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# Monitoring of Food Security in the Russian Federation: Methodology and Assessment

L.A. Kormishkina[1], N.N. Semenova[2]

***Abstract:***

*The paper presents the results of food security research in the Russia Federation. Providing food security and country's independence becomes the core of keeping the national sovereignty under conditions of globalization and integration processes development. It determined the research relevance. The purpose of the research is the development of a new methodological approach to monitoring of food security as one of most important components of an efficient protection system of the latter. Integrative reproduction approach to monitoring of country's food security meeting stability criteria, economic and social ecological efficiency, competitive ability and safety is suggested. The composition of indicators arranged in four groups is developed within the framework of such approach in order to carry out all-round monitoring of Russian Federation's food security: agroindustrial complex production capacity and its efficient use; food accessibility; food affordability; food quality and level. The assessment of Russian Federation's agriculture facilities, agricultural products output dynamics, agricultural raw materials and provisions export and import, level of staple foods consumption by the population and Russians' diet is given based on indicative analysis. The main threats to Russia's food security are revealed (productive powers deindustrialization; low level of investment to the agricultural sector; labour force reduction; increase in dependence on imported foodstuff; population's low income level and living standards, etc.)*
*Recommendations regarding Russian Federation's food security level increase are given (carrying out augmented technologic modernization, establishing a brand new enterprise network, development of associations and cooperatives, increase in government control combined with agricultural producers' business activity, development of market forms of cooperation and integration).*

***Key Words:*** *food security, agroindustrial complex, agriculture, food availability, indicators, monitoring*

[1] Full Doctor of Economics, Professor, Faculty of Economics, Ogarev Mordovia State University, Saranck, Russian Federation, kormishkinala@mail.ru
[2] Full Doctor of Economics, Associate Professor, Faculty of Economics, Ogarev Mordovia State University, Saranck Russian Federation, nnsemenova@mail.ru

## 1. Introduction

1.1 Introduce the Problem

Production of foodstuff necessary for survival of the human race is fairly considered one of the perpetual world's problems, which never looses its topicality. Marx called food manufacturing "the very first life condition" (Marx and Engels, 1962). Austrian scientists Menger (1992) stated "our survival depends on satisfying food needs…". "The process of food manufacturing should be continuous since the human cannot cease to consume and we should increase manufacturing what is conditioned by population growth" (Roberts., 2011). For today Malthus' warning (1798) concerning population overgrowth negative impact on food consumption comes true. It begins to echo the problems of water resources scarcity, climatic changes (Iizumi and Ramankutty, 2015), ecology growing influence on yielding capacity (Seea et al., 2015), aggravation of economic and social problems relating to increasing the role of major monopolies and multinational corporations on food markets.

Providing food security is one of the most important world's problems nowadays (Pete 2013; Qureshi et al., 2015; Smyth et al., 2015). Not only life sustaining but maintaining economic systems' reproduction function and supporting national sovereignty depend on its successful solution. The increasing role of the issue is primarily conditioned by the growing shortage of foodstuff in peripheral economies and world food price surge. According to Food and Agriculture Organization of the United Nations (FAO), in 2014 the total number of undernourished people was 805 mln people or 11% of the world population, and world food price index in the previous year increased by 51% in comparison with 2013. Moreover, anthropogenic pollution followed by the growth of harmful chemical substances content in food products complicates the problem of food quality. In addition, not having provided the world's population with sufficient amount of food, the world faces the problem of food security assurance.

Thus, the global solution of the food problem is currently based on two approaches: the first is focused on providing needy countries with foodstuff along with implementation of countries' own programs regarding agricultural crisis overcoming (the possibility of more yielding transgenic varieties use is left open), the second suggests wholefood production increase and population protection from substandard goods.

1.2 Importance of the Problem

Being the basis of life support, food security is justly considered by many developed countries one of major national priorities with active state participation and national security maintenance as a core element. In this context formation of a new food security conception of the Russian Federation with regard to such world tendencies as globalization, international and national competitiveness and integration development, increase in price dumping, etc. requires reframing a number of theoretical principles. Under present conditions the shift from the system of constant

patching up of arising problems to the theory of stable, efficient, and competitive development of the Russian Federation's agroindustrial complex and its central core – agriculture – with stage-by-stage transition to food sovereignty regarding staple foods manufactured in the country at first, and then – to providing food security is necessary. Generally, taking into account Russian Federation's natural recourses sufficiency and evolving global climatic, economic and social changes, future-oriented country's transforming into one of the largest exporters of environmentally friendly agricultural products should be taken as a basis of food security. While such conception of food security is implemented, Russia will get not only a resource of federal budget income basis alternative to oil and gas but also a core tool to preserve the national sovereignty.

Within the context of the new concept of Russia's food security organization of continuous and all-round monitoring of food manufacture and import, food consumption per capita with due account for food accessibility and affordability becomes fundamental. In the process of monitoring changes happened at the level of country's food security, in the agroindustrial sector; threats to national interests in this area; causes and factors determined these threats are revealed. In this regard food security monitoring should become a constant element of short- and long-term forecasting of the agroindustrial complex and its central core – agriculture – development, national policy strategic areas development in this area.

1.3 Background

In modern economic science and business practices the problems of establishing food security monitoring belongs to controversial matters. It's primarily conditioned by the lack of consistent approach to define the notion of "food security". In modern economic science and practice the following definitions of food security gain currency: 1) self-production of food products (Malthus, 1798; Hayek, 1989; Gordeev. and Altukhov, 1998); 2) food accessibility and affordability (FAO, 2006; Zarova et al., 2002); 3) food safety (Gorlov and Shalimov, 2009). According to FAO (2015), "there's food security only when all people have physical and economic access to safe and nourishing food, which corresponds to their diet requirements and preferences to live a healthy and active lifestyle".

That said, Russian Federation's food security should be considered such condition of the production capacity of the agricultural area when it's possible to provide not only safe and smooth satisfaction of all population strata's demand for high quality – according to established physiological standards – mainly home-made food, affordability of main kinds of provisions but also import substitution and extending agricultural export regardless of external and inner threats.

Therefore, multi-aspect nature is peculiar to the definition of "food security", it influences the composition of an indicators system and their allowable (threshold) values for this area monitoring.

It should be noted that monitoring in leading world economies became a real tool that provides management system (both state and corporate) with reliable information, but the work towards this end only begins in the Russian Federation. As any other field of work, food security monitoring needs for conceptual framework, methodological and organizational approaches development.

It should be noted that the sphere of "management" and "monitoring" categories application is different. According to Mescon, Albert и Hedouri (2006), "management is a process of planning, organization, motivation and control". Control is a fundamental analysis, a management component. Neither planning, nor establishing organization structures, nor motivation cannot be considered entirely and apart from control. The term of "monitoring" is the nearest equivalent term to "control".

Monitoring as a research method is interpreted in scientific literature in different ways. Thus, Ganeeva (2005) considers monitoring a system of data acquisition regarding a complex phenomenon, a process, which are described using certain key indicators for the purpose of operational diagnostics of research object status and its assessment in dynamics.

Thus, monitoring consists of object research, its assessment, control, forecasting, and also elaboration of recommendations on management decisions making to bring the object to optimum condition.

The world practice has different approaches to the assessment of the country's food security level. According to FAO (2006) four main indicators are used when assessing the country's food security level: food availability (output indicators, yield/performance, stock level, loss level, etc.); food affordability (economical possibility for purchasing necessary amount of food for current income, possibility of food traffic through the assessment of hard-top roads proportion of total road length, railway density, etc.); food consumption (correspondence between actual food consumption and nutrition value standards: by calories, proteins, microelements, etc.); supply provision consistency (availability of sufficient amount of food at different times, change in food price, etc.).

World Bank (2014) recommends assessing countries' food security based on three main groups of indicators: level of food affordability and consumption; food availability and sufficiency; food safety and quality level. The rating of countries worldwide by The Global Food Security Index is made based on the analysis of 28 indicators.

The Doctrine of Food Security of the Russian Federation approved in 2010 suggests defining the country's food security status based on the indicators arranged in three groups: organization and management; production and national competitive ability; consumption. In addition, the Doctrine establishes threshold values of home

agricultural and fish products, raw materials and provisions (grains, potato, milk, meat, etc.) percentage of total marketable resources of the domestic market. In 2013 the RF President approved "The List of Indicators in the Area of Russian Federation's Food Security Assurance", which includes 92 indicators arranged in seven groups: 1) the area of consumption; 2) the area of agricultural, fish products and provisions circulation; 3) the area of processing of agricultural and fish products; 5) the indicator in the area of agricultural, fish products and provisions export and import; 6) stock and reserves status; 7) population and labour force.

Some Russian scientists-economists (Zeldner, 2009; Goncharenko, 1997; Shagaida and Uzun, 2014) suggest using "the indicator of food sovereignty" when assessing the country's food security level. That said, food sovereignty is "such level of food security when there's no food emergency in case of cessation of food stuff delivery from abroad" (Senchagov, 2010).

1.4 State Hypotheses and Their Correspondence to Research Design

When developing the composition of indicators and their threshold values it's suggested to use integrative reproduction approach for the purpose of all-round monitoring of food security. The approach is based on the content of Russian Federation's food security concept, its goals and means toward this end on one hand, and established foreign and national techniques of production and import level estimation, food stuff consumption with regard to its affordability on the other hand.

## 2. Method

2.1. Integrative and Reproduction Approach

In our opinion, provisions of various economic schools and movements form the integrative and reproduction approach theoretical basis, i.a. the concept of neo-industrial modernization (Gubanov, 2012); the theory of social reproduction (Marx, 1962); economic growth models (Amin, 1976; Soloy. 1956; De Soto, 1995); general theory of economic security (Senchagov, 2010); the concept of sustainable development (Forrester, 1978; Ekins, 1986; Meadows, 1992; Norgaard, 1994), The United Nations Conference on Environment and Development 1992); the theory of Porter's diamond model (Porter, 1998). The latter becomes more significant when developing the composition of indicators for the purpose of all-round monitoring of modern Russia's food security since organization and increase in the agro industrial complex competitiveness form the basis for its providing. This theory puts an emphasis on the necessity for complex analysis of economic object status based on four groups of indicators, i.a. factor conditions; home demand conditions; related and maintaining branches; companies' structure and strategy; intrabranch competition. In accordance with above-mentioned theories and concepts content, source criteria for establishing indicators system for food security monitoring are the following: development sustainability and safety, economic and social and ecologic efficiency, competitiveness.

2.2. Indicative Analysis

Numerous researches show that indicative analysis is an optimum method for carrying out diagnostics of specific economic object status (areas of life including food provision and food security). Subject to this method food security diagnostics should be carried out based on the complex of indicators of criterial nature (economic security indicators) that make it possible to consider potential dangers, to quantitatively evaluate crisis conditions' severity, to form a complex of program target-oriented measures to stabilize the situation in the examined sphere of life activities with regard to their location. Given this, the level of food security threats is determined when comparing actual (real) values of its indicators' values and their threshhold (maximum allowable) values.

In accordance with the above-mentioned criteria the organization of agroindustrial complex should match, the authors formed the composition of indicators for carrying out diagnostics of the Russia's food security level based on methodological developments of Institute of Economics, The Ural Branch of the Russian Academy of Sciences (Tatarkin et al., 1997). It's suggested to use the extended composition of indicators to carry out detail diagnostics of threats to Russian Federation's food security. The extended composition of indicators, which provide an opportunity to not only assess manifestation of one or another threat but also to break it into individual components.

With regard to the indicators of indicative reproduction approach to the monitoring of Russian Federation's agroindustrial complex functioning, indicators are arranged in four groups: food accessibility; agro industrial complex production capacity and its efficient use; food affordability; food quality and level (Table 1). Continuous monitoring of the mentioned indicators helps to reveal external and internal threats to food security and food sovereignty and to outline main ways to prevent them.

**Table 1.** Indicators for food security assessment with regard to threshold values and expected (rational) values

| No. | Indicator name | Indicator's threshold value |
|---|---|---|
| | **1. Food accessibility** | |
| 1.1 | Agricultural products output:<br>- in total<br>- cattle breeding<br>- crop growing | Expected value |
| 1.2 | Average rates of increase in agricultural production over the last 5 years:<br>- in agriculture<br>- in processing branches | not less than 5-7% |
| 1.3 | Percentage of small entities in total agricultural products output | Expected value |

| | | |
|---|---|---|
| 1.4 | Import provisions proportion in total agricultural products output | no more than 25% |
| 1.5 | Availability of home-produced staple food | not less than 95% |
| 1.6 | Percentage of agriculture budget expenditures, % | Expected value |
| 1.7 | Correspondence of rate of increases in prices for agricultural raw materials and end products | 1:1 |
| **2. Agro industrial complex production capacity and its efficient use** | | |
| 2.1 | Capital assets wear rate | Crisis –50%, pre-crisis value – 35% |
| 2.2. | Farm field load per<br>- tractor<br>- grain harvester | 73 ha<br>244 ha |
| 2.3 | Land resources gross area (mln ha), of which<br>- lands of agricultural designation<br>- of which farm field | Expected value |
| 2.4 | Agricultural land per capita, i.a. farm field | not less than 0,06 ha |
| 2.5 | Average annual number of workers involved in agriculture | Expected value |
| 2.6 | Percentage of persons above working age, i.a. in rural areas | 7 % |
| 2.7 | Energy intensity of agriproducts production | Expected value |
| 2.8 | Investment into equity in the agricultural sector in effective prices | Expected value |
| 2.9 | Equity contribution to the agricultural sector of the total amount of investments | 10 % of GDP |
| 2.10 | Gross agricultural output per 1 rouble of investments | Expected value |
| 2.11 | Share of agricultural goods producers' expenses in the structure of retail price | not less than 50-70% |
| 2.12 | Agricultural profitability | not less than 30% |
| **3. Food affordability** | | |
| 3.1 | Percentage of population with substandard income | no more than 8% (for urban population)<br>no more than 10% (for urban population) |
| 3.2 | Ration of average monthly salary in the agricultural sector to salary in the economy in general, % | Expected value |
| 3.3 | Ration of incomes 10% most and 10% least well-to-do population (funds coefficient) | 10:1 |
| 3.4 | General unemployment level, i.a. in rural areas | no more than15% |
| 3.5 | Share of food expenses in the population income | no more than25-30% |
| 3.6 | Rate of food price increases | Expected value |

| | | |
|---|---|---|
| **4. Food quality and level** | | |
| 4.1 | Degree of satisfaction of the need for main agricultural products per capita as consistent with diet consumption rates, % | 100 % |
| 4.2 | Human's nutrition daily calorific effect | 3000 kcal |
| 4.3 | Percentage of proteins of animal origin in the diet | not less than 55% |
| 4.4 | Percentage of rejected food products came into the market, % | Expected value |

## 3. Results

3.1.Food Accessibility

An increase in the agricultural production in monetary terms has been observed in Russia in recent years. Thus, in 2000-2013 average annual rate of growth in the agricultural sector made up 3,5%. However the pre-reform level by gross output has not yet reached: the index of agricultural goods production in the Russian Federation in 2013 was 94,3% as compared to the level of 1990 (Figure 1). In this regard the main task of the Russia's agroindustrial complex is restoring agricultural goods production of the level of 1985-1990.

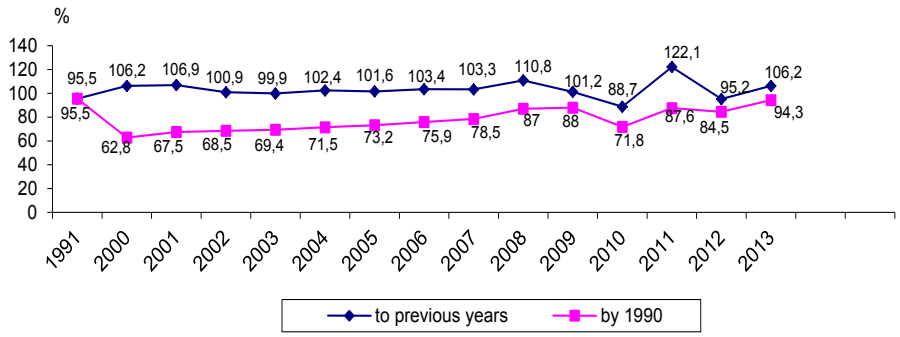


**Figure 1.** Indices of agricultural products output in Russia (in comparable prices)

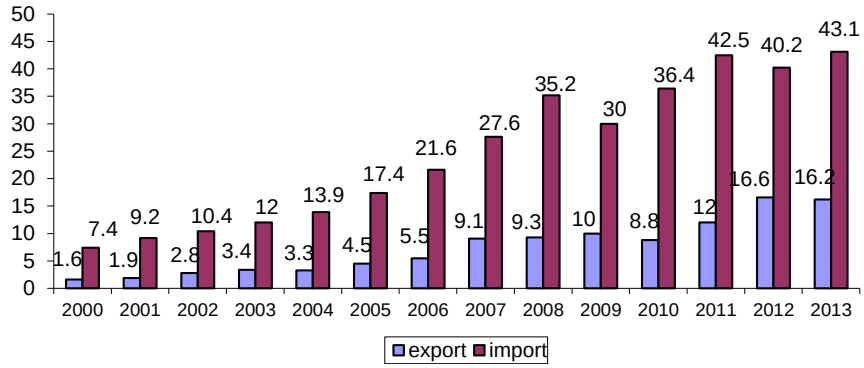


**Figure 2.** Export and import of food products and agricultural raw materials in Russia, mln USD

It should be noted the percentage of different entity forms of total agricultural products output has changed over the years of market transformations. A decline in large scale farms agricultural production took place as a result of the agrarian reforms implemented in the country and drastic decrease in state aid, while the share of small entities (population's and farm enterprises) increased. In particular, the percentage of small entities of total agricultural products output in 2003 in Russia made up 53%. The percentage of agricultural expenditures of total consolidated budget expenses of the RF decreased from 2,4% in 2002 to 1,4% in 2013.

The current situation paradox in the area of food provision of the nations is that the RF self-sufficient by all main kinds of production resources, ranking 4$^{th}$ by grain complex size and grain output in the world and being one of the largest grain exporters, has to increase its food import.

Home-made agricultural goods, provisions and raw materials provide about 95 mln people of 143,7 mln of the country. According to academician of the Russian Academy of Sciences Altukhov (2014), the cause of such adverse situation is "major nonconformity of current resource potential of the national agroindustrial complex to the results of its use".

In 2013 food products and agricultural raw materials import in Russia made up 43,1 bln USD (almost six times increases the level of 2000), it was the highest value for more than 20-year period of market reforms. Its rate of increase made up 7,1% to 2012 while food retail trade turnover increased by only 2,5%. That said, the volume of food, products and agricultural raw materials import increased by 7,2% exceeding production national agricultural goods production rates by 1,0%.

One of the factors boosting food import increase is higher level of yield of import transactions for intermediate structures in comparison with food purchase from

national manufacturers. Thus, the difference between import and consumer prices for similar products makes almost two times.

According to World Bank (2015), the level of Russia's food dependence is 37% what exceeds the country's food security threshold point 1,5 times. Under this level it doesn't supplement domestic production, but suppresses it, leads to degradation of branch reproduction possibilities and potentially causes decline in production. In terms of agricultural self-sufficiency such products as meat and meat products, milk and dairy products cause alarm. These products self-sufficiency level is lower than threshold values established by The Doctrine of Food Security of the Russian Federation (Table 2).

**Table 2.** Agricultural self-sufficiency level, %

| Products | Established by the Doctrine of Food Security | Years | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2000 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Potato | 95 | 100,7 | 97,6 | 100,0 | 102,0 | 75,9 | 113,0 | 97,5 | 99,7 |
| Grain | 95 | 96,0 | 121,8 | 148,2 | 134,8 | 93,3 | 135,9 | 108,3 | 138,9 |
| Milk and dairy products | 90 | 88,3 | 83,1 | 83,2 | 82,9 | 80,5 | 80,8 | 80,3 | 77,5 |
| Meat and meat products | 85 | 67,0 | 65,5 | 66,6 | 70,6 | 72,2 | 74,0 | 76,2 | 78,5 |
| Sugar | 80 | 77,8 | 110,1 | 106,0 | 95,6 | 85,3 | 124,6 | 92,9 | 88,0 |
| Vegetable oil | 80 | 56,3 | 93,7 | 86,3 | 109,7 | 98,3 | 102,0 | 133,9 | 122,7 |
| Vegetables | - | 85,6 | 80,2 | 86,8 | 87,3 | 80,5 | 93,2 | 88,7 | 84,7 |

Strong import dependence heavily decreases the economic security and greatly infringes the country's national interests. Besides, growing import of food and agricultural raw materials for its production leads to the fact that the country has to pay for them with non-renewable natural resources and its weakening role in the world economy, trade, and politics.

*3.2. Agroindustrial Complex Production Capacity and its Efficient Use*

Currently reproduction processes in the agricultural sector are characterized by the decrease in labour force. Over 1990–2013 the number of rural population in the Russian Federation decreased by 3,0%, and the number of population engaged in the agricultural industry –1,5 times what spells a demographic disaster (Table 3).

**Table 3.** Number of population engaged in the agricultural industry

| Indicators | Year | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1990 | 2000 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Number of population engaged in the agricultural industry, thous of people | 9727 | 8996 | 7381 | 7141 | 6925 | 6675 | 6733 | 6656 | 6560 | 6467 | 6292 |
| Economically active population percentage, % | 12,9 | 13,9 | 11,1 | 10,6 | 10,2 | 9,8 | 9,8 | 9,8 | 9,7 | 9,5 | 9,3 |

Land resources are the base of food production. 8,9 % of world's plough land, 2,6 % of grassland, 52% of black earth, 20% of the world's supply of fresh water, and 2,5% of the world population fall to Russia's share. According to Federal Immovable Property Cadastre Agency, there are 386,1 mln ha of lands of agricultural designation in Russia, of which 196,2 mln ha – agricultural lands, including 115,1 mln ha – farm field. It should be noted that Russia ranks 5$^{th}$ in the world by the area of agricultural lands. There was 1,4 ha of agricultural land per capita in Russia at the beginning of 2013.

Over 1990-2013 more than 20 mln ha of agricultural land (9,7%), i.a. 16,7 ha of farm field (12,7%) were suspended from the economic cycle in Russia. Land fertility decreases. There are about 12% of water-logged soils, 19% of eroded and 8% of saline and alkaline soils in total agricultural land. Destruction of the agroindustrial complex reproduction facilities – land degradation, which is main agricultural inputs, took place.

The status of capital assets in the agricultural sector constitutes the biggest threat to Russia's food security. For today capital assets wear rate in the agricultural sector is 43%. Moreover, tractor production decreased in 2013 as compared to 1990 almost 16 times, and grain harvester – more than 11 times. And the share of investments to agricultural industry capital stock in Russia in their total volume by the national economy decreased from 15,9 to 3,3% in current prices over the same period. The main causes of agricultural goods producers' low investment activity are decrease in budget funding, lack of their own financial resources, credit nonavailability because of high rates of interest. Today percentage of profitable households is 82%, and agricultural profitability with regard to aid grants – only 9,3% (almost three times lower than necessary for expanded reproduction). Exclusively of aid grants the agricultural profitability level is minus 1,7%. If this trend continues, the agricultural industry will be loss-making in the nearest years even taking into account provided aid grants.

Currently a negative trend of Russia's agricultural development is debt load of the branch. The size of national agricultural producers' indebtedness under credits and loans is about 2 trn. roubles. Agriculture indebtedness under credits and loans exceeds the branch annual sales receipts 1,5 times.

Due to agricultural goods producers' low investment activity, agricultural organizations provision with tractors and harvesters decreased in 2013 almost 3 times as compared to 1990. Over this period farm field load per tractor increased from 95 to 257 ha, seeding per grain harvester from 152 to 369 ha what exceeds the similar indicators in the US and the Great Britain 4-5 times. It is known that design load per tractor is 73 ha, and design load per grain harvester – 244 ha. Therefore, in 2013 tractors load was beyond the rate 3,2 times, and harvesters load – 1,3 times. Current state of agriculture material and technical base adversely affects branch competitiveness and conditions the need for its further technologic modernization.

3.3. Food Affordability

In the modern context one of the Russian economy agricultural sector's key problems is low population income. Average monthly accrued wages of agricultural workers is 2 times lower than average wage in the economy, more than 4 times lower than in the fuel and energy sector, 4,5 times lower than in the financial sector (Table 4). It shows agricultural labour depreciation, weakening its development motivational mechanisms. It stands to mention that in 1990 average wage in the agricultural sector made up 95,4% of the average Russia wide level.

**Table 4.** Average monthly wage in Russia, USD (calculated based on the average annual rate of The Central Bank of Russia)

| Year | Average monthly nominal wage | Average monthly nominal wage in agricultural industry | Ratio of average monthly nominal wage in the agricultural industry to the Russia wide level, % |
|---|---|---|---|
| 2000 | 79,0 | 35,0 | 44,3 |
| 2005 | 302,5 | 128,9 | 42,6 |
| 2006 | 391,1 | 168,0 | 42,9 |
| 2007 | 531,4 | 240,2 | 45,2 |
| 2008 | 695,9 | 341,1 | 49,0 |
| 2009 | 587,5 | 303,2 | 51,6 |
| 2010 | 690,0 | 351,3 | 50,9 |
| 2011 | 872,2 | 419,4 | 48,1 |
| 2012 | 856,9 | 454,7 | 53,1 |
| 2013 | 933,6 | 492,7 | 52,8 |

The indicator of poverty rate (population with income below the average subsistence line) should be used as an indicator characterizing food affordability. Currently

population with average income below the average subsistence line in Russia makes up 15,6 mln people or 10,9 % of total population (Table 5).

**Table 5.** Poverty rate in Russia

| Indicator | Year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2000 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
| Population with income below the average subsistence line, mln | 42,3 | 25,2 | 21,5 | 18,7 | 18,8 | 18,2 | 17,7 | 17,9 | 15,4 | 15,5 |
| % to total population | 29,0 | 17,7 | 15,2 | 13,3 | 13,4 | 13,0 | 12,5 | 12,7 | 10,7 | 10,8 |

Over the period of 2000-2013 the poverty rate in the country decreased 2,6 times (but still exceeds threshold value). Currently unemployment rate in the country is 5,5 %. However, despite this fact, there are substantial population income differences. According to Federal State Statistics Service of the Russian Federation, the gap between 10% most rich and 10% most poor population (funds coefficient) is 16 times.

Therewith food expenses in the structure of households' consumer spendings in Russia continues to be substantial by percentage and play the core role in the final consumption dynamics (Figure 3).

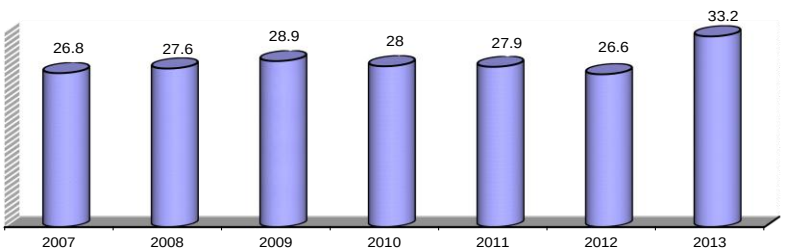


**Figure 3.** Percentage of food expenses in the structure of households' consumer spending in Russia, %

Over the period from 2009 to 2012 households' food expenses decreased by 2,3%. However, in 2013 percentage of food expenses in the structure of households' consumer spending as compared to 2012 increased by 6,6%. It is mainly conditioned by considerable food prices raises. Thus, in 2013 the food prices raise in the RF was 6,2% what exceeds the rate of price increases in the UN 4,4 times (1,4%).

3.4. Living Standards and Food Quality

The tendency of stable expansion of staple food consumption has been observed in Russia in recent years. However, consumption of some products (milk, meat, vegetables) is significantly below the recommended diet norms (Table 6).

**Table 6.** Main agricultural goods consumption per capita in the Russia Federation, kg/year (approved by the Order of the Ministry of Health Care and Social Development of the Russian Federation as of August 2, No. 593n "Concerning the approval of recommendations on dietary norms of food consumption meeting current requirements of healthy nutrition")

| Product | Nutritional standard * | Year | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1990 | 2000 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| Meat | 70–75 | 75 | 55 | 59 | 61 | 66 | 67 | 69 | 71 | 68 |
| Milk | 320–340 | 386 | 215 | 239 | 242 | 243 | 246 | 247 | 246 | 249 |
| Eggs, pcs. | 260 | 297 | 229 | 256 | 254 | 254 | 262 | 269 | 271 | 276 |
| Bread | 95–105 | 47 | 35 | 39 | 39 | 40 | 37 | 49 | 40 | 119 |
| Vegetables | 120–140 | 10 | 10 | 12 | 12 | 13 | 13 | 13 | 13,5 | 109 |
| Potato | 95–100 | 106 | 118 | 132 | 132 | 111 | 113 | 104 | 110 | 111 |

Table 6 shows that meat and meat products consumption per capita decreased from 75 kg in 1990 to 68 kg in 2012 (9,3 %), milk and dairy products – from 386 to 249 kg (35,4 %), eggs – from 297 pcs. to 276 pcs. (1,1 %), while vegetable oil, vegetables and gourds consumption increased.

The calorific effect of Russian's average daily diet is slightly below the set norm and makes up 2626 kcal/day (Table 7). Meanwhile nutrition calorific effect higher than 2300-2800 kcal/day characterizes reaching such food resources level when even episodic starvations are excluded, conditions for stable population increase are provided.

**Table 7.** Population nutrient materials consumption per capita in Russia, g/day

| Years | Protein | Fat | Carbohydrates | Caloric value, kcal/day |
|---|---|---|---|---|
| Nutritional standard | 90 | 105 | 385 | 2950 |
| 1990 | 87 | 104 | 389 | 3000 |
| 2000 | 62 | 82 | 351 | 2394 |
| 2005 | 71 | 96 | 368 | 2630 |
| 2006 | 71 | 95 | 351 | 2554 |
| 2007 | 72 | 97 | 347 | 2664 |
| 2008 | 72 | 98 | 340 | 2550 |

| | | | | |
|---|---|---|---|---|
| 2009 | 73 | 99 | 338 | 2551 |
| 2010 | 77 | 105 | 348 | 2652 |
| 2011 | 77 | 105 | 341 | 2624 |
| 2012 | 78 | 105 | 341 | 2633 |
| 2013 | 78 | 106 | 337 | 2626 |
| 2013 to RNI, % | 86,7 | 100,9 | 87,5 | 89,0 |

The Russian population's diet demonstrates the lack of protein. Currently its deficit per capita makes up 13,3% of minimal recommended values. The analysis of more sound feature of population's diet – animal protein content in dietary intake reveals that it lies beyond the safety zone (recommended level of animal protein consumption – 41 g per day; actual – 48 g) while in protein and fat content in the Russian's daily ration steadily increases.

One of the most important indicators of food security state is food safety for population's health. Among home-made products meat and poultry, whole-milk products quality gives rise to concern. There are such product groups as grain and fish products among poor and dangerous to health imported food (Table 8).

**Table 8.** Quality of home-made and imported food came into the market, % of the number of selected samples of products by each product groups

| Food products | Poor and dangerous to health food products | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2000 | | 2008 | | 2009 | | 2010 | | 2011 | | 2012 | |
| | hm | imp. | hm | imp. | hm | imp. | hm | imp. | hm | imp. | hm | imp. |
| Meat and poultry | 8,2 | 53,5 | 13,2 | 5,0 | 2,8 | 8,4 | 8,1 | 5,8 | 2,8 | 2,3 | 5,0 | 3,6 |
| Sausage products | 14,8 | 57,5 | 9,1 | 1,4 | 2,9 | | 6,8 | 1,5 | 3,3 | 40,6 | 2,0 | 1,8 |
| Fish products (no preserves) | 28,5 | 36,2 | 10,0 | 20,5 | 10,9 | 2,2 | 12,0 | 14,7 | 8,3 | 11,1 | 3,5 | 22,8 |
| Preserved meat and meat and cereal | 62,1 | 71,9 | 3,7 | 0,2 | 0,4 | 21,7 | 2,7 | 4,5 | 2,1 | 0,1 | 0,0 | 0,0 |
| Animal oil | 23,9 | 13,7 | 29,8 | 1,5 | 6,1 | 17,1 | 6,0 | 0,2 | 3,6 | 0,4 | 1,9 | 1,9 |
| Whole-milk products | 18,8 | 36,4 | 7,6 | 4,2 | 7,8 | 4,1 | 6,9 | 3,9 | 2,6 | 4,2 | 4,2 | 3,5 |
| Grains | 39,2 | 49,9 | 0,9 | 1,4 | 5,9 | 29,1 | 5,6 | 2,2 | 2,4 | 11,6 | 1,7 | 16,3 |
| Cheese | 21,9 | 27,1 | 18,9 | 11,4 | 5,3 | 5,4 | 3,2 | 1,8 | 3,3 | 3,3 | 1,3 | 2,4 |

## 4. Discussion

The carried out research makes it possible to conclude that currently there are the following threats to Russia's food security: productive powers deindustrialization; low level of investment to the agricultural sector; labour force reduction; increase in dependence on imported foodstuff; population's low income level and living standards, etc.)

Under current conditions the issue of ensuring Russian Federation's food security cannot be solved without technologic modernization of agriculture and the agroindustrial complex in general. That said, the government bodies' high-priority task it to create necessary financial and institutional conditions to carry out augmented modernization. The following measures should be taken in this regard:

(a) development and implementation of the federal goal-oriented program "Development of national agricultural engineering" as a basis of agribusiness competitive growth;
(b) providing aid grants to not only agricultural equipment producers but also agricultural goods producers to recover expenses for purchasing equipment.
(c) stimulation of investing activities in the agricultural sector due to tax deduction when forming taxation base by profits tax in the amount of 30% of total agricultural organizations' investments expenses; providing tax holidays regarding land tax and property tax to newly established innovation companies in the agricultural sector; extension of investments tax credit terms to 10-15 years.

In addition, providing food security of the Russian Federation involves its agricultural production efficiency upgrading by means of active development of different forms of integration and cooperation. The latter contributes to increase in agricultural sector profitability through the decrease in losses and expenses at each technologic stage of production, creating conditions for the branch shift to extended type of reproduction. Meanwhile integration and cooperation help to decrease transactional costs and achieve diversity effect due to production diversification, agricultural products advanced processing, and also the effect of economy of scale by means of output growth.

## 5. Conclusion

Monitoring of food security should become an important and efficient tool of government control, an integral part of Russia's efficient agricultural policy development. The following is necessary to organize such monitoring: (1) definition and recording of individual government agencies' functions and commitments regarding monitoring in corresponding documents; (2) development of the mechanism of government agencies' cooperation in the process of monitoring; (3) development of the organizational mechanism providing monitoring in each federal body in accordance with its functions and commitments; (4) development of the organizational mechanism providing monitoring in Russian Federation's constituent entities with the following generalization of results at the federal level.

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