

Traditional Livestock Sectors in Russia

by Svetlana Abramovich

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What's at steak?

— the real cost of meat —



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Analytical Report

Traditional Livestock Sectors in Russia.

According to J. Lagemann¹ traditional farming is characterized by the use of fire for clearing a new farm plot (slash-and-burn agriculture), superficial tillage by hand, often planting on mounds or ridges, mixed cropping using a number of carefully composed crop associations, the lack of any inputs for fertilizing, and crop protection. Rapid growth and technological innovation have led to profound structural changes in the livestock sector, including: 1) a move from smallholder mixed farms towards large-scale, specialized industrial production systems; 2) a shift in the geographic locus of supply and demand to the developing world; and 3) an increasing emphasis on global sourcing and marketing. Close to one billion of the world's poorest people rely on traditional livestock for their livelihood. Traditional animal husbandry supplies more than just food. Keeping animals provides wealth, status and even dowry payments².

Pastoralism is a subsistence agricultural pattern in which people make their living by tending herds of large animals. The species of livestock vary depending upon global region, but in general they are all domesticated herbivores that live in herds and eat grasses or other abundant plant foods. Almost all of the world's milk and much of its meat come from ruminant (cud-chewing) animals – mostly cows, goats and sheep, but also buffalo, camels, lamas, reindeers and yaks. Raising birds commercially for meat or eggs (i.e., chickens, turkeys, ducks, geese, guinea fowl, and squabs) is treated separately.

There are essentially two forms of pastoralism. They are known as nomadism and transhumance. Pastoral nomads follow a seasonal migratory pattern that can vary from year to year. The timing and destinations of migrations are determined primarily by the needs of the herd animals for water and fodder. Transhumance pastoralists follow a cyclical pattern of migrations that usually take them to cool highland valleys in the summer and warmer lowland valleys in the winter. This is seasonal migration between the same two locations in which they have regular encampments or stable villages often with permanent houses. Transhumance pastoralists usually depend somewhat less on their animals for food than do nomadic ones. They often do small-scale vegetable farming at their summer encampments. They also are more likely to trade their animals at town markets for grain and other things that they do not produce themselves.

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Lagemann J. Traditional African Farming Systems in Eastern Nigeria: an Analysis of Reaction to Increasing Population Pressure. Munich, 1977

² Otte J. et al. Livestock Sector Development for Poverty Reduction: An Economic and Policy Perspective – Livestock's Many Virtues. FAO, 2012.

Pastoralism was for a long time a very successful human adaptation to life in grassland and desert. The existence of extensive tracts of temperate grassland (steppe), subtropical desert, or tropical savanna, combined with the technology of animal husbandry, lead to the development of pastoral societies that were able to compete effectively with more "advanced" agrarian societies, despite being considerably more "primitive" in terms of complexity of social and political organization. For example, pastoral peoples routinely prevented farmers from occupying the rich steppes of South-eastern Europe that are now the main grain producing regions of Hungary, Russia and the Ukraine. The politics of the Old World agrarian civilizations was heavily influenced by pastoral raiding and conquest, as pastoral peoples used the mobility afforded by a wealth of riding animals to plunder civilized states and to impose themselves as elites upon conquered agrarian societies³.

Small-scale farming is an alternative to [factory farming](#). Small-scale farming includes a number of [sustainable agriculture](#) practices such as: 1) [organic farming](#), which follow rules and regulations set by [International Federation of Organic Agriculture Movements](#) (IFOAM); 2) [permaculture](#); 3) arable land use; 4) pastoral; 5) rain-fed; and 6) biodynamic agriculture.

In Russia small-scale agriculture plays a strong role in local and regional development of the country. Agriculture accounts for about 7% of Russia's GDP, less than the industrial sector (40%). Russia's agricultural sector, which employs about 12% of its labour force, has grown about 4% annually (according to the data from 2006). The major field crops grown in Russia are grains, sugar beet, sunflower seeds, potatoes, vegetables, livestock, poultry, milk, eggs and wool. In Russia more than 25% of total consumption of meat and meat products and more than 20 % of milk and dairy products is imported⁴.

In Russian agriculture we find a varied structure of farms that can be divided into three broad categories: 1) large-scale farms (agricultural enterprises); 2) small-scale farms; and 3) households and other private farms. Statistical data shows that small-scale farms produce more than half of the agricultural production. In 2014 the share of these farms was 54 % in crop growing and 51 % in animal breeding sector. Small-scale farms produce 33.8 % of livestock, 49.7 % of milk, 21.7% of eggs and 54.4 % of wool⁵.

Another very important point is that nowadays the household production, both in rural and peri-urban areas, has increased and strengthened. These farmers have a catalyst role in the Russian rural economy. An increasing percentage of food is

³ Evans-Pritchard E.E. Pastoral Societies // <http://www.des.ucdavis.edu/faculty/Richerson/BooksOnline/He5-95.pdf>

⁴ Russia's Agricultural Sector. A Report from the Economic Research Service. United States Department of Agriculture, 2015. p. 12-14.

⁵ Russian Federal State Statistics Service // www.gks.ru

grown on small private garden plots (dachas) and sold in urban markets. The small private plots are made up of approximately 16 million owners of plots, ranging in size from 2.2 acres to 6.8 acres. Each plot can be used for growing food, or for simply vacationing or relaxing, and the government has agreed not to tax this land. Based on 2014 figures, the collective value of all the household produce grown in Russia is USD 14 billion, or 2.3 percent of Russia's gross domestic product (GDP) – and this number only continues to increase as more and more Russians join the eco-village movement.

The Role of Women in Agriculture. In rural societies, where local culture and traditions are still very vibrant, responsibilities and tasks are often assigned to women and men on the basis of traditional gender roles based upon what society considers appropriate for men and women. These roles change over time, have different characteristics in each local context, and are shaped by ideological, religious, cultural, ethnic, and economic factors.

Livestock is considered a key asset for rural households worldwide and a primary livelihood resource for rural communities: about 752 million people in the world keep livestock to produce food, generate cash income, manage risks and build up assets. In Russia in 2015 there were 20.2 million cows, 23.9 million sheep, and 2.11 million goats.⁶ In rural areas (especially in the poorest regions, like Voronezh, Smolensk, Pskov, and Ivanovo regions) the development of small-scale livestock enterprises is a key element of any efforts to eradicate poverty.

Speaking about the roles of women in food production sector it is necessary to note that women perform a reproductive role, encompassing child bearing, child rearing, and housework. At the same time, they also fulfill a productive role, engaging in paid labour activities outside the house, and/or being in charge of a number of tasks related to household farming activities, including livestock management. As a result women often have a double work burden.

In Russia women make on average up to 43 % of the agricultural labour force and contribute substantially to the livestock management. For instance, dairy cattle are one of the most important investments a farmer can make to improve welfare, income, and nutritional standards of the household. This is because dairy cattle have value beyond simple production of milk; they can perform work, and help to diversify farming activities, in addition to providing additional fundamental nutritional value through the milk produced. Traditionally, women are responsible for milking animals, processing milk, and collecting dairy products. They are responsible for activities related to small livestock production, including poultry, sheep, goats.

⁶ Russia 2015. Statistical Report. M.: Russian Federal State Statistics Service, 2016. p. 25.

Despite women's crucial contribution to agriculture and food security, due to traditional and customary gender rules, women's access to and control over water, energy, biodiversity, and land remains lower than that of men. Gender disparities can have negative consequences on women's ability to earn a stable income and have an adverse impact on overall income earned at the household level from livestock production.

At the same time the experts speak about "feminization of agriculture," which arose in some countries after men began to migrate to the developing countries in search of formalized employment. Currently, about half of agricultural workers worldwide are women. This trend is particularly evident in some Central Asian countries. For example, according to the latest report of Tajikistan, about 80% of the total number of working women are involved in country's agriculture sector⁷.

In Russia in 2014 13,640,000 people worked in agricultural sphere, including 7,611,000 women⁸ who made up 55.8 % of agricultural workers. In some regions women constitute 60 to 70% of the agricultural labour force.

Women make a significant contribution to agricultural and food production both in Russia and worldwide. Their roles are diverse and understanding their differential access to land, capital, assets, human capital, and other productive resources is necessary to develop successful interventions.

Livestock Consumption and Production Patterns

Dairy Consumption. According to the World Association of Health Care, billions of people around the world consume milk and dairy products every day. These products are one of the most important in the menu of a majority of mankind⁹. Moreover, milk and dairy products are included into the Doctrine of National Food Security of the Russian Federation, and have paramount value in the diet of the Russian population.

In Russia, consumption of dairy products has increased rapidly in recent decades, driven by economic growth and rising income levels. Cow milk accounts for 80% of Russian production and at least 72 % of total production in Russian regions except some regions like Kalmykiya, Buryatia, Kamchatka, Yamalo-Nenetskiy Autonomous District, etc.), where its share is less than half (31-42 %). Goat milk contributes only 12.4% of Russian milk production. Sheep milk contribution is marginal in Russian regions except the Crimea and Northern Caucasus.¹⁰

⁷ Women-Farmers Solve the Problem of Food Security // International Centre for Trade and Sustainable Development. <http://ru.ictsd.org/>

⁸ Labour and Employment in n Russia. Statistical Report. M.: Russian Federal State Statistics Service, 2016. p. 94.

⁹ Milk and Dairy Products in Human Nutrition. Rome: Food and Agriculture Organization of the United Nations, 2013. p. xii.

¹⁰ The Market of Milk and Dairy Products in Russia: Peculiarities, Tendencies and Prospects of Development. M.: Ministry of Agriculture of the Russian Federation, 2014. p. 14.

Today, Russia is one of the world's largest producers of milk and dairy products. Approximately 21,000 organizations and more than 1.2 million people are engaged in the dairy industries s associated industries. For the last 25 years, the dairy sector in Russia has shifted towards larger herds and greater annual milk production per cow. The driving force behind this development has been the need to adopt technologies that require large capital investments, and as such, depend on larger herds to be profitable. At the same time, more feed concentrates are being used to support the higher yields. However, the number of cows varies widely across the country, ranging from 218,593 animals in Tatarstan and 154,366 animals in Altay to 52,156 cows in the Dalnevostochniy Federal District. Average annual milk production per cow in 2014 ranged from 3,951 to 2,781 kg per cow.

The Russian Statistics Agency (Rosstat) reports that, as of July 2016, non-commercial household farms hold 47% of Russia's milking cows.¹¹ Two types of commercial dairies manage the remaining 53% of dairy cows: 1) large agricultural establishments, which account for 40% of commercial dairies; and 2) small-scale farms that account for the remaining 13%. The distribution of dairy cattle by type of farm is slowly changing; the share of small-scale farms is gradually growing as some household farms register as small businesses in order to become eligible for state support programs.

In Russia in 2014, there 11,144,000 tons of whole-milk products, 84,000 tons of powdered skim milk, 28,000 tons of powdered whole milk, 251,000 tons of butter, and 378,000 tons of cheese were produced. Raw milk production decreased in 2015 by 0.3%. In 2015 the regional leaders in Russian milk production were Bashkortostan, Tatarstan, Rostov and Krasnodar regions (producing more than 800,000 tons of milk)¹².

On the other hand, Russian milk consumption has decreased over the last few decades. In 2015, 244 kg of milk per capita per year was consumed (the recommended rate of consumption is 320-340 kg per person per year), while in 1990 the consumption of dairy products was 387 kg per capita per year. The lowest consumption of milk and dairy products per capita per year (less than 200 kg) are recorded in the following regions: the Urals Federal District, Northwestern Federal District, Chukotka Autonomous District, Sakhalin and Amur regions, the Kamchatka territory, Chelyabinsk, Tambov and Tula regions. In opposition, the Central Federal District is marked with the highest level of consumption of milk and dairy products in Russia.

Overall, there is a gap between consumption and production of milk In Russia, and as such the country depends upon importing milk. Russia's main foreign suppliers

¹¹ Russian Federal State Statistics Service // www.gks.ru

¹² The Market of Milk and Dairy Products in Russia: Peculiarities, Tendencies and Prospects of Development. M.: Ministry of Agriculture of the Russian Federation, 2014. p. 28.

of dairy products are Finland (6.3%) and Poland (26.5%). In 2014 Latvia, Lithuania, and Estonia were also among them, but a food embargo led to a trade break-up between Russia and these Baltic countries. On the other hand it significantly increased the amount of products supplied to Russia from the Republic of Belarus: milk to up 17.3%, dairy products up to 23.4% and of cheese up to 22.9%. Belarus accounted for 96.6 percent of fluid milk imports to Russia in 2015, and will likely be the only major exporter of raw milk to Russia in 2016. In 2015, Russia imported 158,000 tons of butter, 348,000 tons of cheese and cottage cheese, 199,000 tons of powdered skim milk, and 347,300 tons of milk¹³. Despite the milk deficit in the country, Russia still exports milk and dairy products to China, Kazakhstan, Qatar, and several other countries.

Meat Consumption. In Russia, beef, veal, pork, poultry, sheep, goat, and other kinds of meat accounted for about 38-43% of overall livestock sector production in 2010-2014 as well as 19-23% of the total agricultural production. In 2015 the meat market value in the Russian Federation reached RUR 1,439 billion (in current prices)¹⁴.

However, the Russian meat sector has been undergoing a major transition over the last 25 years, which is largely unprecedented in modern history, and followed the breakup of the Soviet Union in 1991. Russia began a downward trend in cattle inventories beginning in 1990. Cattle numbers declined from 59 million heads at that time to 28 million heads in 2000 and then dropped below 21 million heads in 2010, thus registering a tremendous 65% decrease in livestock numbers since 1990. This downward trend has slowed in recent years, but it is still ongoing.

Swine inventories also decreased dramatically from 40 million heads in 1990 to 18 million in 2000. But the downward trend reversed starting in 2005 owing to generous state support and trade measures. Nevertheless, the Russian Federation has witnessed a 57% decrease in swine numbers from 1990 to 2010.

Despite a reduction in production, the Russian Federation's consumption of all types of meat increased by 21.8% between 2010 and 2015 – from 7.5 million tons to 9.1 million tons – which again reflected higher consumer incomes.¹⁵ This figure corresponds to about 64 kilograms per capita as compared with 52 kg per capita in 2010. Although meat consumption has increased considerably, it still has not reached the so-called "rational norm of consumption" of 75 kg per capita per year that has been established by the Ministry of Health of the Russian Federation.¹⁶

¹³ The National Union of Milk Producers // http://souzmoloko.ru/news/rinok-moloka/rinok-moloka_3013.html

¹⁴ Russian Federation: Livestock and Products Annual Report 2015. Global Agricultural Information Network // <http://gain.fas.usda.gov>

¹⁵ Russian Federation: Meat Sector Review. Rome: Food and Agriculture Organization of the United Nations, 2016. p. 17.

¹⁶ The Consumption of Basic Foodstuffs by the Population of the Russian Federation // <http://gsk.ru>

Each type of meat has its own seasonality of consumption which correlates with demand. The seasonality of consumption also affects imports. The peak of meat demand falls in October, November, and December. It coincides with the slaughter season for cattle and pigs in rural households as well as the upcoming Christmas and New Year festivities. Purchasing volumes consequently decline in January. The lowest consumption levels for all types of meat occurs during Great Lent, which usually takes place between late February and early April. There is another drop in meat consumption in late summer and early autumn when the domestic market is abundant with inexpensive fruits and vegetables.

Meat production in the Russian Federation is mostly concentrated in the southwest and, to a certain extent, central parts of the country. The highest concentrations of poultry inventories are in the Central (29%), Volga (20.2%), and Southern (13.1%) Federal Districts. The specific regions with the highest poultry stocks are Belgorod (10.1%), Rostov (5.4%), and Leningrad (5.1%).

The highest concentrations of pork inventories are in the Central (34.6%), Volga (21.4%), and Siberian (17.6%) Federal Districts. The regions with the highest pork stocks are Belgorod, Krasnodar, and Tatarstan. For many years, Belgorod Region has been the Russian Federation's leader in development of industrial pork and poultry production. This is mostly owing to a advantageous investment climate established in the region, which has attracted big projects and large agricultural holdings. In addition, the fertile soil and favourable climate are excellent for pork production.

Other types of livestock farming are mostly concentrated in the southwestern part of the country. The largest cattle inventories are in the Volga (30%), Siberian (21%), and Central (14%) Federal Districts. Cattle farming is less popular in the Far Eastern (2%), Northwestern (4%), and Ural (6%) Federal Districts. Within the Russian Federal Districts, the leading regions in terms of cattle numbers are Bashkortostan (6.3%), Tatarstan (5.4%), Dagestan (4.5%), and Altai (4.5%). Bashkortostan and Tatarstan primarily raise dairy cattle, while Dagestan raises cattle for beef. The majority of Dagestan's cattle are concentrated in rural households; only 11.6% of cattle in the region are in agricultural enterprises. The majority of cattle in specialized beef farms are concentrated in the Southern (42%), Siberian (18%), and Ural (12%) Federal Districts.

The Russian Government, in its *Strategy of Livestock Production Development in the Russian Federation until 2021*, forecasts that the total production of all types of meat will reach 9.6 million tons, imports will decrease to 0.6 million tons, and domestic consumption will increase to 9.9 million tons by 2020. The same strategy envisages that Russia will export 0.6 million tons of meat, including 400,000 tons of poultry and 200,000 tons of pork.

Between 2010 and 2015, meat imports decreased from 2.6 to 1.9 million tons. This decrease was mainly because of increased domestic production, shrunken poultry meat imports, and sanitary import restrictions imposed by the Russian veterinary authorities. The Russian Federation's pork production expanded by 49% from 2010 to 2015 and was accompanied by a 38% increase in consumption. Imports continued to grow marginally over the same period, 9 %. In 2015 imported pork, which mostly goes for further processing, held 22% of the domestic market share, compared with 27% in 2010.

The Organisation for Economic Co-operation and Development (OECD) suggests that the Russian Federation will decrease its meat imports from 3 to 1.3 million tons in the same period (down 57%) due to anticipated growth in domestic chicken meat and pork production. The share of the Russian Federation in global meat imports will also decrease by 12% in between 2010 and 2015, and reach about 4% in 2021.¹⁷ From being the largest meat importers in the world between 2010 and 2015, by 2021 the Russian Federation is anticipated to move to the fourth position on the global import list after Japan, the sub-Saharan African countries, and Saudi Arabia.

Social Considerations of Livestock Consumption and Production

Urbanization alters patterns of food consumption, which may influence demand for livestock products. People in cities typically consume more food away from home and larger amounts of pre-cooked, fast, and convenience foods than do people in rural areas. The growing urban population in the Russian Federation's cities provided a big boost to the development of the retail market in the country; the growth of milk and meat sales was one of the results of this change. Consumer preferences have also revealed the following trends:

- consumers look for value-added cuts rather than whole birds;
- consumers tend to prefer chilled meat rather than frozen;
- beef is no longer a meat for everyday consumption, unlike in Soviet times;
- chicken meat has taken the place of beef in everyday diets;
- as the poultry meat market becomes saturated, pork consumption grows (including pork that is processed into sausages, smoked meat, meat delicacies, etc. that have a longer shelf-life); and,
- consumers have an increasing awareness of food safety issues.

Rural populations across the globe are aging. The percentage of farmers over 55 is 7.1 in sub-Saharan Africa, 12.1 in Asia, 25.3 in the Caribbean and 12.3 in Latin

¹⁷ Russian Federation: Meat Sector Review. Rome: Food and Agriculture Organization of the United Nations, 2016. p. 5.

America.¹⁸ The same situation can be seen in Europe as well. The oldest farmers are in Portugal, where the proportion of farmers over 55 years is 73.4%. In Bulgaria 70.3% and Romania 67.5% of rural farmers are over 55 years of age. In Spain it's 53%, in Greece it's 56%, and in Italy it's 62% of farmers who are over 55 years of age. This is becoming a significant problem because the older farmer, the less arable their land becomes. In the Nordic countries the situation is a bit different. In Finland only a quarter of farmers are older than 55 years. In Germany, the corresponding figure is 28%, and in Austria it's 29%.¹⁹ Unfortunately, there are no reliable statistics about aging of Russian small-scale food producers, however it is likely that this group is an ageing population as well. This emerging demographic reality demands attention from policy-makers and practitioners alike, because older farmers are less productive and unable to adopt new technologies or practices.

Migration of young people to urban areas causes a decrease in livestock and poultry production by rural households and small-scale farms. For instance, the World Bank (2008) found that more than half of the 4 million internal migrants moving across provinces in Vietnam over the period 2004-2008 were young people (aged under 25 years), with a highest migration rate within the 20-24 years old category.²⁰ According statistics in Russia, between 2007 and 2012, 40% of 17-29 year-old young people were involved in the internal migration processes.²¹

Young people leave rural areas mostly due to a lack of opportunities. Unemployment and under-employment are major issues that rural youth face, along with high economic insecurity, poverty, and pronounced work deficits. Agriculture is the main sector of employment of rural people. However, rural youth generally are under-represented in development policies and they lack access to adequate education opportunities and productive assets. All this impedes them from accessing decent employment in rural areas and represents a push factor of migration.

Environmental Considerations of Livestock Consumption and Production

Consumption and production of meat and dairy products also have a significant impact on the environment. For meat and dairy systems, largely negative environmental issues increase with greater intensity of production. Associated with the intensive meat and dairy systems are high stocking rates, high use of chemical fertilizers and pesticides, and mechanized methods. These result in problems of

¹⁸ The Ageing of Rural Populations: Evidence on Older Farmers in Low and Middle-Income Countries. German Federal Ministry of Economic Cooperation and Development, 2014. p. 3.

¹⁹ EU Agricultural Economic Briefs. Generational Renewal in EU Agriculture: Statistical Background. Brief № 6. June 2012. p. 3.

²⁰ Rural Youth and Internal Migration Inputs to the United Nations World Youth Report 2013. Youth Migration and Development, prepared by the Decent Rural Employment Team, ESW, FAO. p. 1.

²¹ Mkrtchyan M.V. The Migration of Young People in the Russian Regional Centers at the End of XX - Beginning of XXI Century // Bulletin of Russian Academy of Sciences. Geographical Series. 2013. № 6. p. 19.

direct point source pollution, diffuse pollution, and pressure on marginal habitats and landscape features:

- **Biodiversity:** The effect of dairying on biodiversity includes the development of invasive herbs and loss of natural grassland diversity due to the increased use of fertilizers, silage production, reduced grazing, and scrub encroachment. While some intensively managed grassland is of strategic importance to migrating and wintering wildfowl, large-scale changes in the intensity of use in traditional farmed areas seem to be associated with a loss of both complexity and stability.
- **Soil:** Soil integrity is affected by increased use of fertilizers, feed additives, and the more concentrated use of waste products like manure. As intensification increases, the level of application of fertilizers and manures usually rises to levels that are greater than crop requirements or the ability of the soil to retain them. When these nutrients are relatively immobile or have limited water solubility the result is that the soil may change its essential character. Intensive production systems also make fairly widespread use of feed additives, medicines, and growth promoters. Little is known about the impact of these on the environment, however feed concentrates contain phytotoxic heavy metals such as copper (Cu), zinc (Zn), and cadmium (Cd), which accumulate in the soil. As well, vet medicines persist in dung, affecting fauna and potentially the dependent bird populations. Also, high stocking rates may result in increased incidence of trampling and subsequent erosion.
- **Water:** Pollution of groundwater with nitrates and pesticides is the primary mechanism of damage to water systems. The full extent of surface and groundwater pollution due to farming is largely unquantified.
- **Air:** the impact of meat and dairy production on the atmosphere arises from de-nitrification, the production of methane, ammonia volatilization, and carbon dioxide. Whilst methane generation per animal tends to be higher in low input systems than in the more intensively managed systems that use feed supplements, ammonia emissions are highest for intensively managed systems (these occur during manure storage and application to arable and grassland). In terms of carbon dioxide and nitrous oxide emissions, dairy production has only an indirect impact (mainly the use of energy to manufacture

feed concentrates and to assist forage production as well as housing systems).

The Effect of Genetically Modified Organisms (GMOs)

GMOs are novel organisms created in a laboratory using genetic modification/engineering techniques. By cutting and splicing the DNA of an organism, new functions, characteristics, or traits can be introduced into that organism. As the result, most existing GM crops are supposed to improve yield, through the introduction of resistance to plant diseases or of increased tolerance of herbicides. GMO plants are commonly used in agricultural business as a feedstock for cattle.

GMOs are characterized with huge negative effect on human's health. First of all, studies on laboratory and farm animals show that GM food itself can be toxic or allergenic. In addition to the above subject about the health hazards from GM food, it is also proved that pesticides and insecticides which are being used for growing GM crops can also damage our health and the environment. For example, biopesticide CryA1b as well as the glyphosate herbicide, Roundup, kill human kidney cells. Furthermore, glyphosate herbicides could also contribute to modern human diseases such as celiac disease and gluten intolerance, ADHD (attention deficit hyperactivity disorder), autism, Alzheimer's disease, Parkinson's disease, infertility, birth defects, and cancer that are on the increase worldwide. It is obviously that without stopping this GMO epidemic, the list of the diseases can be continued because not all negative GMO consequences are fully recognized today.

As for Russia, it experiences now a high increase in livestock production as a result of strong government support and rising domestic demand. This rapid expansion of meat and dairy production has favored the robust growth of demand for high protein for livestock in recent years, making Russia increasingly dependent on soybean meal. That is what it is a fact that Russia continues to be the world's leading importer of soybeans especially from Paraguay where about 96% of the soybeans (mainly genetically modified) are destined for export as livestock feed. This relation between the Paraguay's soy feedstock and a huge Russian market of livestock and related dairy products results negative consequences for both countries: rapid spread of toxic GM food in Russia and negative effects of GM crops in Paraguay. These two problems should be taken seriously into consideration by the governments of these countries for the welfare of their people.

Corporate Giants in the Russian Agricultural Market.

EURODON. *EURODON, LLC* was established in 2003.²² Today, the company is the leader in the Russian market of turkey breeding and manufacturing. Its branded

²² <http://www.eurodon.ru>

products are known at the Russian market under the trade mark “Indolina.”

Applying a modular approach, at the first phase of the production development in Rostov region was accomplished by construction of turkey breeding and manufacturing complex of the annual output of 11,200 tons. Considerable increase of the EURODON production capacity was achieved upon implementation of the second project phase. In 2013 the output amounted to 43,000 tons of live weight turkey meat. In 2015, 75,000 tons of turkey meat was produced. The company plans to produce 150,000 tons of turkey meat per year moving forward.

The total area of the EURODON complex is 160 ha, namely twelve segregated farms for poultry rearing and growing (93 barns), a hatchery of the capacitance of 340,000 eggs per batch, meat processing plant with the slaughtering capacity of 120,000 tons per day, and a feed mill plant. The range of the products sold under the brand name “Indolina” exceeds 100 articles, including about 30 types of sausages and meat delicacies. The products are sold in the major federal and regional retail chains of European part of Russia.

Miratorg Agricultural and industrial holding company Miratorg was founded in 1995 in the Russian Federation as a trading company. In 2005 it became the largest importer of meat in the country. Since 2003, with the introduction of quotas on meat imports, the company developed a new strategy called “from field to fork.” Currently, Miratorg is the largest producer of pork in the country²³.

With over 16,000 clients, Miratorg is present in 15 regions and provides employment to more than 7,000 people. Vertical integration allows Miratorg to leverage costs and risks on various commodity markets, maintain stable margins, minimize raw materials’ price fluctuations, and ensure timely supplies and quality control at all production stages.

In 2012 the company opened a new processing plant in Kaliningrad, Concordia, which processes poultry and other meats for McDonald’s as well as its own brands.

Since 2009, Miratorg also has run the brand of frozen vegetables named “Four Seasons” In 2010, the company started the construction of green-field broiler complex in the Bryansk region with an annual capacity of 100,000 tons.

As a result of restructuring in 2008-2010 into an agricultural and industrial holding, Miratorg consolidated 100% shares of its subsidiaries. At the end of 2012, the holding company planned to consolidate LLC Concordia, LLC Prokhorovsky Feed Mill, LLC Novoyakovlevsky, and LLC Pristensky.

Miratorg is actively developing its own production of fodder and grain to be able to fully meet the needs of its current and future operations. Starting in May 2011, the

²³ <http://www.miratorg.ru>

combined capacity of two feed plants reached 630,000 tons a year. In 2012, a third feed mill with an annual capacity of 360,000 tons began to operate. This mill is equipped with machinery from Brock (USA, elevator) and Ottevanger (Netherlands, mill).

Production of pork is the core business of Miratorg. Today the agroholding owns 12 automated pig farms working on Big Dutchman (Germany) and Roxell (Belgium) equipment. Genetic material is supplied by PIC (United Kingdom), Hermitage (Ireland), and Dan Bred (Denmark). In terms of effectiveness, the holding's pig farms are producing close to the world's leading manufacturers and are far ahead of the Russian average.

A slaughterhouse and a primary pork processing plant in Korocho (Belgorod region) were launched in 2008. It is the biggest and most modern enterprise in the Russian Federation in this sector. The list of equipment suppliers includes Banss and Multivac (Germany), York (Denmark), Cryovac (the USA), Mondini (Italy), and Marel (Iceland). In 2011 this complex was approved for exports to the EU.

Food distribution is the final link in the business model of the holding. In 2010 through its own retail chain, Miratorg sold 338 tons of meat, 64% of which was its own production. Thanks to its distribution network Miratorg markets 600-1,000 tons of meat products daily.

In the first half of 2011, sales of Miratorg increased by 18.5% when compared with the sales during the same period of the previous year. Such growth is backed up by the active development of the distribution network and an aggressive marketing policy. Due to Miratorg's high-tech factory for meat products in Kaliningrad, the European expansion is an important point of the company. Miratorg-West already exports chicken products to Italy and Serbia. The company grew its overall volume of meat sales for the in 2016 by 16% year-on-year, hitting 342.000 tons of meat. ²⁴

Cherkizovo Group. Cherkizovo Group is a vertically integrated agribusiness company with a full production cycle, from feed production to processing meat products and distribution.²⁵ The company was established in 2005 as the result of merger between Agro-Industrial Holding Cherkizovsky (involved in meat production and processing) and Agro-Industrial Holding Mikhaylovsky (poultry production).

The company's activities comprise:

- seven full-cycle poultry production facilities, with a total capacity of 400,000 tons live weight p.a.;

²⁴ <http://www.globalmeatnews.com/Products/Miratorg-moves-into-German-ready-meal-market>

²⁵ <http://cherkizovo.com>

- 14 modern pork production facilities with a total capacity of 180,000 tons live weight p.a.;
- six meat processing plants with a total capacity of 190,000 tons p.a.;
- six fodder plants with a total capacity of 1.4 million tons p.a.;
- grain storage facilities with a total storage capacity exceeding 500,000 tons and a land bank exceeding 100,000 hectares.

In 2011, Cherkizovo acquired 100% of Mosselprom, whose operations included poultry, pork, feed production, and grain businesses. It also started construction of the Elets agro-industrial complex in the Lipetsk Region, with an annual meat capacity of 400,000 tons per annum (poultry and pork).

The Cherkizovo Group renovated the Otechestvenniy Product meat processing plant, which increased its capacity to 400 tons per month. A poultry breeding facility Komarovka at Penza cluster consists of 34 birdhouses, which have a combined capacity of almost 1.1 million broilers. In Penza cluster there was launched the largest hatchery in the Russian Federation, capable of 105 million eggs per year. And a second line at the poultry breeding facility at its Bryansk cluster consists of 26 birdhouses, which have a combined capacity of almost 880,000 broilers. A hatchery at Bryansk cluster is capable of producing 43 million eggs per year.

In 2015, the Cherkizovo Group produced more than 825,000 tons of meat products. The company's consolidated revenue reached RUR 77 billion. In the past five years alone, Cherkizovo Group has invested over USD 1.5 billion in developing Russia's agro-industrial sector. Cherkizovo Group's strategy centres around organic growth and developing its infrastructure, as well as consolidating its assets on Russia's meat market. The Cherkizovo Group's shares are traded on the London Stock Exchange (LSE) and on the Moscow Exchange.

Influence of Trade Agreements and Negotiations on the Livestock Sector

Against the background of worldwide food price increases, the global economic crisis, and recurrent droughts in some of the main agricultural regions, food security has become a key political goal of the Russian government. Defined as a far-reaching self-sufficiency in food, it was codified in the 2010 "Food Security Doctrine," and became the major objective of the current multi-year *State Program for the Development of Agriculture until 2020*. The doctrine sets specific goals for self-sufficiency ranging from 80% to 95% for grains, sugar, vegetable oil, meat, dairy, and fish products.²⁶ Given the collapse of the domestic livestock herd in the

²⁶ Food Security Doctrine // <http://kremlin.ru/events/president/news/6752>

1990's, these goals are particularly ambitious to reach in the area of meat and dairy production. Moreover, by acceding to the World Trade Organization (WTO) in 2012, the Russian Federation committed to liberalizing its trade regime and accepted a set of ceilings to its domestic farm support.²⁷

The Russian Government managed to defend a substantial domestic market protection level at World Trade Organization (WTO) accession, including Tariff-Rate Quotas (TRQs) for poultry meat and beef with high out-of-quota rates. For pork, the Russian Federation has agreed to a TRQ of 400 000 tons for fresh, chilled and frozen pork with a zero in-quota tariff. As of 1 January 2020, the Russian Federation will adopt a tariff-only regime for pork with a bound duty of 25%. Therefore, the domestic pork market will be open to greater import competition.

How to modernize the cattle and dairy sectors under the conditions of WTO commitments has thus emerged as a major policy challenge for the Russian government. According to the current State Program, it is mainly to be achieved by concessional credits to the livestock sector, which was singled out as the largest recipient of interest subsidies in the 2013-2020 period.²⁸

State support programs focus on extending long-term credit at low interest rates to livestock breeding and other regional programs. They have attracted many entrepreneurs. For example, interest rate subsidies for livestock production from the federal budget – aimed at supporting the construction, reconstruction and modernization of livestock and poultry facilities – totaled RUR 2.36 billion and attracted RUR 155 billion worth of credit to 492 projects alone. In 2013, overall state subsidies to the livestock and poultry industries, disbursed under various support programs, amounted to RUR 22.8 billion. State subsidies for livestock production from the federal budget amounted to RUR 22.8 billion in 2011, and another RUR 27 billion for the dairy sector. More than 3,000 projects were already accomplished in the dairy industry under these programs.²⁹

As domestic meat and milk markets appear to be highly distorted, the extent to which investment decisions have been driven by rational business considerations is unclear. Many companies also complain about the excessive documentation requirements and the lack of transparency in decision making by officials responsible for the distribution of state support. To ensure the long-term competitiveness of Russia's meat sector, it would be highly desirable to refocus domestic budget support to food safety improvements, feed quality monitoring, research, education, training and other non-distorting support measures.

The Russian livestock sector is strongly affected by political agreements and other

²⁷ <https://fas.org/sgp/crs/row/R42085.pdf> (p. 9)

²⁸ Agricultural Policy Monitoring and Evaluation 2013. OECD Countries and Emerging Economies, Paris: OECD Publishing, 2013.

²⁹ Russian Federation: Meat Sector Review. Rome: Food and Agriculture Organization of the United Nations, 2016.

acts. For example, since March 2014, the European Union has decided upon the adoption and gradual extension of sanctions towards Russia, thus reacting to the violation of Ukraine's sovereignty and territorial integrity as well as the continuing destabilization of the country. According to estimates, EU sanctions hurt the Russian economy by EUR 23 billion in 2014 (1.4% of Russia's GDP) and EUR 75 billion in 2015.³⁰ In response to Western economic sanctions, the Russian Federation decreed a ban on agricultural products and foodstuffs from the E.U., U.S., Norway, Canada, and Australia on 6 August 2014. The list of products issued by the Russian government on 7 August 2014 alongside vegetables and fruits covers dairy products (milk, dairy products, notably cheese, skimmed-milk powder, butter, whey powder, fresh products, whole-milk powder, and condensed milk, and some food preparations containing milk components), meat (meat of bovine animals, swine, and poultry, whether fresh, chilled or frozen, as well as meat salted, in brine, dried or smoked, sausages, and similar products).

Even earlier still, in January of 2014, Russia had banned E.U. fresh and frozen pork from 1 February 2014, because African Swine Fever (ASF) had been detected in wild boars in four isolated cases coming from Lithuania and Poland. The Commission resorted to the WTO dispute settlement procedure in April of 2014, as it considered the ban to be disproportionate and against WTO rules.

The EU was hit hardest among all countries targeted by the Russian embargo, as 73% of banned imports come from the EU. The Directorate General for Agriculture of the European Commission stated that "the restrictions put a serious pressure to our agriculture and food markets"³¹ due to a temporary loss of a significant commercial market and because of possible cascade effects leading to oversupply, price collapses, and income losses for the producers. Meanwhile, in Russia there was established a so-called import-substitution campaign directed to the implementation of 2,059 projects across 19 branches of the economy, including the livestock sector, between 2016 and 2020, to help counteract the effects of the sanctions.

Problems with Coexistence of Small-scale and Industrial Food Production

Small-scale farming is inextricably connected with national and global food security. In the majority of the world's countries, small-scale food production is the predominant form of agriculture in the food production sector. Small-scale farmers carefully manage their lands to sustain remarkably high levels of productivity despite having less access to resources such as agricultural inputs and support. Moreover, small-scale farming preserves traditional food products, while contributing to a balanced diet, safeguarding the world's agro-biodiversity, and the

³⁰ The Russian Embargo: Impact on the Economic and Employment Situation in the EU. Policy Department A: Economic and Scientific Policy of European Parliament, 2015. p. 3.

³¹ Rural Development in the European Union: Statistical and Economic Information Report 2013. Directorate-General for Agriculture and Rural Development. p. 24.

sustainable use of natural resources. Farmers are the custodians of a finely adapted understanding of local ecologies and land capabilities. Through local knowledge, they sustain productivity on often marginal lands, through complex and innovative land management techniques. As a result of the knowledge that they have of their land and their ability to sustainably manage diverse landscapes, small-scale farmers are able to improve many ecosystem services.

Small-scale food production represents an opportunity to boost local economies, especially when combined with specific policies aimed at the social protection and well-being of communities. Small-scale farmers have strong economic links to the rural sector. They contribute strongly to employment, especially in the countries where agriculture still employs the majority of the labour force. In addition, the incremental income generated by small-scale farming is spent on housing, education, clothing etc. in the local non-farm economy.

However, small-scale food production has negative points as well. Farmers need to be stable producers. Without stability, the food market is dangerously dependent on fluctuating imports. So, left to the mercy of the market, farmers couldn't invest in improvements to productivity, food safety or environment protection.

Currently, Europe's rural communities are under threat. With farmers' incomes only about half the average EU wage, it's no surprise that over the last decade agricultural employment fell by 25%. Around 60% of the EU population lives in the countryside, which covers 90% of the Union's territory. And every year, Europe has 2% fewer farmers.³² This trend can be seen in Asian countries, the U.S., and Russia as well.

According to the Statistical Register of Rosstat, at the beginning of 2016, there were 268,336 small-scale farms in Russia. However, by July 1, 2016 there were 227,836 households and small-scale farms,³³ reducing the number of small-scale food producers on average from 20 to 25% in the Districts. Currently, the largest concentration of farms is in the Volga (39,282), Southern (39,336), and North Caucasus (57,970) Federal Districts, but in 2015 these figures were 49,000, 49,375, and 66,753, respectively, showing a significant decline in numbers. The least decline (about 10%) was in the Central District. In total, the number of farms fell from 35,224 in 2015 to 31,569 in 2016.³⁴

A small-scale food producer in Russia can get a state financial support or get low-interest loans, in special banks for agribusiness like the Russian Agricultural Bank. However, it appears that farmers periodically receive loans and local financial

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Population statistics at regional level // <http://ec.europa.eu>

³³ Russian Federal State Statistics Service // www.gks.ru

³⁴ The Ministry of Agriculture of Chelyabinsk Region // <http://www.chelagro.ru>

report, but there is no return in the form of products. Moreover, there is evidence that the farm is only listed in the reports, being absent as a small-scale producer.

Industrial Food Production. Industrial food production is a way to produce food, particularly meat, milk, and dairy products, in large quantities at a faster rate than small-scale farming. Its primary objective is to produce the greatest volume of products at the lowest cost with the goal of gaining as much profit as possible.

However, putting profit first often leads to negative impacts in industrial food production. For example, there are high occurrences of animal cruelty. Animals fall victim to the difficult and cruel conditions of factory farming. They are packed into incredibly small areas, which are often indoors, and fed additive ingredients for fattening. And, because animals would be exposed to difficult conditions, they die in huge numbers. Animals that are factory farmed are fed with high-fat and additive feeds to get them fat quickly. Take note that these can transfer to their meat. As you may have noticed in today's supermarket chickens, they are about 2 times fatter and having half the protein compared to supermarket chickens many years ago.

Industrial food production risks food products to have sub-standard quality. This is one of the biggest disadvantages of factory farming. Since animals are artificially bred and the procedure used is unnatural, the end products could be having poor quality. Moreover antibiotics are injected into livestock can negatively affect our health.

Additionally, industrial food production has a negative impact on the environment. Because of extreme overcrowding conditions, the land that surrounds industrial farms could not handle the large amount of waste produced by animals. This can contribute to land, air and water pollution in the surrounding areas and in general it contributes to global warming.

Nowadays in Russia there are 318 large industrial food producers. The largest ones are Miratorg, Cherkizovo Group, Efko, RusAgro and Agro-Belogorie, whose net profit in 2015 was RUR 16,396 mln., 13,318 mln., 857 mln., 20,177 mln. and 5,990 mln. respectively³⁵. In 2015 they control 41 % of Russian food market. Huge farms, factories, fields located in different regions, high technologies, newest method of crop growing and cattle-breeding made those giants of food production.

Small-scale farming is drastically decreasing in Russia, while industrial farming has rapidly increased. Industrial food producers cause smaller farms to go out of business by mass producing food. Of course, Russian government supports small-scale farms, but industrial farming has become a big business, vertically integrated. That implies larger acreage and field equipment, two factors that small farmers

³⁵ 50 largest Russian agro-industrial companies in 2015 // <http://expert.ru/>

cannot afford. Besides, in Russia large industrial farms put the title of "organic" to their products; as a result consumers are willing to buy only their production, completely ignoring real organic food from small-scale farms. In the end I'd like to underline once more that in Russia small-scale farms are being wiped out because of industrial food production.

Policy Recommendations for the Russian Federation's Livestock Sector

Small-scale producers tend to have a limited land base, raise multiple types of livestock and crops, practice integrated farming methods and market their products directly, either from the farm or through a farmers' market. There are also a number of larger, conventional farms that dedicate a portion of their farm to specialized, local food production – in effect, a small scale operation. Small-scale food processors also typically have few employees, produce a limited number of specialty products, and market their products either directly or through outlets that focus on local foods.

The small-scale food production sector has the following characteristics, which differentiate it from corporate giants. First, it focuses on healthy eating and safe food. There is a deeply held sense of responsibility to produce food that was safe, nutritious and flavourful. Second, it is very important for small-scale producers to create a relationship with a consumer. A bond is formed when consumers interact directly with the people who grew, raised, harvested, or slaughtered the food. Food is more highly respected and is less likely to be treated as a throw-away commodity when the consumer recognizes the time and effort that has gone into making it. Being innovative and nimble is no of less importance. The small-scale sector has been called "the breeding ground for innovation" because it can respond very quickly to market signals, which is the lifeblood of competitiveness. However, innovation can be a challenge for regulators who are faced with scrutinizing new processes and procedures to determine their public safety and utility.

As well, the small-scale food production sector creates jobs and economic opportunities. In rural communities, small-scale agriculture is a key way for someone to "be their own boss," create employment opportunities for youth, or create opportunities for new entrants who may not come from a traditional farming background. Finally, small-scale agriculture production preserves diversity and skills. The small-scale sector's use of heritage animal breeds provides a rich gene bank that might be lost otherwise. Small-scale farming also provides society with a critical mass of people who have agricultural and preservation skills.

However, small-scale producers face many of problems. For example, many small-scale producers feel overwhelmed by regulatory issues. Some are not fully aware of the scope of the different regulations, while others receive inconsistent direction from different departments – Tax Department, Fire Department, Sanitary and

Epidemiological Service, etc. Another problem is that many financial planning tools are widely available from most financial institutions, but small-scale entrepreneurs may not be able to qualify for crop or livestock insurance programs or business interruption and liability insurance. In Russia many smallscale food processors indicate that marketing is one of their biggest hurdles. It is difficult for them to access traditional distribution chains and retail grocery stores. On the other hand, most small-scale farmers who marketed directly to the consumer had little difficulty in selling their products. Most institutions and restaurants that purchase local foods directly establish their own network of suppliers.

Furthermore, there is no unifying organizational structure for small-scale producers and processors, and, as a result, there remains a “policy space vacuum.” A mechanism to represent their collective interests to government, to other parts of the agriculture and food sector, and to the public is lacking. A number of grassroots groups have sprung up in the small-scale food sector, but without a unifying organization, the small scale sector will continue to be sidelined. This severely limits farmers’ capacity to create a cohesive voice and design a strategy to advance the sector. Governments will continue to struggle with demands from individuals, who may or may not represent what the entire sector wants. A strategy that links the small-scale sector into the overall goals of agriculture and food development in each region of Russian Federation is needed.

Recommendations in terms of increasing the role of small-scale farm are the following:

- develop a plain language guidebook to assist new entrants in the small scale food sector and to provide an overview of what business owners need to consider;
- develop/adopt training tools to explain the regulatory requirements for food safety;
- develop an ongoing consultative opportunity between government and the small scale food processing sector, to solve problems early in the policy and regulation-making process;
- explore options for small -scale producers and processors within supply managed industries;
- develop and identify facilities for innovation and start-up food processors;
- explore ways to make crop and livestock insurance programs accessible to small-scale producers;

- -larify the terms for direct marketing and distribution through a collaborative marketing venture; and,
- facilitate a process to allow small scale producers to organize themselves.

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