Livestock Policy Analysis Brief  No. 11

Livestock production, consumption and trade: Key indicators

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Livestock production is a major contributor to economic development, both driving economic growth and benefiting from it. As an engine of growth, it provides increased income, employment, food and foreign exchange earnings, as well as better nutrition. As income increases with economic development, the share of animal products in the total food budget increases faster than that of cereals. This occurs because of the relatively high income elasticity of demand for animal products.

This fact sheet gives some key indicators for 1993 derived principally from FAO (Food and Agriculture Organization of the United Nations) AGROSTAT data tapes. The data provide, at a glance, insight into the role of animal agriculture in developing countries. It highlights the production, consumption, import and export of the two major ruminant products, meat and milk. There may be discrepancies between FAO and other sources of data due to differences in pricing, aggregation and conversion factors used. For example, based on USDA (United States Department of Agriculture) data, the share of livestock in agricultural output for Ethiopia is about 40%, but based on the FAO data it is about 27%.

The countries and the sub-regions selected in this fact sheet reflect the current mandate of the International Livestock Research Institute (ILRI). Consequently, only regional figures for the developed countries have been included to facilitate comparisons and highlight the potential for and consequences of livestock development. The country grouping in this fact sheet generally follows that of FAO, but further groupings by subregions have been provided to obtain better comparisons across regions. Countries have been grouped by subregions based on their geographical proximity and level of economic development. For example, North Africa has been reported separately instead of under West Asia and North Africa (WANA); Sudan has been grouped in East Africa instead of North Africa; and Mexico has been grouped as part of Central America and the Caribbean instead of under North America.

Livestock and economic development

The importance of livestock production in agriculture grows during economic development, even as the share of agriculture in total national output declines. Comparison of the contribution of agriculture to total gross domestic product (GDP) and the contribution of livestock to agricultural output shows that as the proportion of agriculture in GDP decreases, the importance of livestock in agriculture increases. The contribution of agriculture to total GDP is as high as 60% for the low income sub-
Saharan African countries and the average for this region ranges between 40% and 50%. For Asia, the proportion of agricultural GDP is generally in the region of 20 to 30%, while for South America it is in the range of 5 to 14%. In the highly developed countries of Europe and North America, overall agricultural GDP on average constitutes about 2 to 3% of the total. This trend, however, is reversed for the livestock component. As income increases, the share of livestock output (meat, milk, eggs, wool, hides, skins etc) generally increases. Livestock products, for example, make up an average of 28% of recorded agricultural output in developing countries, but 47% in developed countries with western Europe and Oceania recording 55% and 64%, respectively.

The USDA estimates that in 1988 livestock products accounted for about 22% of the agricultural output of Asia (excluding Japan), 27% in China, 25% in sub-Saharan Africa (excluding South Africa), and 38% in South America. Data obtained from the FAO for 1993 also show similar pictures. The contribution of livestock to agricultural output for many of the low income countries generally falls in the range of 15 to 40%. For some individual countries the figures are: 27% for Ethiopia, 37% for Sudan, 33% for Tanzania, 44% for Kenya, 29% for Niger, 30% for Uganda, 17% for Zimbabwe, 14% for Bangladesh and 15% for Nepal. The share of livestock for a number of the developed countries, however, falls in the region of 50 to 70%. For USA, the share of livestock in agricultural output is about 53%, Canada 54%, Austria 61%, UK 62%, Denmark 68%, and the Netherlands 76%. Generally, the averages for Africa and Asia, and South America are about 28% and 46%, respectively, while for western Europe and Oceania, and North America, the average share of livestock stands at 55% and 53% respectively.

The contribution of livestock to agricultural output, however, varies considerably both between and within regions mainly owing to differing agro-ecological and economic conditions. Comparative advantage for livestock largely depends on the capacity of the natural resource base to support production of feed.

**Exports and imports of meat and milk**

Imports and exports generally reflect the overall production and consumption situation of a country. Developing countries, which contain about 77% of the world’s human population and 71% of the cattle population, produce about 38% of the world’s total beef and veal output, and 25% of the total cow milk output. The rest is produced by the developed countries which contain 22% of the world’s people and 29% of the cattle population. Partly because of this low production base and productivity, and partly owing to high population growth, developing countries are net importers of beef and veal (except South America), and of milk. In 1993 developing countries imported 1.1 million tonnes of beef and veal and exported 0.5 million tonnes giving rise to a net import of 0.6 million tonnes. In the same year developed countries imported about 3.4 million tonnes of beef and veal, and exported about 4.1 million tonnes, generating a net export of 0.7 million tonnes. The picture for milk and milk products is quite similar to that for beef and veal. Developed countries, with no exceptions, are net exporters while the developing countries are net importers. Thus, in spite of the relatively large potential suggested by the large cattle population, domestic supply of meat and milk in the developing world remained far lower than demand.
Although developing countries are net importers of meat and milk, their trade share is a negligible proportion of the world total. Nearly 75% of the world’s imports of beef and veal goes to developed countries (Europe 39% and North America 20%). The share of developing countries as a group hardly exceeds 25%, of which Africa’s share (excluding South Africa) is about 6.5% and Asia’s (excluding Japan) about 13%. The same is true for milk products. About 59% of the world’s imports of total milk and 90% of fresh milk is imported by the developed world (of which Western Europe’s share is as high as 49% of total milk), while the share of developing countries is about 41% of the total milk, with Africa and Asia having about 10% and 23%, respectively. These figures are hardly surprising as the capacity to import is conditioned by the level of income and availability of foreign exchange which is generally scarce in developing countries.

The situation is similar for exports. Nearly 89% of the world’s beef and veal and 97% of its total milk are exported by developed countries. However, with increased liberalisation of both foreign and domestic markets of most developing countries, import and export of meat and milk to developing countries may be expected to increase at a rate faster than is currently observed.

**Livestock productivity**

As noted above, developing countries have more than two-thirds of the world’s cattle population, but produce less than 40% of the world’s beef and veal and, about a quarter of the cow milk. Africa and Asia, which own about 15% and 31% of the cattle population, respectively, produce about 7% and 13% of the beef and veal, and about 3% and 15% of the cow milk, respectively. Comparison of livestock population with meat and milk production figures points to the low productivity of livestock systems in the developing regions such as Africa and Asia. Low meat productivity generally reflects both low offtake rates, and low yields. Low offtake rates may be demonstrated by the fact that of the 190 million head of cattle in Africa and 401 million head in Asia, beef and veal production was only 3.4 million tonnes and 6.5 million tonnes, respectively. Europe, however, produces about 10 million tonnes from 109 million cattle, while North America produces about 11 million tonnes from 111 million cattle.

Compared to developed countries, livestock yields are also very low in developing countries. Beef and veal output per animal slaughtered in North America is about 303 kg which is 1.5 times the world average (202 kg), and in Europe 253 kg or about 1.3 times the world average. Yields for beef and veal in Africa and Asia in 1993 were about 136 kg and 146 kg, respectively, which was well below the average for North America. On the whole, Africa is 67% as productive as the world while Asia is 72% as productive as the average for the world. In South America, where livestock production is relatively more advanced, average yield of beef and veal is about 191 kg which is closer to the world average (94%) but still lower than the average yield for the developed regions.

The picture for milk appears much worse than for beef and veal. The average yield of cow milk for developed countries in 1993 was 3758 kg per cow, with North America recording almost twice this (i.e. 6985 kg). However, Africa (including South Africa) is only 21% as productive as the average for the world, while Asia and South America are 55% as productive as the world. Thus, although Africa and Europe had the same
number of dairy cows in 1993 (about 34 million head), the total cow milk output for Europe was 10 times higher than that of Africa, mainly because of the huge differences in yield. The wide difference in productivity while suggesting that there are wide potentialities so far untapped, at the same time indicates that an all out effort has to be made to increase yield in developing countries. Agro-ecological conditions, to some extent, may be important factors but cannot justify why yield is so low in the developing countries. A combination of technological change, improved livestock management and better incentives for producers are needed to raise productivity in Asia and Africa.

Consumption and nutrition

The gap in per capita consumption of animal products between the developed and developing countries appears much wider than the gap in productivity levels. Total meat consumption (all types of meat) for developed countries stands at 77 kg, with North America, Europe and Oceania registering 115 kg, 82 kg and 107 kg, respectively. The figure for developing countries, however, is only 21 kg which is about a quarter of that of the developed countries. Consumption per capita of total meat for Asia (including Japan) and Africa (including South Africa) is only about 20 kg and 14 kg, respectively. South America, however, is in a relatively better situation than Africa and Asia. Per capita consumption of milk varies along the same lines. Per capita consumption of total milk for Africa and Asia for 1993 was about 38 kg and 40 kg, respectively. These figures are, however, far lower than those for Europe and North America which are about 289 kg and 258 kg, respectively.

These differences in consumption levels reflect the widely varying nutritional status that exists between developing and developed countries. Animal products contain important nutrients in bioavailable form, especially protein, carbohydrates and calcium, and the micronutrients vitamin A, the B-complex and zinc, essential for growth and proper physical and mental development. For instance, studies have shown that children deprived of vitamin B$_{12}$, which comes only from animal products, suffer impaired learning abilities. Children in most developing countries do not face a threat of too much cholesterol; to the contrary, they have too little animal product in their diets.

Promoting livestock development

The share of livestock output discussed above suggests that of the developing regions, animal agriculture is most developed in South America and least developed in sub-Saharan Africa (excluding South Africa) and in Asia (excluding Japan). Meat and milk output per animal are also very low in these two regions indicating the undeveloped nature of animal agriculture. Apart from a country’s natural resource endowments, prospects for livestock development depend on overall economic growth, one of the determinants of demand for animal products. Given the high income elasticities of demand for animal products, demand for meat and milk is thus likely to increase rapidly in Asia where the prospect for economic growth has been encouraging. Market-oriented, demand driven opportunities for growth also exist where population concentration is increasing. Thus, even if the prospects for economic growth in sub-Saharan Africa are not as encouraging, population growth and rapid urbanisation will provide impetus for livestock development.
The population of developing countries was projected to increase from 4 billion in 1990 to 7 billion in 2025. In sub-Saharan Africa the population is growing most rapidly with annual growth rates in the 1990s projected to be 3% compared with 1.9% for the other developing countries. Moreover, the proportion of urban population in the developing region is expected to increase by a much higher rate than the overall population growth rates. Thus, while the overall population increase suggests that overall food supply (including from livestock) has to increase greatly, higher urbanisation would mean a shift in dietary preferences towards higher quality food items such as meat, milk and eggs.

High population growth rates in developing countries can be expected to continue to limit land that can be devoted to livestock production. Most opportunities for livestock development will thus take place in mixed crop–livestock systems and will increasingly necessitate technological change to bring about increases in production. Growth in production will require more productive animals which are managed and fed better. Research will need to play an increasing role to generate appropriate technology and policy if higher productivity is to be achieved. Research and extension programmes need to be tailored more to the needs and situations of developing countries to achieve a higher and sustained growth in livestock productivity.

ILRI is beginning to see increases in the transfer and uptake of its technologies in Africa. The Institute has already moved into Asia and other developing regions where the prospect for livestock development looks promising. Unlike in the past, the prospects for adoption of research results are improving rapidly mainly because of the responsiveness of producers to the better incentives unfolded by the implementation of economic reform programmes in many developing countries. The growing availability of effective NGO partners in the process, and the better functioning of national institutions is also expected to contribute to improving livestock productivity and to developing the livestock sector at large. There are other encouraging signs to bank on. A number of countries have already realised that the livestock sector deserves as much attention as the crop sector to increase overall food supply, achieve food security, and improve the nutritional status of the population. This would require integrating research centres with extension programmes and allocating more resources to the sector than in the past.