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The regional aspects of food security

The essential questions of food security, the main factors of regional food security by example of the Komi Republic, the conceptual frameworks of food provision and the development lines of the regional agrarian sector are considered in the article.

Food security, food provision, agrarian sector of the Komi Republic.



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The essence of the concept of food security

Ensuring food security is essential and integral part of the nation-state and first economic security and, as such characterizes the economic stability and political independence of the existing system. Food security problem-solving gets particular importance in the Northern regions. Productive life in harsh climates is possible only if there is adequate nutrition. Whole milk, fresh vegetables, meat and eggs as sources of dietary high-grade protein, vita-

mins, mineral salts and other biologically active substances are indispensable in a balanced diet of northern residents. The lack of fresh food per person is acting oppressively and sharply reduces people's ability to work. Consumption of these foods is largely dependent on the level of their production on the spot.

Food safety is the term officially adopted in world practice, used to describe the state of the food market and the country's or group of countries economy as a whole, as well as the

world food market. However, the term “food security” is ambiguously reflected in the scientific literature and official documents.

In a narrow sense, food security means the availability of food for each resident taking into account the functional characteristics and needs of the human body. To determine the food security it is appropriate to apply the following indicators: satisfaction of physiological needs for food; food safety to human health; the level of food availability for different population groups; degree of country's food supply dependence on imports; population's sufficient purchasing power.

Countries of the world can be divided into four groups according to the degree of food security and safety: independent countries – providing their residents with the main food of their own production based on the current consumption and the creation of a reserve for unforeseen circumstances and objectives; relatively independent countries – producing main basic food products, and importing small amount of food; partly dependent countries – importing a certain amount of food from other countries; entirely dependent countries – unable to produce self-sufficient food for the residents in accordance with recommended standards. In modern conditions only a few industrialized countries produce far more food than it is needed to the population. For example, in Canada, New Zealand, USA, France and some other countries manufacture of their own food far exceeds the needs of residents in

accordance with medical standards. In Germany, Italy, Spain and many other developed countries they produce not less than 80 – 90% of domestic food products [1].

In Russia the share of imported foods in the population's ration is about 40% of total consumption [2]. Therefore, now our country refers to the latter two groups in the degree of public health standards for food from its own resources.

According to the Ministry of Agriculture of Russia, in 2000, imports of agricultural products amounted to 7 billion dollars; in 2005 it increased to 17.4 billion dollars (*tabl. 1*).

The main reason for significant food imports is the imperfection of agrarian policy, low competitiveness of domestic agriculture. It is primarily due to the fact that the bioclimatic potential of agricultural land in Russia is on average 2.5 times lower than in Western Europe and the United States. In terms of technical equipment and technological development of production agriculture, food and processing industry are significantly behind Western countries. Long time and considerable resources are required to overcome this. There are no own funds, and ability to attract foreign investors in the AIC is limited by the fact that for Western firms it is more profitable to Russia to supply their surplus food rather than invest in the development of Russia's AIC.

The problem of food security in the region reflects the totality of agrarian problems, internal and external food markets, as well as

Table 1. Imports of basic food commodities in the Russian Federation

Product	2000	2002	2003	2004	2005
Agricultural products, mln. \$	6 976.8	10 363.2	11 887.4	13 849.8	17 414.4
Meat, thousand tons	599.7	1 153.4	1 096.2	1 030.8	1 339.4
Poultry meat, thousand tons	687.2	1 377.7	1 203.4	1 114.4	1 328.4
Fish, fresh and frozen, thousand tons	321.1	460.1	570.9	682.4	785.0
Milk, thousand tons	111.8	37.3	186.9	256.3	313.9
Butter, thousand tons	53.9	120.3	163.6	148.1	132.8
Sunflower oil, thousand tons	149.5	175.6	199.3	161.2	131.5
Crops, tons	4 672.1	1 355.7	1 666.6	2 898.5	1 449.0
Flour and cereals, tons	175.4	79.7	72.3	129.4	74.1
Oilseeds, thousand tons	106.6	153.6	104.0	99.4	142.8
Sugar, tons	4 818.0	4 598.5	4 608.5	3 209.7	3 512.2

external economic aspects and problems of social policy. If the country's food security is based on the concept of self-sufficiency of basic foodstuffs, the food security of the Federation is determined by the degree of population's basic needs satisfaction in food, taking into account its own production, in accordance with rational standards of consumption.

Food security at the regional level is aimed at maintaining the supply and demand for food. Criterial evaluation of food security in the region includes the following evaluation:

- food independence (maximum food self-sufficiency in the region of local agribusiness and the creation of optimal food stocks, significant gap between incomes and prices of food products);
- stability and sustainability of regional agro-industrial complex (sustainable growth and efficiency of production);
- economic access to food for the population;
- the level of dynamics and the adequacy of consumption of basic foods, their consistency with the social and health standards.

In developing the specific approaches and solutions to the problem of providing food to the population of the Komi Republic its specific characteristics must be taken into account. The most significant of these include:

- limited capacity of agricultural production on the spot because of the extreme conditions of the North and the dependence of population provision on food imports;
- more narrow range of foods consumed in comparison with the central and southern regions of the country, a high proportion of canned food, great time and money spent on transportation;
- lack of stable ties with ranges of food production;
- focal nature of the settlement and the difficulties of transportation of food in the deep areas;
- availability of good transportation links connecting the republic with the agricultural

regions of the country allows for year-round shipment of perishable food products even in the villages near these communications.

Different conditions of food security in the region are determined by many factors: the level of incomes, prices in local food markets, volumes of agricultural production, the level of agricultural production capacity and state of the material and technical base of agriculture, market infrastructure, development of market relations, etc. Indicators of assessing food security can be: the factor of economic accessibility, determined by the ratio of the value of the food basket of the average monthly income per capita; adequacy ratio, calculated by the ratio of the actual calorie daily diet in the management or daily ration for the average daily food consumption of 3450 kcal for the conditions of the North; critical adequacy ratio, defined as the ratio of actual daily caloric intake by 2150 kcal per day, relating to the classification of FAO to the category on the verge of starvation; private adequacy ratio for certain types of products, determined by the ratio of actual consumption of a particular product to the rational standards of consumption.

Analysis of food security according to our calculations showed that the rate of economic availability in 1998 was 0.32, in 1999 – 0.27 and in 2000 – 0.22, in 2007 – 0.13, indicating the increasing economic accessibility of food for the population. Daily caloric intake of the population fell from 3,265 kcal in 1990 to 2,670 kcal in 2006. Adequacy ratio of consumption in 1990 was 0.95 in 2006 – 0.82, indicating a lack of consumption.

Analysis of the agricultural production and food security of the Republic of Komi

Analyzing the present and future role of the Komi Republic on the national and regional food markets, one should primarily proceed from its natural potential and the socio-economic situation. The republic, where natural conditions for agriculture are the less favorable (poor soil, lack of heat, a short growing season, excess moisture), and land provision is low

(for one resident of the republic there is 0.31 ha of farmland and 0.07 ha of arable land, which respectively 8 and 13 times less than in the whole of Russia), refers to a consuming (importing) region.

In the republic having low food self-sufficiency, imported products are now the basis of resources on all types of food except potatoes and eggs. Fully imported are thermophilic products (melons, fruits), most types of industrial processing food, such as sugar, tea, vegetable oil, flour, cereals, canned vegetables, the bulk of dairy and meat and vegetable products.

In 2006, the republic imported 49.5 thousand tons of vegetables, 49 thousand tons of meat and meat products, 162 thousand tons of milk and dairy products, 98.9 mln. eggs.

The transition to a market economy is characterized by recession mode of agricultural production, particularly in the collective sector. During 1990 – 2007 decline in agricultural production in the Komi Republic was 37%, including meat – 59, milk – 67 eggs – 54%. During this period the volume of investment, organic and mineral fertilizers, power generation capacity, and the number of agricultural workers declined sharply. The degradation of the productive capacity of the industry – land, logistics, and personnel takes place.

During 1990 – 2007 investment in fixed assets of agriculture in total investment declined from 5.7 to 0.4%.

Material and technical base of agriculture of the republic was in a catastrophic state. Tractors park in agricultural organizations for the 1990 – 2007 decreased six times, the energy capacity – five times. The area under cultivation in all categories of farms decreased from 100,5 thousand hectares to 52.8 hectares.

The difficult situation is in animal husbandry. At the end of 2007, the number of cattle farms of all categories decreased compared to 1990 for 75%, cows – 71, pigs – 80, sheep – 67, birds – 50, deer – 33%. The number of agricultural workers in farms has declined from 29.5 to 6.9 thousand, or four times.

In 2007 30% of the agricultural enterprises of the republic turned out to be unprofitable. Rural workers' standard of living significantly decreased. With the fall of production food supplies to the regional market significantly decreased.

The main causes of the crisis in agricultural production are: the disparity of prices of agricultural products supplied by the village, and logistical resources; tight credit policy of the state and commercial banks and a sharp rise in the cost of credit resources; insolvent consumers and untimely payments for products sold; low purchasing prices, high energy, equipment and fertilizers prices; reduction of state support for agribusiness at the federal level, wear and tear of the material-technical base; violation of corporate communications, corporatization of agro-service companies which service the rural producers, making them virtually independent of village workers; falling purchasing power of the population, whose share of spending on food by 2006 had reached 35%.

In connection with the crisis in agriculture, meat production in the republic (slaughter weight) per capita declined in 1990 – 2006 from 30 to 17 kg, milk and dairy products – from 164 to 75 kg, eggs – from 289 to 188 pcs. At the same time, the production of potatoes and vegetables increased by more than 2 times. Domestic demand for these products is significantly less than the proposals and provided mainly by private farms and horticultural land.

The decline in production of livestock products, together with reduced purchasing demand of the population, determined reduction of the population consumption of this product.

During 1990 – 2006 the proportion of locally produced food consumption in relation to the rational norms of consumption decreased by meat and meat products from 34.1 to 19.3%, milk and dairy products – from 37.3 to 17%, eggs – from 97 to 87.5%, and on vegetables grown from 11 to 29.2%, for potatoes – from 42 to 100%.

Table 2. Average annual production of agricultural products in the Komi Republic in all categories of farms, thousand tons

Production	1986 – 1990	1991 – 1995	1996 – 2000	2001 – 2005	2006	2007
Potatoes	181.3	172.1	243.5	216	192.1	125
Vegetables	29.3	22.8	36.9	39	36.9	32
Milk	217.5	178.8	106.9	90	71.0	66.0
Meat of all kinds (live weight)	57.0	46.7	26.6	24.8	25.9	25.6
Meat of all kinds (slaughter weight)	38.6	14.0	16.0	14.8	16.4	15.8

Table 3. The level of self-reliance of the Komi Republic with main types of agricultural products, % *

Products	2000	2001	2002	2003	2004	2005	2006
Meat and meat products	27.0	26.6	24.7	22.4	23.5	23.6	25.9
Milk and milk products	45.9	44.3	38.8	38.1	34.1	33.0	31.3
Eggs and egg products	61.4	60.2	56.3	50.3	60.0	65.7	68.4
Potatoes	99.5	101.0	99.0	95.3	99.3	92.1	97.6
Vegetables and melons	39.1	45.9	39.5	45.3	39.7	43.1	42.4

* The level of self-reliance for certain types of agricultural products is defined as the ratio of production in the region for its domestic consumption. Domestic consumption includes: industrial consumption, private consumption (consumption fund), loss of production, processing of non-food purposes.

Production of agricultural products in recent years can be characterized by the data in *table 2*.

The level of self-reliance of the republic's population with main types of agricultural products is presented in *table 3*.

Dynamics of production and consumption of milk and milk products per capita for 1990 – 2006 reveals their significant decline: in per capita consumption of milk and milk products – from 396 to 230 kg, in production – from 164 to 75 kg. Lagging indicator of milk and dairy products of own production per capita in 2006 was 54%. However, since 2000 there is an increase in consumption of milk and dairy products per capita.

Dynamics of production and consumption of eggs until 1998 has also revealed tendency of decline. During 1990 – 1998 consumption of eggs per capita dropped from 290 to 200 pcs., and eggs production – from 289 to 125 pieces. Since 1999 there has been growth in production and consumption of eggs per capita. Now egg production per capita is lower than their consumption by 28%. In 1990 the rational norms of eggs consumption is almost entirely ensured by local production.

For the consumption of vegetables and melons per capita a tendency of decline is also characteristic – from 90 kg in 1990 to 84 kg in 2006. While the parameters of production and consumption of vegetables per capita came together. Consumption of vegetables per capita in 2006 to 42.4% was covered with a proposal for local products.

The republic is virtually self-sufficient in potatoes. There only can be the import of a small number of early potatoes. In well-functioning system of production and marketing, creating favorable economic conditions for the implementation of the republic could take out of the potato in other regions of Russia.

Conceptual approaches to food security and agricultural development in the region's agriculture

The concept of food security of the population in Northern areas provides a rational combination of agricultural and agro-industrial production and import of products.

Developing scientific substantiation of recommendations for the local population with food range there must be considered:

- comparative cost-effectiveness of social work for the products of local production and

imported products, taking into account transport costs, reduce losses and improvement of products quality;

- role of the local food base for the establishment of stable staff in the sectors of the economy, expanding problems of the indigenous population employment and income;
- need for low transportable fresh and perishable foods;
- quality of imported food;
- natural and economic conditions, the historical specialization, and the peculiarities of agricultural production;
- emerging in the country the food situation and the need for some level of production at the site of a number of products due to the impossibility of their importation from other regions;
- priority specialization on reindeer herding and hunting economy.

Due to the difficult natural and economic conditions for agricultural development for the Republic of Komi principle of food self-sufficiency is unacceptable, but production of staple foods for which there are favorable conditions is an objective necessity for the foreseeable future. Our studies show that the republic has the potential to fully provide the population with open ground potatoes and vegetables of the local variety (except early production), to expand the production of greenhouse vegetables, to provide the population with milk and milk products at 40 – 45%, meat and meat products at 30 – 35, dietary egg at 65 – 70%

The main means of achieving the goals set before the regional agro-industrial complex is intensification of innovation, improving the organizational and economic mechanism of its regulation, rural development, improving the level and quality of life in the countryside.

The Komi Republic has a set of favorable agro-climatic conditions (plenty of moisture, heat and long daylight hours during the growing season) to ensure efficient production of potatoes, vegetables of local range (cabbage, red beet, carrot, radish, etc.) and fodder crops. When using modern technology effectively in

the region it is possible to get from a hectare of 200 – 300 quintals of potatoes, 300 – 400 quintals of vegetables, 20 – 30 quintals of rye, barley and oats (in the south), 40 – 50 y hay of perennial grasses. In the late 1970's – early 1980's the Komi Republic ranked first on the yield of potato, and fourth on the yield on field vegetables among the 71 regions of the RSFSR.

The presence of natural fodder has positive effect on livestock development. Hayfields and pastures of the Republic are the cheapest source of high-grade and fodder. Of particularly national economic value are large tracts of grassland, located in the floodplains of the Pechora, Vychegda and Sysola. The potential for collection of fodder from the flooded meadows is more than 150 tons of food units. In connection with the presence of natural fodder the Republic specializes in the production of whole milk and dairy products.

Enhancing innovation in plant breeding is the development of systems of soil fertility, breeding methods, creation and introduction of new varieties and hybrids that combine high yield potential, quality, resistance to diseases and pests, adverse weather conditions, with technical and technological re-equipment industry.

The analysis shows the economic feasibility of poultry production near large cities. The cost of eggs and poultry meat at poultry farms of the country (despite the more expensive factors) is slightly above the rate for the whole poultry enterprises in Russia.

Prospects for reindeer husbandry are associated with intensive development of the industry both in the tundra and taiga zones. Development of swamps and low-productive swamp forests in Izhemsk, Ust-Tsilemsk, Ukhta, Sosnogorsk, Pechora and the North Udorsk regions which were practically not used today is one of the measures aimed at maintaining the dynamic development of reindeer herding. Using known methods of forest reindeer (managed and controlled winter grazing and grazing in fenced pastures in other seasons) we can create the most favorable conditions

for deer when they reach high fatness. One of the advantages in this case is also reindeer herding brigades' advantageous location close to the deep processing enterprises and market products.

Innovative processes in animal husbandry will evolve in the direction of improving the breeding work to improve the breed of animals and productive quality, efficient use of forage resources, reconstruction and technical re-equipment of existing livestock buildings, construction of new farms and complexes with modern high-efficiency equipment.

As one of the strategic objectives of agricultural development of the republic is the production of organic (environmentally friendly) products. In the short term a broad transition to the practice of organic agriculture is not considered.

Important role in the provision of food is played by industry processing agricultural raw materials. All its branches, with the exception of dairy, meat and salt, work almost entirely on imported raw materials. Consequently, the development of processing industry determines the dairy and meat cattle.

Enhancing innovation in the processing industries is associated with the development and manufacture of environmentally safe products of mass consumption, production of therapeutic and prophylactic purposes, the use of resource-saving technologies, introduction of technologies increasing shelf life of agricultural raw materials and food products without quality loss. In the Republic only through in-depth processing of raw materials and reduce its losses food resources can be increased by 20 – 25%.

Overcoming the agrarian crisis and the transition of agriculture to the dynamic development demand improved organizational and economic mechanism of APC. The main directions of improving the organizational and economic mechanism of agricultural production state regulation are as follows:

1. In the near future the following laws are to be adopted: at the federal level – “On State regulation of imports of agricultural products”, “On agricultural insurance”, “On state agricultural enterprise”, as well as regulations governing the income, the equivalence of barter in agricultural and industrial products, tariffs and services; at the level of the Komi Republic – “On the reconstruction and development of agriculture of the Komi Republic”, which should clearly define strategic direction of the state agrarian policy to recognize agriculture an important sector of the economy, identify trends, methods, instruments and size of government support industry, “On innovation policies and strategies in agriculture”.

2. Develop a targeted program “Development of agriculture in the Komi Republic in 2010 – 2012” and “Social development of the village until 2012”.

3. In order to create the conditions for expanded reproduction of Agriculture to bring the share of consolidated budget of the republic to finance the industry until 5 – 7% instead of less than 2% at present.

4. Establish a clear procedure for the formation of federal and regional funds of agricultural products for three to five years with annual clarification not later than six months prior to the coming year. It's necessary to authorize the state unitary enterprise as state procurement and purchasing agent for the local producers of products at bargain prices, but not below the guaranteed prices in the Komi Republic. Recently, the purchase of agricultural products for state needs in the country is done on a competitive basis. Products bought at auction, displaces local because of its lack of competitiveness. This “innovation” is unacceptable for agriculture of the North; its products should not be included in the list of goods purchased at auction.

5. In order to stimulate agricultural production and increase employment in rural areas with the development of local self-government

in the future it is useful to move from the state order on the regional level to the municipal demand for products from local producers.

6. State's participation in the mortgage operations of agricultural products (potatoes, vegetables). The subject of pledge can be both already produced products and products of the future harvest. State participation in the mortgage product is the allocation of budgetary funds, concessional lending.

7. Transition to the new pricing system for agricultural products, including trust, guaranteed (protective), mortgage, oriented (recommendation), threshold (to determine the tariff) prices.

8. Neutralize the monopoly of procurement, brokering and processing structures, translating into a cooperative basis cycle of production, processing and marketing agricultural products.

9. Expand the system of credit cooperatives in rural areas, working on the rights of mutual credit societies and mobilizing idle funds to rural entrepreneurs and citizens.

10. Provide grants to increase per capita income of residents of remote villages.

11. Expand the use of leasing, the soft loan, to increase the contribution of government in the financing of innovation in the agricultural, industrial and social infrastructure in rural areas, to fully compensate the loss of agricultural producers due to rising prices for gasoline, diesel fuel, electricity, gas, mineral fertilizers, machinery. As additional funding sources one should use: the value added tax, which provides the price of food, one third of the excise taxes on liquor and vodka and tobacco products; the full amount of customs duties on imported food products; part of the Stabilization Fund's and gold reserves.

12. Reduce the tax rate and differentiated value-added capital goods supplied by agricultural producers; cancel a five-year single agricultural tax. Release farmer's economy from

paying taxes, replacing them with the introduction of patents on the running of business. With the strengthening and development of farms patents can be bought at a discounted price.

13. Create a system of indicative planning and forecasting the development of agribusiness.

Priority directions of state support are potatoes, vegetables, open and protected soil, fodder production, dairy farming, reindeer herding, industrial poultry and pig farming, harvesting and processing of non-timber forest products. There are 15 kinds of berry plants, 90 species of edible mushrooms, many species of medicinal herbs in the republic. Commercial supplies of berries are estimated at 211 thousand tons, mushrooms – 74 thousand tons.

Stable development of agricultural production depends on the formation and realization of human potential. APC needs workers with a high level of professionalism, economic, legal, innovation and information literacy.

In order to better ensure the APC with skills it is necessary: to create them attractive social and material conditions ensuring normal activity; to restore large-product agricultural production, provide the conditions for improving the efficiency of agricultural enterprises, to raise the prestige of the agricultural labor, to develop a contract basis: applicant – Educational Institutions – agricultural enterprise; to restore the work of vocational guidance to rural specialties in rural schools, to develop a multi-level system of continuous training, retraining and advanced training, their certification: schooling, basic vocational, specialized secondary, higher professional, retraining; develop targeted programs to staffing rural management at the enterprise level, municipalities and the region; systematically monitor staffing processes of social and labor relations; introduce statistical reports on personnel to make informed management decisions on the staffing industry.

Formation efficiency of the agrarian sphere worker, the achievement of high results of labor depends on the degree of implementation of the complex mechanism of motives and incentives. At the present time it is necessary to establish socially equitable pay system, promotion for the results of labor, resulting in a reproduction of the labor force and meeting the spiritual and material needs of workers and their families. Given the complexity of agricultural production and the severity of labor wages in this area should not be below the average in the republic.

With the increasing public support, improved financial, credit, pricing and taxation policies, increased profitability of agricultural enterprises and the sustainability of their economic situation, the introduction of self-sustained economic relations the transition to remuneration of labor according to the standards of the gross (self-financing) income is expedient.

Implementation of the organizational and economic measures complex will enable the agricultural sector to overcome the crisis and move to the dynamic development.

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