

## Conditions of the sustainable development of agricultural sector in the Komi Republic (in the case of remote areas)

*The article estimates the sustainability of agriculture in the remote areas of the Northern region in the pre-reform and transformation periods. It shows the influence of market reforms on agricultural production dynamics and reveals the factors and conditions hampering sustainable agricultural development in the remote areas. To ensure the sustainable development of the sector, a set of organizational and economic measures is proposed, which includes agricultural legislation updating, the increase of the state support of agricultural producers, retaining qualified personnel in the sector, the formation of multifunctional agriculture in rural areas, the creation of modern systems of planning, forecasting and scientific and information support.*

*Sustainable development, agriculture, remote areas, the complex of organizational and economic measures, innovations, state support.*



**Anna S.  
PONOMAREVA**

Postgraduate student of the Institute of Socio-Economic and Energy Problems of the North Komi scientific centre of the Ural RAS department  
anita-85\_07@mail.ru

The urgency and necessity of agriculture's transition to the sustainable development in the remote areas of the Komi Republic are caused by the increase in production of local environmentally safe foodstuffs, dealing with the problems of indigenous population employment, increasing the living standards of peasant community, stable and balanced nature management.

Today, the region's agriculture is characterized as unstable. Therefore, developing a set of science-based measures, aimed at the stabilization and sustainable development of northern agriculture, has become an important and urgent task.

*The research* is aimed at evaluating the current state of the agricultural sector in the remote areas of the Komi Republic and working out the key guidelines for the sustainable agricultural development of these territories.

The following tasks were solved based on the research objectives:

1. Analyzing the development of agriculture in the remote rural areas in the pre-reform period and the period of market reforms.
2. Identifying the factors and conditions that constrain the sustainable development of agricultural production.
3. Proposing a set of measures for the sustainable development of the sector.

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The theory of sustainable development has become the most popular one in the recent decades. However, there is no common definition of this notion today. Modern ideas about sustainable development, the notion and essence of sustainable agricultural development, the analysis of factors, conditions and indicators of sustainability are studied completely by the author [3, 4].

### **Specificity of agriculture**

Any territory is divided into rural and urban areas. Remote rural areas are characterized by remoteness, low population density, a lack of necessary infrastructural facilities, poor transport accessibility, a lack of material and financial assets for development, poor institutions and low competitiveness of commodity producers [2]. According to these features, the following regions have been referred to the remote rural areas: Ust-Tsilemsky District, Izhemsky District, Udorsky District, Troitsko-Pechorsky District, Ust-Kulomsky District and Koygorodsky District.

Remote rural areas occupy 42% of the Republic's territory. 100.7 thousand people or 11.2% of the total population lived here in 2010. The population size has declined by 29% in these regions and by 28% in the Republic over the period from 1990 to 2010. Ust-Tsilemsky District has the largest area and the lowest population density. The average population density accounts for only 0.3 persons per square kilometer here, 1.1 persons per square kilometer in the remote areas on average and 2.2 persons per square kilometer in the Republic.

The area of remote rural territories is large but only 0.9% of it is used for agricultural purposes. The share of the most productive land – arable land – is only 0.1%, this indicator is 0.2% in the Republic. The share of tilled land is 14% in the remote areas and 24% in the Republic. Natural hayfields and pastures predominate over agricultural land; there are 5.8 hectares of grassland per 1 hectare of arable land.

The sectoral structure and specialization of agriculture have been formed under the influence of natural conditions, geographical, historical, and socio-economic factors. The share of livestock sector accounts for 69%, while the share of crop production is 31%. Livestock farming is a key sector in Izhemsky, Ust-Tsilemsky and Koygorodsky districts.

Dual purpose cattle breeding and reindeer breeding are the main areas of the livestock sector. The crop sector is focused on the production of feed, cultivation of potatoes and vegetables.

53 agricultural organizations, 175 peasant farms and 40 thousand household farms were involved in the production of agricultural products in 2010. Household farms prevailed in the production of all the kinds of products.

The remote areas under our study are the parts of the Northern, Central and Southern agricultural zones.

The Northern agricultural zone includes Izhemsky District, Ust-Tsilemsky District, Udorsky District and Troitsko-Pechorsky District, the Central agricultural zone includes Ust-Kulomsky District and the Southern agricultural zone includes Koygorodsky District. There are more favorable conditions for agriculture in the Southern and Central agricultural zones.

Per capita availability of biological resources is higher in the remote areas than in the Republic. In 2010, per capita farmland was 3.1 times more and per capita arable land was 1.8 times more here than in the Republic. Per capita share of cattle was 2.7 times more, cows – 3.3 and sheep – 4.3 times more in the remote areas than in the Republic.

As for the natural environment in these regions, it should be noted that they are mostly favorable for the further development of agriculture, especially for cattle-breeding (sufficient rainfall provides a relatively high fertilizers efficiency; almost round-the-clock daylight in the northern zone promotes the

rapid growth of plants; there are significant areas of natural forage land here). The large areas of floodplain meadows in the Pechora, Mezen, Vychegda and Sysola basins are valuable in the national economy.

There are opportunities for organic production and forming an appropriate market segment in these regions. It is possible to receive a kind of rental income due to the sale of environmentally friendly products.

Another group of social factors and conditions has a negative influence on the development of agricultural production. Remote rural areas are characterized by the following social problems:

- depopulation due to migration and natural decline in the population;
- low population incomes; the gap in wages between agricultural and industrial workers; working people live below the poverty line;

- a lack of skilled employees; low level of management in the agricultural sector;
- significant lag of remote rural areas behind urban and suburban areas in the development of social infrastructure and quality of service;

• low transport accessibility and low opportunities to receive the essential social goods (education, health, culture, public services). There is a hard-top road to Syktyvkar only in two out of six regions (Koigorodsky and Ust-Kulomsky districts). The vast majority of settlements are connected with the district centres by earth roads.

The study of the most important factors and conditions that affect the development of agriculture in the remote areas allowed us to define the strengths and weaknesses of the agricultural production and identify opportunities and threats (risks) due to the use of SWOT-analysis (*tab. 1*).

Table 1. SWOT-analysis of the agricultural development in the remote areas of the Komi Republic

	<i>I. Opportunities</i>	<i>II. Threats</i>
<i>External environment</i>	<ul style="list-style-type: none"> <li>• Demand for environmentally safe food products in the regional, national and international markets</li> <li>• Availability of budgetary funds in the region for the implementation of the target-oriented programmes aimed at the development of agriculture and rural areas</li> <li>• Financing of agriculture and rural areas by industrial enterprises</li> <li>• The focus of social and economic policy on the development of remote areas</li> <li>• Cooperation and agro-industrial integration</li> </ul>	<ul style="list-style-type: none"> <li>• Unfavorable environmental conditions for agriculture</li> <li>• Inefficient management structure of agricultural and rural development</li> <li>• High dependence of livestock production on the delivery and market of concentrated feed</li> <li>• High costs and risks, restraining the involvement of private investors</li> <li>• Increased competition</li> <li>• A lack of processing facilities oriented to farmers</li> <li>• Disparity in prices for agricultural and industrial products</li> <li>• Low state support</li> <li>• Monopoly of the I and III spheres of agriculture</li> <li>• Underdeveloped agrarian legislation</li> <li>• Scientific, informational and consultancy isolation of rural areas</li> <li>• Limited access of agricultural and commodity producers to the production markets, material and technical means and financial resources</li> </ul>
	<i>III. Strengths</i>	<i>IV. Weaknesses</i>
<i>Internal environment</i>	<ul style="list-style-type: none"> <li>• High demand for local products and guaranteed consumption of them</li> <li>• Significant natural and labour resources</li> <li>• Long daylight hours during the growing season; good moisture supply of plants</li> <li>• Floodplain meadows for the development of cattle-breeding</li> <li>• High genetic potential of cattle stock</li> <li>• Favourable conditions for the production and export of organic products</li> <li>• Opportunities for the diversification of agricultural production</li> <li>• High potential of agrarian sciences</li> </ul>	<ul style="list-style-type: none"> <li>• Significant gap between urban and rural quality and standards of living</li> <li>• High depreciation of fixed assets</li> <li>• Outdated technology and equipment</li> <li>• Low professional qualification of personnel</li> <li>• Outflow of skilled personnel</li> <li>• Poor management</li> <li>• Poor rural living environment (underdeveloped infrastructure, landscaping and services)</li> <li>• High cost of local products as compared with imported goods</li> <li>• Low competitiveness and inefficiency of agriculture</li> <li>• High unemployment rate and low living standards</li> <li>• High migration activity of population</li> <li>• The lack of a clear developmental strategy</li> <li>• The lack of alternative employment spheres and income sources</li> </ul>

**Agriculture in the pre-reform period**

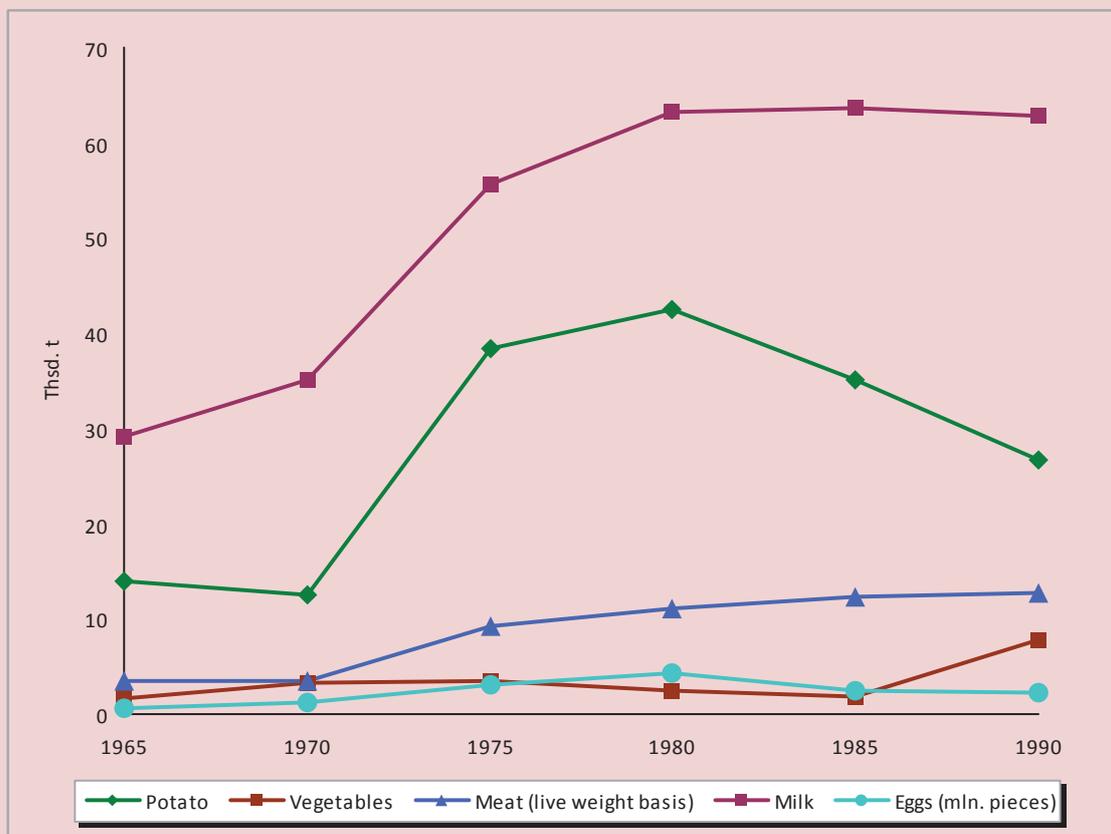
The dynamics of crops and livestock production in the remote areas was positive till the early 1990s (with the exception of vegetable production in the period from 1980 to 1990). Potato production increased 1.9-fold, meat production – 3.8-fold, milk production – 2.2-fold, eggs production – 4.4-fold in 1990 as compared with 1965 (fig. 1).

Remote areas were characterized by positive dynamics in the increase of per capita livestock production. There was a decline in per capita milk production only in Udorsky District. Per capita milk production increased 2.4-fold and meat production increased 4.3-fold in the remote areas in 1990 as compared with 1965. In general, per capita milk production has decreased by 3% over this period in the Komi Republic.

There were positive changes in pricing and financial position of agricultural enterprises due to the increase in purchasing prices for agricultural products. Production of all the major products was profitable in 1990. The level of agricultural production profitability accounted for 44%, which corresponded to an optimal rate (40 – 50%).

Harmonizing the living standards of urban and rural population was the main area of social policy in the pre-reform period. There was a steady increase in rural families’ total incomes, which became close to the incomes of urban population. It should be noted that there was a trend to increase the provision of rural population with different types of social and living services. There was a comprehensive development of central farmsteads.

Figure 1. Dynamics of production in all the categories of enterprises in the remote areas of the Komi Republic for 1965 – 1990, t



### **The impact of market reforms on the sustainability of agriculture**

There were contradictory socio-economic processes in the rural areas in the period of market reforms. Legal and organizational conditions for functioning of the various forms of ownership and economic management have been created in the recent years; the basis for the inclusion of market development mechanisms has been laid. A new socio-economic structure of agricultural production, characterized by private, collective and individual legal organizational forms of management, has been created.

The role of personal subsidiary plots and private farms has increased and the role of collective sector has decreased in the agricultural sphere of remote regions. If in 1990 the share of agricultural enterprises in milk production accounted for 78%, in meat production – 77%, in potato production – 29%, in vegetable production – 55%, then in 2010 they produced 23% of milk, 13% of meat, 1% of potato and 0.1% of vegetables. The share of households in the production of milk has increased from 23 to 66%, meat – from 23 to 82%, potatoes – from 71 to 98%, vegetables – from 45 to 99.5%. Agricultural enterprises dominated in the production of milk only in Koigorodsky and Udorsky districts. Peasant (farm) households did not play a significant role in the production of agricultural products, especially in crop production. In the remote areas, the share of milk production in the farm households increased from 0.3% in 1995 to 7.2% in 2010, the share of meat production increased from 0.7% to 5%, respectively.

The transition to market economy had a negative impact on the agricultural sector in the remote areas. In 1990 – 2010, milk production in all the categories of farms and households decreased 3.2-fold, and there was 4.2-fold decline in meat production (live weight basis) (*fig. 2*). There was the greatest production decline in the collective farms: milk production

decreased 9.2-fold, meat production decreased 22.5-fold, potato production – 30.1-fold, vegetables – 108.3-fold. There was a growth in milk production in the households until 1995, and the production of meat, potatoes and vegetables increased till 2000.

There was a sustained decline in per capita livestock production during the period of market reforms. With decreasing population from 142.3 to 100.7 thousand people, per capita milk production in rural remote areas decreased from 442 to 198 kg, meat production decreased from 90 to 30 kg.

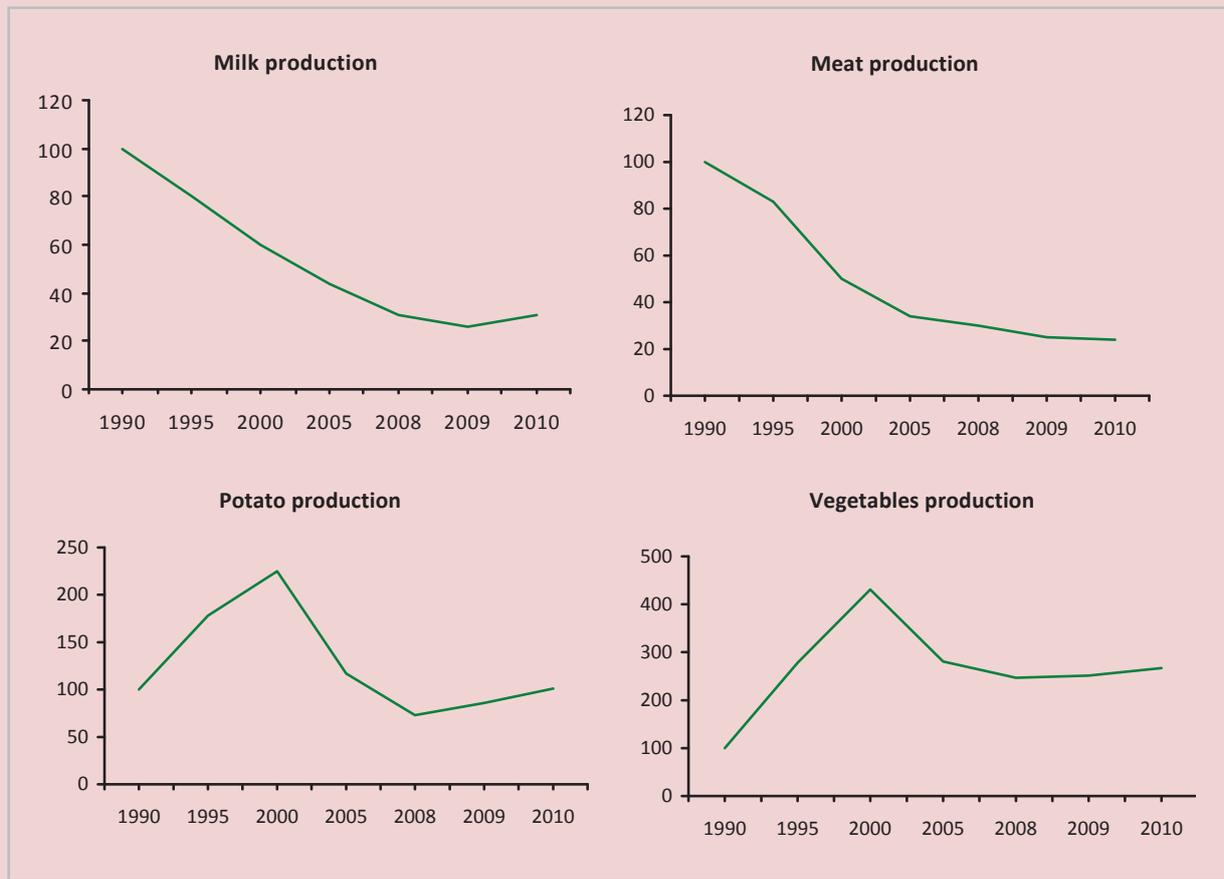
The area under crops and total number of livestock also decreased. The area under crops in these areas decreased from 21.2 to 11.3 thousand hectares in the period from 1990 to 2010, including the decline in the areas under potato from 2.7 to 1.7 thousand hectares and decline in the areas under feeding crops from 18.2 to 6.1 thousand hectares. The number of cattle decreased from 56.3 to 11.9 thousand head, including the number of cows – from 22.8 to 6.6, the number of pigs – from 17.9 to 3.1, the number of sheep and goats – from 21.2 to 8.4 thousand head. There was the most rapid livestock decline in the agricultural enterprises (*fig. 3*).

In plant growing there was a worsening of agrochemical and water-physical properties of soil, the increase in the area of wetlands and bushed areas due to the destruction of drainage systems and stopping land reclamation in the late 1990s.

Removal of nutrients from the soil with the crop is more than soil dressing. Nowadays, the application of organic and mineral fertilizers provides less than 10% of the need in maintaining soil fertility.

There is an organizational, technical and technological lag of the sector. The number of all the marks of tractors has decreased from 1752 to 212 machines over the period from 1990 to 2010 in the remote areas; the application of mineral and organic fertilizers has decreased

Figure 2. Dynamics of production in all the categories of farms in the remote areas of the Komi Republic for 1990 – 2010 (1990 = 100)



from 113 kg and 22 tons, respectively, per 1 ha of crops on 100% of nutrients basis down to 0.8 kg and 7 tons, respectively.

Available technology is aging dramatically. According to the 2006 All-Russian agricultural census, the share of tractors that are exploited 3 years and less accounts for only 3% in the agricultural organizations of the remote areas; the share of machines aged over 9 years is 84%.

The outflow of agricultural workers has led to the deficit of qualified personnel in the industry. There is only one agronomist, animal technician and engineer in most households due to the insignificant volumes of production and low production concentration.

The level of profitability is 4 – 5 times lower than the norm necessary for the implementation of expanded reproduction. The level of

livestock production profitability, which is the leading industry in the regions under our study, remains extremely low. Beef production is unprofitable. The analysis of the financial stability of agricultural enterprises in 2011 shows that more than half of them are in the crisis.

Some positive changes in the agriculture of the remote areas are caused by the implementation of the national project “Development of agriculture” (2006). It should be noted that there is an increase in the meat production and mass of profits, and a decrease in the share of unprofitable agricultural organizations. Unfortunately, we could not overcome the tendency to reduce the number of cows and milk production. There is no serious progress in improving the quality of life in the rural areas.

According to the poll of agricultural managers and specialists in the remote areas, the factors that restrain the sustainable development of household include: disparity in prices for agricultural and industrial products – 55% of respondents; weak material and technical base – 52% of respondents, a lack of qualified personnel and poorly developed engineering and transport infrastructure in the rural areas, including poor roads – 43%, low government support – 41%, lack of funds for investment and innovation – 36%.

**The basic trends in the sustainable development of the agricultural sector**

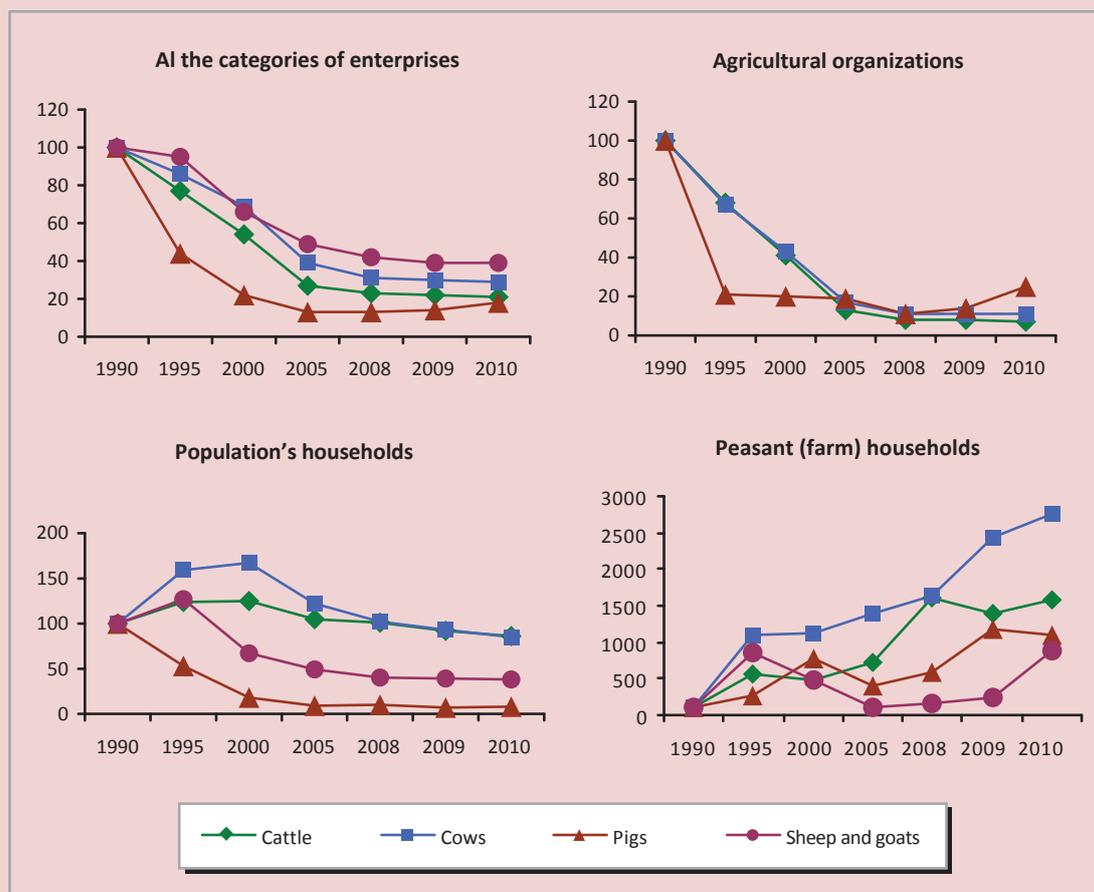
The current economic, social and environmental state of the agricultural sector in the remote rural areas of the Komi Republic is

unstable, which can get an extremely negative form due to the elimination of agricultural production and the reduction of habitable rural areas.

We have proposed a set of measures to overcome the crisis and transit to the sustainable development of agriculture:

1. Developing renewed agrarian legislation. First of all, it is necessary to develop and adopt the direct Federal law of full value “On Agriculture of the Russian Federation” [1, p. 39] aimed at: toughening the requirements for target-oriented use of farmlands; neutralizing the influence of monopolistic structures in agriculture; resource supply for the industry; protectionist policy with a focus on agricultural income support through the sponsorship

Figure 3. Dynamics of livestock in the remote areas of the Komi Republic for 1990 - 2010 (1990 = 100)



of agricultural prices; maintaining price parity of agricultural producers due to the budget compensations; reducing the share of exported products; expanded access of peasants to financial markets. It is necessary to change the criteria of considering the organizations and households as agricultural producers in the new law. Nowadays, agricultural producers involve the organizations and individual producers, whose incomes should include at least 70% of profit due to selling and processing agricultural products. The diversification of agricultural economics as applied to the remote areas of the North assumes reducing this threshold to 40 – 50%. At the national level, it is necessary to adopt the laws on the restoration and development of agriculture, innovation policy and strategy in the agricultural sector, which should clearly define the strategic trends in the agrarian policy, recognize agriculture as a priority sector of the economy, determine the direction, methods, mechanisms and measures of state support for the industry and stimulation of innovation activities in the agricultural sector.

2. Full financial support for the sustainable agricultural development in the areas under our study, which would require a 4 – 5-fold increase in the budget as compared with the current level. Most budget allocations (70 – 80%) should flow through the regulated prices for agricultural products in order to make the conditions for expanded industry's reproduction. Nowadays, more than two-thirds of agricultural enterprises have no access to preferential credits due to the high risk of their creditworthiness. Therefore, it is necessary to make the conditions for increasing a pledge base and direct financial state support in order to modernize production, use selection and genetic, technical and technological innovations, and increase the level and quality of farmers' life.

It is reasonable to use budget funds in the construction of modern livestock farms. It is necessary to strengthen the contribution of the state in financing agricultural innovation,

industrial and social infrastructure in the rural areas; it's necessary to compensate the losses of agricultural producers due to rising prices for petrol, diesel fuel, electricity, gas, fertilizers, machinery, seeds, and concentrated forage.

We have made the calculation of the size of state support for municipal unitary enterprise "Vashka" located in Udorsky District of the Republic of Komi, based on the projected profitability rates of 30, 40, 45% and bringing the average wage rates in the agricultural sector to the average level of the Republic's national economy. State support accounts for 6.1 million rubles at the present rates of profitability (3%) in MUE "Vashka". In view of bringing the average wage rates in the agricultural sector to the average level of the Republic's national economy (28.8 thousand rubles), the size of state support will be 28.7 million rubles at the profitability rate of 30% and 30.3 and 31.1 at the profitability rates of 40% and 45%, respectively (*tab. 3*).

Therefore, the size of state support should be increased 4.7 – 5.1-fold in order to ensure the sustainable development of agricultural organizations.

According to the managers and specialists poll, the following areas of budgetary allocations to agriculture have been defined: compensation of forage costs – 77% of respondents; subsidies to compensate for the construction of livestock buildings, vegetable stores and technical modernization of the enterprise – 66% of respondents; support for livestock breeding – 61% of respondents; support for the improvement of soil fertility – 59% of respondents; compensation of the cost of mineral and organic fertilizers and chemicals – 43% of respondents.

3. The access of agricultural enterprises and farms to the financial markets; increase in the role of long-term loan: a soft loan for the construction and modernization of livestock facilities should be provided for 20 – 25 years, and for the purchase of agricultural machinery

Table 3. Calculation of the size of state support for MUE "Vashka", thsd. rub.

Lines	Indicator	2011
1.	Cost of goods sold (including commercial and administrative expenses)	15608
2.	Sales revenue	9984
3.	Sales loss (p. 2 – p. 1)	-5624
4.	Other incomes	6099
5.	Including subsidies from the budgets of all the levels	6099
6.	Profit before tax (p. 4 – 3)	475
7.	Profitability rate (p. 6 / p. 1×100)%	1.57
	The size of state support under the current labor compensation for profitability	
8.	30% (p. 1×130/100 – p. 2)	10306,4
9.	40% (p. 1×140/100 – p. 2)	11867,2
10.	45% (p. 1×145/100 – p. 2)	12647,6
11.	Additional salary fund for farmers	18412,4
	The size of state support when bringing the average wage rates in the agricultural sector to the average level of the Republic's national economy for profitability	
12.	30% (p. 8+p. 11)	28718,8
13.	40% (p. 9+p. 11)	30279,6
14.	45% (p. 10+p. 11)	31060,0

and equipment – by 6 – 8 years. Expanding the system of credit cooperation and leasing in the village. Canceling the debt of agricultural producers, canceling the taxes for agricultural organizations for five years and introducing the patents on business activities instead of taxes for farm enterprises.

4. Increase in incomes of the agricultural sector up to the level of the national economy. Significant improvement of the social environment: meeting the demand for comfortable housing, improving access to education, health, cultural, trade and consumer services, and improvement of traffic conditions. Creation of the system of lifelong agricultural learning – primary vocational, specialized secondary, higher vocational education, retraining and development of competence. Developing the target programme on agricultural staffing at the level of organizations, municipalities and regions.

5. Elimination the monopoly of intermediary and processing structures, which requires the translation to a cooperative basis of production cycle, processing and marketing of agricultural products. The priority of local agricultural producers in purchasing products in the regional and municipal funds. The access

of agricultural producers to retail outlets and food markets. State involvement in the products pledge (potatoes, vegetables) by allocating budget funds and soft loans.

6. Forming multi-management economy in the rural areas: the integration of agriculture, forestry and handicraft industry; processing of agricultural products and wild plants; recreational use of rural territories. Creating the conditions for the diversification of agro-industrial economy requires the correction of the Forest Code of the Russian Federation, the Land Code of the Russian Federation, the Law "On Peasant (farm) households".

7. Creating a system of indicative planning and forecasting of agro-food sector. Developing and adopting the concepts and programmes for the sustainable agricultural and rural development at the national and municipal levels. Creating the modern scientific, informational and counseling system.

The implementation of measures, aimed at the modernization of the agrarian legislation, production modernization, redistribution of financial resources in favor of agriculture in the remote areas, forming multifunctional economy in the rural areas, creating a system of planning, forecasting, research and informa-

tion security, will require the political will of the Republic's government, a consistent long-term work aimed at overcoming the protracted and sustainable crisis in the agricultural sector of these regions, industry's transition to dynamic development, the improvement of working and living conditions of the peasants.

Summing up the facts mentioned above, we should note the following:

1. The prerequisites for the sustainable agricultural development of the remote areas include increasing the production of environmentally safe food products and increasing the self-sufficiency of the population with local foodstuffs, improving the living standards of the rural population, stable and balanced nature management.

2. Evaluation of agricultural development in the remote areas of the Republic in the pre-reform period shows the positive dynamics of agricultural production, improving the living standards of farmers. All the farms were profitable in the pre-reform period. The profitability level of agricultural production allowed to carry out the process of expanded reproduction.

3. Market transformations were accompanied with a decline of agricultural production, degradation not only of the industrial production potential, but also the peasant community. The main causes of the agricultural sector's instability include the disparity in prices for agricultural products and material resources supplied in the rural areas; decline in the state support; violation of corporate bonds; corporatization of agro-service enterprises aimed to serve the rural producers who have made them virtually independent of the village workers; backward technology, high level of fixed assets depreciation; extremely low living standards of rural workers; lack of qualified personnel in the industry, lack of management and infrastructure.

4. The main trends in the sustainable development of agriculture are related to the use of new technologies and balanced reproduction of resource potential, forming multi-form and multifunctional economy in the rural areas, scientific and informational support, increased government support of agricultural producers.

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