production are declining (table 5).

This is the result of a strong decrease in all the countries with large numbers of sheep, where wool is the main purpose of sheep breeding (Argentina, Australia, New Zealand, Eastern Europe and Former USSR).

Table 4. World use of raw material by the textile industry, 1800-1990

		1800	1900	1950	1990	1996
Total	(million t)	0.6	4	12	41	45
Of which: wool	(million t)	0.2	0.8	1.0	1.7	1.5
	%	33	21	8	4	3

Source: International Wool Secretariat.

Table 5. Sheep numbers. World and selected countries, 1985/1996 (centre moving average 3 yr)

		1985	1996	Δ
Sheep numbers (million heads)	Former USSR	140	80	-60
	Australia	140	120	-20
	New Zealand	70	50	-20
	East Europe	50	20	-30
	Argentina	30	20	-10
	West Europe	90	120	+30
	China	100	120	+20
	Rest of the world	500	540	+40
	World	1,120	1,070	-50
Meat production (million t cwe)	World	6.0	7.4	+1.4
Wool production (million t greasy)	World	3.0	2.5	-0.5

Source: FAOSTAT.

#### 2) Milk

Milk is characteristic of sheep husbandry in the Mediterranean basin (Boyazoglu, 1997). In these countries, sheep provide a significant share of the total quantity of milk available for the population. In spite of its price, higher than cow milk, the demand for sheep dairy products is high, being used in traditional, prized dishes. Substitutes made of cow milk are sold by dairy companies but do not threaten sheep and goat products. Production is still increasing. Dairy ewes also produce lambs, slaughtered at a very light weight (6 to 10 kg carcass weight). This type of lamb is also very prized by consumers in these countries.

#### 3) Meat

Sheep meat can be produced with sheep bred for milk and/or wool. But it can be the main product of sheep husbandry. In this case, all the costs of the husbandry must be covered by the price of the meat.

Poultry and pork need 3 to 6 kg of grain to produce 1 kg of carcass meat. They are developing because their prices (table 1 and 6) are high enough to allow specialised meat production based on cultivated grain (Boutonnet, 1997a): Producer prices range from 1,400 to 1,900 US\$/t, when barley is available on the international market for 140 US\$/t. Sheep need approximately 20 to 25 kg of grain

equivalent to produce 1 kg of carcass meat, and its price is generally lower, or simply equivalent to 25 times the price of barley: Export average price (table 1) is only 8 times the average export price of cereals and 14 times the US export barley price. Even in the EU, the price of lamb is only 22 times the price of barley. Only in some SWANA countries, during very dry years, the price of sheep meat can reach high levels (50 times the price of barley), allowing large proportions of grain in the feed (up to 50%). Sheep husbandry, specialised for meat production, with animals only fed cultivated forage, would be possible only if the price of lamb was eight times the price of poultry (Boutonnet and Simier, 1995). In present conditions, sheep must be fed with cheaper forage, especially when its main product is meat.

**Table 6.** Average producer price of meat. Selected countries, 1996 (US\$/t cwe)

	Argentina <sup>a</sup>	New Zealand <sup>b</sup>	Australia <sup>b</sup>	USA <sup>c</sup>	EU-15 <sup>d</sup>
Cattle	1,400	1,200	1,200	2,600	3,100
Sheep-meat					
Mutton		800	500		
Lamb	1,700	1,600	1,700	3,800	4,500
Pig-meat	1,400	1,900	2,000	1,500	2,100
Chicken	1,400	n a	1,600	1,400	1,900

Sources: <sup>a</sup> OECD Agriculture outlook 1998-2003; <sup>b</sup> ABARE Australian Commodity Statistics 1997; <sup>c</sup> USDA Economic research service; <sup>d</sup> EUROSTAT.

#### A grazing animal

Sheep can be fed on pastoral range-land, the opportunity cost of which is very low, when the population pressure is low. Natural pasture is not

created by human labour and the grazing of it has no production cost. The amount of animals maintained depends on its availability and accessibility (social and demographic conditions). All species of Ruminants can be kept on this type of land, the proportion of each species depending on the market for their products (wool, meat, hides and skins, tallow). This allows sheep to provide wool at an acceptable price (production of one kg greasy wool needs the feeding equivalent of 70 kg grain, or a feeding cost of 10 US dollar/kg wool if fed with grain, while the price of raw wool is not more than 4 US dollar/kg).

Sheep are not only Ruminant, but small. They are

- \* easy to handle
- \* suitable to very small farms or rural households
- \* more sensitive to predators than cattle: they need to be kept or housed except in very safe countries such as Australia, New-Zealand, or Argentina (Boutonnet, 1986).

These characteristics, common to sheep and goats, make Small Ruminants very popular in small scale husbandry in large parts of the world, where they can be fed from domestic and farming by-products. This type of husbandry is worldly dominant in goat breeding (Morand-Fehr and Boyazoglu, 1998) and is the only type of sheep farming increasing at the moment, particularly in the CEEC, (Boutonnet, 1997b), the former USSR, and in the inter-tropical zone.

#### DIVERSITY OF SHEEP MEAT PRODUCING

Sheep meat production systems are very diverse around the world. Each country, each region, each breeder has its own "mix" of objectives (wool/milk/meat), and its own "mix" of feed

**Table 7.** Total output of sheep husbandry. Selected countries, 1996

	New Zealand		Australia		United Kingdom		Greece		Algeria		
	US\$	%	US\$	%	US\$	%	US\$	%	US\$	%	
Per ewe	Wool	21	47	37	76	-	-	-	-	-	-
	Meat	24	53	12	24	83	66	60	34	120	100
	Milk	-	-	-	-	-	-	73	42	-	-
Direct subsidies	-	-	-	-	42	34	42	24	-	-	
Total	45	100	49	100	125	100	175	100	120	100	
Per labour unit	63,000		54,000		50,000		14,000		30,000		
Per ha	270		20		625		700		72		
Structural data											
ha/lab unit	230		2,750		80		20		420		
ewe/ha	6		0.4		5		4		0.6		
ewe/lab unit	1,400		1,100		400		80		250		

Sources: elaborated with data from NZ Ministry of Agriculture and Fisheries, ABARE Farm Survey, Ministry of Agriculture Fisheries and Food "Agriculture in the United Kingdom", EUROSTAT, and author's estimates.

(range-land/domestic or agricultural waste/cultivated feed). A wide range of types of animals are produced, from the milking light lambs of Greece (6 kg, 4 weeks), to the Australian wether (30 kg, 2 years). Even within a single market, the purchasers for the slaughtering companies are every day confronted by a great variety of animals, among which they have to choose the most adapted to their own sale requirements.

All these types of meat are in competition on the international market. Tables 7 and 8 show some characteristics of sheep husbandry in some of the major importing or exporting countries.

Wool remains the main output for Australian and New Zealander sheep farmers. Meat is only 24% and 53% of their total receipts. Greek breeders draw only 1/3rd and British 2/3rds of their receipts from meat: Greek farmers sell milk, and British and Greek receive EU subsidies, compensating for the lack of a market for wool. Algerian sheep breeders, as well as all sheep breeders in SWANA countries, get all their receipts from meat, which is at high price in these countries.

Total output per labour unit is similar in Australia, New Zealand and United Kingdom, the average flock size balancing the output per ewe. In Algeria and Greece, the output per ewe is high, but the output per labour unit is low, due to the smaller size of the flocks.

Technical labour productivity (table 8) is better when available land per labour unit is large (Australia vs. Algeria and New Zealand vs. United Kingdom), whereas land productivity seems to be linked more with product prices. The New Zealand sheep industry has a high productivity performance both for land and labour, due to good climatic conditions (similar to

Great Britain) and to larger land per labour unit than in Great Britain. With similar climatic conditions, but with a per labour unit land area much smaller (15%), Algeria attains land performance similar to Australia, but with much lower labour productivity.

Australia and New Zealand are certainly highly competitive, in the present conditions, in sheep meat production. But their competitiveness comes mainly from two factors: sheep meat is a by-product of wool, and these countries have large amounts of land available. These two factors will probably change in the next few years. The wool market is already declining and sheep husbandry will have to get a bigger part of its output from meat. World demographic pressure in the next few years will have effects on the availability of land in these two countries, not so much directly by immigration, but indirectly by the increasing demand for grain for direct human consumption or for feed. In any case, these two countries produce only 16% of the total production of sheep meat in the world and could not produce much more without a rise in the price of meat. It is likely that their sheep meat production will not increase in the next few years.

## CONSUMPTION

Sheep meat, if it ever were, is no longer a staple food, providing only proteins, lipids and energy to human beings. As other sheep and goat products, maybe more than other foods, sheep meat is providing pleasure, dream, identification. Demand for this product is everywhere very cultural, even when it is very low. It depends on consumption patterns, strongly dependent on cultural factors. Some countries, or some part of the population of a country, like to eat sheep meat, some others don't. Sheep meat specialised husbandry

**Table 8.** Technical performance of sheep husbandry in a comparative perspective. Selected countries, 1996 (kg)

		New Zealand	Australia	United Kingdom	Greece	Algeria
Per ewe	Wool	8	12	3	1	4
	Meat	17	12	19	12	8
	Milk	-	-	-	95	-
Per labour unit	Wool	11,000	13,000	1,200	80	1,000
	Meat	24,000	13,000	7,600	960	2,000
	Milk	-	-	-	7,600	-
Per ha	Wool	48	5	15	4	2
	Meat	102	5	95	48	5
	Milk	-	-	-	380	-
Structural data	ha/lab unit	230	2,750	80	20	420
	ewe/ha	6	0.4	5	4	0.6
	ewe/lab unit	1,400	1,100	400	80	250

Sources: elaborated with data from NZ Ministry of Agriculture and Fisheries, ABARE Farm Survey, Ministry of Agriculture Fisheries and Food "Agriculture in the United Kingdom", EUROSTAT, and author's estimates.

can develop only if it is aimed at providing markets where specific demand is strong.

Each country or region has its specific demand, as a result of traditional types of breeding, and cooking habits. A type of lamb adapted to Greek consumers is not suitable for the Russian market. This means that exporting regions or countries have to adapt their types of products to the different markets they provide, or to organise selective trading procedures in order to choose the proper product for their different markets. But generally, specific products are sold mainly in the region of their production.

Because of the specific demands made of it, sheep meat is the most expensive meat in all developed countries, Australia and New Zealand excepted. As a result there are few opportunities for high value-added processed products for which processors prefer cheaper meats. Processing of sheep meat consists only in slaughtering and cutting. Pieces are sold bone-in and uncooked to both consumers and caterers. Development of brands, innovation, are very difficult. The market is a commodity market all along the chain.

### CONCLUSION

The future trends in markets for sheep meat seem to be towards a slight increase of the relative price, allowing more grain in the feeding of sheep, but not strong enough to stop the recession of the flock of big wool producers. As well as for goat, sheep husbandry will develop in such small or medium scale systems, combining pasture, waste and crops, oriented towards local markets. In any case, labour productivity will be important, as these systems will have to be more and more market oriented. In this context, the main areas of research work will be concerned with preserving or increasing genetic diversity (adapted

genetic material for each particular situation), and improving nutrition science in order to be able to provide proper feeding with a wide range of diverse forages. The prevention of contagious diseases will have a growing importance for all meats, but sheep is until now not suspect.

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