NATIONAL INSTITUTE OF STRATEGIC STUDIES OF THE KYRGYZ REPUBLIC

Food security governance review

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Conclusions and recommendations

CONCLUSIONS

- Ensuring food security is one of the key functions of the State, which is implemented by the President and the Government of the Kyrgyz Republic. Food security is included in the overall system of the most prioritized and sensitive threats to national security. Food security is vulnerable to a variety of fundamental and operational factors, which, if exposed to an unfavorable environment, can cause a chain reaction of negative consequences and lead to an exacerbation of threats to the overall national security system.
- Addressing food security issues requires a high level of coordination national stakeholders, a clear understanding of related problems and objectives, and ways to overcome and achieve these, which should correspond to the extent of the threat to food security and the resources available. Effective food security governance should include the following: understanding of fundamental threats to food security, vision of the long-term and sustainable balance between interests of consumers from one side and food producers and suppliers from the other side, as well as the responsibility of society to ensure food access, for the most vulnerable of its members.
- Food security governance mechanisms exist and function in the country:

– Food security governance in the country is implemented within a complex set of normative frameworks, specifically designed to regulate relations in the food security field. However, the fundamental Law on Food Security of the Kyrgyz Republic lacks sufficiency in terms of regulating food security issues within all pillars: food availability, food access, food utilisation and stability to food security. In its current form, the existing normative frameworks do not comply with recommendations of specialised international organizations, where a scientific approach and best experience and practices of food security governance are applied. Insufficient regulation of issues of food safety, food quality and stability to food security poses potential niche to food security risks.

– National and sectoral food security programmes, in general, distinguish food security issues as one of the threats to national security, with a complex of objectives and measures to be taken to address a number of problems. However, these programmes do not contain all objectives that are important in addressing food security related risks. This creates insufficient results-based management among national institutions, and creates conditions for ineffective use of public resources. The programmes do not form an appropriate level of systematisation and comprehensiveness of policies to ensure food security. This, to some extent, creates risk of incomplete orientation of government to address food security related issues.

– One of the important determinants of ability to reach the targets while addressing food security related issues is budgeting for implementation of policy measures. Currently, the Government does not have such indicators that are able to show the composite expenditures of public resources to address food security related issues.

– A number of social assistance programmes to ensure economic access to food for the most vulnerable are actively implemented in the country. However, according to official statistics data, these measures have no influence on ensuring the minimal required energy consumption for the most unprotected population groups. The actual consumption among these groups remains below the minimal required threshold for several years.

– The general food security analysis is periodically conducted in the country, with results reported to the Government of the Kyrgyz Republic and to the Government's Food Security Council. Nevertheless, the list of food security monitoring indicators does not include all necessary

indicators for comprehensive assessment in line with all components of food security. Thus, indicators to assess stability to food security are almost absent, indicators of food utilization are insufficient, and indicators to assess physical access do not exist. Some of the applied indicators have no target values, which does not make them controlling and regulatory, but rather informative.

– Institutional mechanisms to ensure food security are established in the country. However, relevant government agencies within the delegated functions in managing food security related issues are acting outside these mechanisms with limited coordination and in disconnection from each other, governed by internal agency decrees.

- Risk analysis of potential scenarios of food security deterioration in the Kyrgyz Republic showed low probability of risks to food security in the country in the mid-term period. Among the most likely scenarios are macro-economic instabilities affecting the living conditions of the population in the country. This risk is also associated with accumulation of structural disproportions in the agricultural production, driven by a greater agriculture producer orientation on market demand, including outside the country, if insufficient government measures exist to ensure self-sufficiency thresholds through domestic production.
- **Food availability**. Review of indicators of ensuring food security that are openly available for analysis has shown that the threshold levels of some indicators have not been reached. Thus, for the "Food self-sufficiency by individual product" indicator (with the threshold level not exceeding 20% of the total domestic market volume), Kyrgyzstan is not complying with the established normative standards on "vegetable fats", "sugar and confectionery" and to a lesser extent "wheat products" for many years. The actual food needs covered by domestic production are only covered for "raw milk", "vegetables", "fruits and berries" and "potato". Besides, non-compliance to the threshold levels of the indicators, as seen from the results of the implemented policy measures, does not raise significant concerns and is not followed by targeted actions to address the situation. This implies that Kyrgyzstan, at least partially, is withdrawing from the declared domestically derived food self-sufficiency policy targets for basic foods. In fact, another policy is being applied, namely ensuring food availability for the population through international food markets.
- **Food access**. The national road system, in the absence of factors related to natural disasters, is capable of ensuring uninterrupted supply of food to virtually any locality. Given the activities of the government in expansion and reconstruction of domestic roads, especially in recent years, the **physical** accessibility of food in the Kyrgyz Republic can be deemed as constantly improving.

The review of **economic** access to food has shown the following:

– The normative standard of "Economic access to food" indicator is met by the population of Kyrgyzstan nation-wide and by regions. However, the standard is not always met for some population groups when disaggregated by income level. Thus, the first quintile group consisting of people with the lowest income spends about 75% of their income on food.

– The population of the country is significantly differentiated by food expenditure levels. Thus, people from the first quintile group spend on food approximately half less than the fifth income group. Acuteness of this problem, given the magnitude of difference in food expenditures, cannot be reduced through the social assistance mechanism only.

– The review of "Energy value of the diet" indicator, which has been considered within the food access component in this study, has shown that the overall average consumption based on the "Kcal per day" indicator has been generally met for the population. However, it has not been met for the first quintile group of the population and among "children aged 0-3" group during the analysed period, i.e. since 2010.

– The most complicated situation is with the "Protein consumption per capita per day" and "Fat consumption per capita per day" indicators – the normative standards are not met by all

population in general, and among all quintile groups, except the fifth group, who represents the richest population. The analysis of the dietary intake has shown that the practices are shifted towards consumption of bread and wheat products with limited intake of meat, eggs, fruits and berries. Besides, it should be considered that such dietary practices may be due not only to the reduced economic access (which is the most likely cause), but also to the dietary habits related to the low awareness of healthy nutrition.

- **Food utilisation.** The actual deviations of anthropometric and medical indicators of body state among children and adults in the Kyrgyz Republic from scientifically derived normative standards have shown that the country faces problems of micronutrient deficiencies and imbalanced diets.

According to UNICEF studies, in 2012, 97.6 per cent of children were breastfed, but only 41.1 per cent were exclusively breastfed, and 69.5 per cent of children were predominantly breastfed until 6 months. Anthropometric indices: 2.8 per cent of children under five years of age are moderately underweight, 0.6 per cent of children are severely underweight. It should be noted that the problem of breastfeeding is on the agenda of state authorities, and currently a package of measures is being applied to improve the situation.

The situation with anaemia in the country among children and pregnant women in 2005-2014, which was acute at the start of the period, has currently improved, which leads to assumption that the implemented policy measures in this regard has been effective. The incidence of endemic goitre associated with dietary iodine deficiency is currently uncommon because the salt iodisation measures taken have turned out to be quite effective.

Problems related to the limited access to safe drinking water have been high priority policy for many years. However, the fact that the share of people with no access to safe drinking water in the country has increased during five years requires the revision of the whole strategy in this regard.

- **Stability to food security**.

In 2015-2016, the prices of basic foods in Kyrgyzstan were decreasing for all basic food items. This has increased food access, yet failed to increase the energy value of the diet among vulnerable populations.

Kyrgyzstan, with low cropland availability and relatively high population growth rates, can face scarcity of one of the major natural resources for the agricultural industry, i.e. cropland, in the future. The most unfavourable situation is in the southern regions, where cropland availability per capita is three times less than in the northern regions.

The condition and use of the major natural resources for the agricultural industry, i.e. land and water, require the strengthened resource conservation policy.

Recommendations

1. Improving food security normative frameworks:

The first set of measures should be targeted at improving the main normative frameworks of food security. The Food Security Law should include regulation mechanisms within all food security pillars: availability, access, utilization and stability. Ensuring food security governance principles and approaches follow internationally adopted practices will allow quality improvements in food security governance.

The second set of measures should be targeted at assessing normative frameworks and integrating the opportunities which appeared after the entrance of Kyrgyz Republic to the Eurasian Economic Union (EAEU) membership. Full implementation of measures in the four areas – goods, services, capital and labor force, in future, should provide opportunities for the country to resolve potential barriers to the stable supply of necessary food commodities, which are produced in EAEU country-members in abundance and at lower prices.

The third set of measures should be targeted at revising the system of assessing the food security situation based on available international approaches and best practices. It is necessary to clarify and broaden the set of applied indicators in assessing the food security situation in the four pillars of food security and set target values. In addition, it would be reasonable to introduce integral [composite] [1] indicators to measure food security in the country and respective methodologies for its application, as well as strengthen mechanisms and instruments for real-time information generation in the food markets.

2. Improving food security programmes

The first set of measures should be targeted at improving food security governance in terms of ensuring that food security is regarded as a cross-sectoral objective. There is a need to develop one "objective tree" for ensuring food security. All policies and programmes, which include food security related issues should form a logically and hierarchically constructed system, where the governance measures will be defined: policy formulation, selection of economic decisions, crisis situations management.

Targeted programmes, regardless of which implementing agency they belong, should have clear formulations of food security policy measures and distinct divisions between tasks and measures which ensure food security and tasks measures and targets in other related areas.

It is also important to achieve consistency in the formulation of objectives and measures in the different targeted programmes and terminological uniformity. The system of monitoring of achievements within the set objectives should satisfy the needs of terminological uniformity, logical linkage regulations between indicators and calculation methods. Changes in the national level policies (objectives, priorities and measures) should be adequately reflected in relevant parts of all sectoral strategies.

The second set of measures should be targeted at improving the system of food security resource allocation, which should be implemented based on the principles of programme budgeting and linked to the targets defined in the common food security objective tree. Objective tree implementation mechanisms should be based on the application of project and results-based approaches with a clear distinction of all key business processes and responsibilities of government agencies and their managers.

The third set of measures should be targeted at the creation of an effective food security monitoring system in Kyrgyzstan, which should be developed in accordance with the targets defined in the common food security objective tree and reflecting food security situation in all four pillars of food security (availability, access, utilization, stability)

3. Strengthening food security institutions

The first set of measures should be targeted at improving normative frameworks, which support food security management as a complex of measures. This requires all government agencies that are engaged in addressing food security related issues in one way or another, to have clearly defined functions and measures to address food security related issues within their responsibilities outlined in their internal Decrees.

The second set of measures should be targeted at increasing the activeness of the Food Security Council to control and monitor the implementation of measures outlined in the common food security objective tree and business processes, related to ensuring food security.

The third set of measures should be targeted at improving the food security reporting systems of all government agencies that implement food security related measures to the Food Security Council for more in-depth food security situation analysis and provision of recommendations for policy measures to improve governance. Besides, it is important to strengthen information

[1] Editor's note

management systems to inform the Council, including the application of information technologies and improving information visualization.

4. Improving governance within food security dimensions (national level)

i. Food availability

The first set of measures should be targeted at improving the effectiveness of agricultural production and increasing agricultural productivity. This can be done through enhancing the effectiveness of the use of natural resources, increasing access of agricultural producers to goods and services used or consumed during the production process (financial resources, high-grade seeds, breeding stock, etc.), creation of value chains, cooperation, creation of clusters, and improving stability of direct relations with markets. A separate focus is supporting measures targeted at poor rural households to increase their food production for own consumption, which will improve stability of their access to food.

The second set of measures should be targeted at addressing the issues of ensuring food security through domestic production. A set of preferences should be developed and implemented to encourage an increase in production of basic food items. However, a detailed food security risk assessment is required considering Kyrgyzstan's membership in EAEU, as well as the system of international agreements between Kyrgyzstan and EAEU states regulating the unhindered supply of food items within EAEU.

The third set of measures should be targeted at ensuring required and secured volumes of the state food reserve stocks. This information should be kept confidential but the mechanisms to ensure more transparency of the reserves status and conditions should be determined, e.g., via publication of qualitative assessment indicators. This will strengthen the public control over ensuring food security.

The fourth set of measures should be targeted at protection of the domestic market from dumping and poor-quality foods.

ii. Food access

The first set of measures should be targeted at increasing employment levels, creating productive jobs, which will create added value and ensure increased remuneration of labour. In rural areas, the main path for labour productivity growth is through farm consolidation, increased access to production equipment, renewed seed and breeding funds, etc.

The second set of measures should be targeted at increasing protection of all children aged 0-17 years and especially children aged 0-3 years through social assistance in order to increase access of children to highly energy-dense and enriched foods, including through diversification of school meals.

iii. Food utilization

The first set of measures should be targeted at improving conditions for assessing the food utilisation situation. Additional indicators, their threshold and target values, the reflection in relevant laws and regulations and proper monitoring should be ensured.

The second set of measures should be targeted at improving the safety of produced and imported foods. Introduction of HACCP[2] system and increase the volume of certified foods must become the national policy priority. The state should take the side of consumers, rather than producers, in the issues of food quality control. The state should not shift the risks to consumers through unjustified self-restrictions when performing regulatory and control functions.

[2] HACCP (in English - Hazard Analysis and Critical Control Points) is a concept providing for the systematic identification, assessment and management of hazards that affect the safety of food. https://ru.wikipedia.org/wiki/HACCP

The third set of measures should be targeted at increasing the production of foods enriched with necessary micronutrients[3]. This requires a comprehensive approach, along with state support in the production of fortified wheat flour, iodised salt and effective information and awareness raising policy, which should encourage stable consumer demand for such foods based on knowledge and rational behaviour.

The fourth group of measures should be targeted at raising public awareness about healthy nutrition. Separate measures should be focused on the rational use of funds intended for food consumption and reduction of expenses on large-scale events (feasts, funeral feasts, etc.).

iv. Stability to food security

The first set of measures should be targeted at improving the assessment of the situation in the "Stability" component through introduction of new indicators, determination of accurate threshold and target values of these indicators. These indicators should be reflected in the relevant policies and duly monitored.

The second set of measures should be targeted at creation of mechanism of risk mitigation of price destabilisation, which is related to the market imbalances between "sellers" and "buyers" under the influence of various factors not related to food shortages.

The third set of measures should be targeted at increasing stability of agricultural production through expanded application of rational natural resource management principles and ecosystem approach, as well as measures of adaptation to climate change that include the measures to improve stability of crop farming, irrigation systems, etc.

GOALS AND OBJECTIVES OF THE STUDY

Goal:

Assess food security policy, governance and key achievements of ensuring food security at national level in the Kyrgyz Republic.

Objectives:

- Conduct analysis of the normative framework and institutional environment of food security governance
- Identify main trends of indicators of food security within four pillars of food security (availability, access, utilization and stability).
- Provide recommendations on improvements and adjustments in food security governance at national level.

METHODOLOGY

Objects of analysis:

- Normative frameworks, programmes, Government reports, ministries' and agencies' reports on the implemented activities and food security governance practices.
- Statistical, analytical and empiric data on food security from official statistical reports, international and non-governmental agency reports, scientific articles and information from in-depth interviews with food security experts.

Research methods:

- Information processing (normative frameworks, programmes and statistical, analytical and empirical information on food security) was based on content analysis and formal logical

[3] "...Micronutrients are nutrient materials (vitamins, minerals and trace minerals) contained in foods in trace amounts, milligrams or micrograms. They are not the sources of energy, yet take part in the digestion, function regulation, performance of the growth, adaptation and development of the body..." http://official.academic.ru/12366/%D0%9C%D0%B8%D0%BA%D1%80%D0%BE%D0%BD%D1%83%D1%82%D1%80%D0%B8%D0%B5%D0%BD%D1%82%D1%8B

methods: classification, generalisation and typology and logical modelling. Analytical methods of quantitative and qualitative assessments – mathematical statistics, problem tree methods, expert assessments – have been used to identify trends over time, causal relationship between the reasons, factors affecting food security and the actual results of food security policy implementation.

- The main elements of the hypothetico-deductive method were used to draw conclusions and recommendations based information processed by formal logical and analytical methods: inspection of actual material, formulation of assumptions (hypotheses) of reasons and patterns, assessment of the relevance and formulation of the most probable assumptions; drawing consequences and conclusions from the verified hypotheses.
- Comparative analysis methods were used to compare food security approaches and indicators with other countries and with recommendations of international organizations specialised in food security issues.
- A verbal (text) and graphic forms (tables and diagrams) were used to present the results of the study. The results are reported in the document in a narrative form following a unified and strict logical structure in all sections; they include descriptions of the results of data analysis (objects of analysis), formulation of detailed conclusions and recommendations. The document contains tables and diagrams to allow reviewing the processed quantitative information in a systematized way.

1. FOOD SECURITY AS AN OBJECT OF STATE GOVERNANCE

1.1. Factors affecting food security policy formulation and ensuring food security

Factors affecting food security policy formulation

Among the risk prevention policies and measures of the government, ensuring food security is one of the key national priorities and has the following peculiarities to be considered during policy formulation.

Firstly, food security is part of an inter-dependent system of the main risks to the state (military, economic, social, energy, and others).

Secondly, food security is related to the economic self-sufficiency of the state – to economic incentives and capacity for food production by domestic producers, as well as to the availability of financial resources to an extent to meet the food needs of the country.

Thirdly, food security is related to the public insurance against the risks of possible decline in agricultural production, which can be caused by the environmental, economic and political factors.

Fourthly, food security is related to the public understanding of the "social equity" criterion, which is defined as the willingness of the society to allocate part of public resources to improve consumption of vulnerable population groups.

Violations of the principles of economic self-sufficiency, maintenance of the capacity for food production and social equity can result in the reduced economic incentives for production and in the growing social tensions between various social groups.

Fifthly, food security is related to the market imbalances between "sellers" and "buyers" under the influence of various factors not related to food shortages. For example, in case of the false market signals and lack of proper national policies, "sellers" and "buyers" may sharply change their market behaviour strategies – the former applies speculative strategies, while the latter apply the strategies of supra-rational accumulation by buying all basic foodstuffs under the

influence of rumours. Such speculations and supra-rational accumulation in the market may lead to social, and further to political conflicts in the society.

Sixthly, low levels of food security may be related to low awareness of healthy and safe nutrition. People are often indifferent to consuming food prepared in insanitary conditions. They are not demanding in terms of national food safety policies, access to information on the compliance of production to sanitary requirements, ingredients and quality of procured foods, which can often be attractive, yet lacking required quality and even harmful. Hidden hunger is not recognized among the population.

Among the consequences are the increases in the prevalence of diseases, physical and mental retardation of children, which primarily affects the most vulnerable populations. Overweight caused by improper nutrition is another problem.

Based on the above, disturbance of food security may be the result of relatively sustainable factors related to economic and social issues, low public unawareness and prevailing dietary habits, and also the fast emerging factors related to the public exposure to rumours or careless advertising.

Conclusions:

• Food security is included in the overall system of the most prioritized and sensitive threats to the national security. Food security is prone to a variety of fundamental and operational factors, which, if unfavourable environment occurs, can cause chain reaction of negative consequences and lead to exacerbation of threats to the overall national security system.

• The main cause of disturbance of the stability of food security is the implementation of inefficient economic and social policies, which should not only be reactive, but also proactive.

• Effective food security policy should be based on a stable balance between the interests of different groups of society, primarily between food security relations subjects - food consumers, food producers and food importers. Such essential values of society as responsibility and justice oblige the Government to maintain the minimum necessary level of food consumption among the weakest population groups based on the principles of social justice.

Food security risks scenarios in the Kyrgyz Republic

The possibility of the following five scenarios that could deteriorate food security in the country were identified by the authors of the study[4].

Scenario 1: Reduction of food access as a result of macroeconomic instability and deterioration of living standards of the population.

Prolonged economic crisis and ecological problems in many countries leads to the deterioration of living standards of the population. As Kyrgyzstan is well integrated in the international economy, it may not avoid such situation. In this scenario, reduction of incomes of certain population groups may lead to poverty and deterioration of economic access to food.

The first phase may include a disproportion of food market supply volumes and market demand (purchasing power of the population). Besides, due to the inertial process of food production and delivery, the food supply volume may cover or even exceed internal market capacity, but the demand will be limited by low purchasing power of the population and by the caused speculations.

The second phase, if no actions are taken to stabilize the situation, inevitable loss of economic interest will occur among domestic agriculture producers and the problem may become more complicated, when reduction of physical volumes of food takes place.

[4] Risk Scenarios are categorized within a 1-4 scale, where 1 – highly possible, 2 – possible, 3 – unlikely, 4 – highly unlikely.

This risk (the first phase) is rated as a **higher than 'unlikely'**. Probability of situation development to its second phase is rated as **lower than 'unlikely'**. Factors that will hinder its development are:

- Assumptions that a possible slowdown in the pace of economic development in Kyrgyzstan will lead to a state of economic crisis (with massive dismissals, a rapid increase in unemployment, a significant worsening in the standards of living, etc.) are unlikely. The economy of the country has shown its stability in the most difficult times including a sharp depreciation of national currency and the fluctuations in living standards of neighboring countries
- The most vulnerable part of the population is protected by law and the state material reserve. These conditions create a time reserve for taking emergency measures.
- Given the levels of the informal economy, it can be assumed that the number of extreme poor is actually lower. Consequently, the real purchasing power of the population may be greater.
- Kyrgyzstan is a small country, so it can be provided with quick assistance from international organizations that monitor the situation.

Scenario 2. Reduction of food access as a result of deteriorated physical availability of domestic production, natural disasters and international food price hikes.

Natural and climatic conditions in Kyrgyzstan in most parts of the country make agricultural production a risky area. Although Kyrgyzstan is a water sufficient country, a difficult situation can occur (such as decrease in arable land area) in dry years due to the poor quality of irrigation systems and poor practices in effective water use and management. Mudflows occur often in the country, posing a risk of damaging croplands; earthquakes are highly likely and may lead to the destruction of roads and hinder food supply.

However, natural disasters that caused reduction in agriculture production in recent years were of a localized nature. To date, all natural shocks were not critical for the food supply to the population.

The international economic crisis during 2007-2008, which influenced many countries in Asia, Latin America and Africa, showed that the international food system can also be unsteady. Key causes of the crisis were: imbalances between food production and demand due to rapidly growing population's food purchasing ability; rapid population growth in developing countries, deterioration of the natural environment, limited and decreasing areas of arable land and volumes of fresh water, etc. However, the global community today has taken the steps to reduce the likelihood of a similar crisis. But it is not excluded, since many initial factors still remain.

In general, the scenario of deterioration in food access in Kyrgyzstan, which is associated with a reduction in the physical volume of production due to reasons listed above, can be assessed as **unlikely**. It should be considered, that any shortage of basic foodstuffs is growing rapidly, as the behaviour of consumers is changing (accumulate food stocks). Therefore, with a sharp exacerbation of the situation, the population will face acute food deficit in a much earlier term than it can be assumed.

Scenario 3. Reduction of food access as a result of structural deficit of domestic food production[5].

The structural deficit of domestic food production in relation to domestic consumption is defined as the "constant shortage of selected domestic food products to meet the total food needs due to changes in the structure of production under the influence of political, market, natural or

[5] Structural deficit is an *irresistible* or *cumulative* factor. The factor is *irresistible* when the existing conditions (environmental, climatic, lack of arable land, etc) do not allow increase in domestic production. The factor is *cumulative* when, driven by market signals, and in absence of control actions from the government, the structural shift in agriculture production towards the commodities that are highly profitable but are not among the basic food commodities is gradually accumulated. The technologies change, special equipment is purchased, appropriate economic links are established, etc.

environmental factors". For example, cotton production in Soviet times became a monoculture in Uzbekistan, the production of beans is now becoming a monoculture in Talas region.

In Kyrgyzstan, the basic list of such products may include wheat, where the structural deficit is an *accumulated* factor. Wheat produced in Kyrgyzstan due to natural and climatic factors has a relatively high price and low gluten compared to wheat that is imported from Kazakhstan and Russia. However the intent to increase domestic production of wheat and improve its quality through cultivar change will result in economic obstacles, since each unit of additional production will require increased aggregate costs.

Reduction of food access (as a result of effects of chronic stagnation of agriculture or unregulated market conditions when the shift in production preferences are driven by higher profitability of specific items) was rated as unlikely. Currently, imported commodities are able to close the food availability gap if the trade meets normative regulations.

At present, the food supply problems in Kyrgyzstan related to the structural deficit of production is **unlikely**, since the existing gap is compensated by imports, conditioned by compliance with exchange reserves legislation requirements.

Scenario 4. Reduction of food access as a result of conflicts and crisis situations.

The political situation in the country has been stable since 2010. The likelihood of serious border conflict, which may limit the control of the state over a part of the territory, stop agricultural production and food supply, are minimal[6]. The country's membership in international military and political organizations guarantees rapid military assistance. Therefore, the probability of the reduction in food access, associated with conflicts and crisis situations, is almost equal to zero (**highly unlikely**).

Scenario 5. Combination of various types of food deficit

There is also a possibility of a combination of different scenarios. For example, the combination of the existing structural deficit with a decline in the standard of living of the population and a decrease in the physical volume of production. If these occur at the same time the combined impact can lead to failures in domestic food supply (bread, oil, sugar, etc.). The situation may be aggravated by the emergence of panic moods, rumors.

At the same time, the scenario is **lower than 'unlikely'** as it requires most of the risks above to happen. The probability of such a scenario is much lower than the probability of each of the individual scenarios above to happen separately.

Conclusions

- Ensuring food security is one of the key functions of the State, which is implemented by the President and the Government of the Kyrgyz Republic. Implementation of food security measures requires a high level of coordination between all branches of the government, accurate understanding of the complexity of problems and solutions that correspond to the urgency and risk levels to food security, as well as government resources.
- The probability of scenarios occurring that may result in the destabilisation of food security in Kyrgyzstan are low, which ensures a stable level of food security. However, early warning systems and prevention of accumulation of negative factors is required to prevent the risks at an early stage.

1.2. Approaches of policy formulation to ensure food security in the Kyrgyz Republic

[6]The last and only conflict was related to the invasion of bandit formations on the territory of the country in 1999 from the territory of Tajikistan

Analysis of existing approaches and definitions of food security

The Rome Declaration adopted in 1996 has defined that "poverty is the main reason for food insecurity, and sustained progress towards poverty eradication is a decisive factor in improving access to food." It also formulated the definition of food security that is used today and includes the directions:

- physical availability of sufficient quantities of safe and nutritious food;
- economic access to food of adequate volume and quality, of all social groups of the population;
- autonomy and economic independence of the national food system of the country;
- reliability or ability of the national food system to minimize the impact of seasonal, weather and other fluctuations on food supply to the population of all regions of the country
- Sustainability, which means that the national food system is continuously developing and expanding.

устойчивость, означающую, что национальная продовольственная система развивается в режиме расширенного воспроизводства.

To date, there are laws, concepts and programmes on food security in all developed countries. Similar policies have been adopted in all EAEU countries. The definitions of food security adopted in the normative frameworks reflect the main approaches to the formation of food security policies.

Thus, the Law of the Republic of Kazakhstan[7] "On National Security of the Republic of Kazakhstan" states that food security indicates the condition of the economic security of the country, including the agro-industrial complex, in which the state is able to provide (1) physical and (2) economic access to the population (3) high-quality and safe food products, (4) sufficient to meet the physiological norms of consumption and demographic growth.

The Food Security doctrine of the Russian Federation[8] defines food security of the Russian Federation as the state of the country's economy that ensures (1) food self-sufficiency of the Russian Federation, (2) physical and (3) economic food access to every citizen that (4) meets the requirements on technical regulation in the laws of the Russian Federation, in (5) quantities not less than the balanced food consumption norms required for an active and healthy lifestyle.

Similar definitions are given in the national policies of the Republic of Belarus[9] and Armenia[10].

Legislation of the Kyrgyz Republic[11] defines food security as the state of the economy of the Kyrgyz Republic, in which (1) the country's food self-sufficiency is ensured and (2) physical and (3) economic food access to the population is guaranteed (4) in accordance with the established minimum standards for food consumption.

Thus, according to the definition, the state of food security of the Kyrgyz Republic is assessed by the following criteria:

(1) ensuring food self-sufficiency;

(2) physical food access for the population;

(3) economic food access for the population;

(4) the level of consumption, which should correspond to the minimum norms of food consumption.

It should be noted that unlike the above-stated definitions of food security in Kazakhstan and Russia, the food security definition in Kyrgyzstan lacks the criterion on quality and safety.

[7]Adopted 6 January 2012 № 527-IV

[8]Approved by the Russian Federation Presidential Decree dated 30 January 2010 No. 120

[9]Concept of national security of Republic of Belarus. – Decree of Council of Ministers of Republic of Belarus 10.03.2004 N 252.

[10] Law on Food Security of Republic of Armenia. Adopted 07.05.2002

[11] Law on Food Security of Kyrgyz Republic 4 August 2008 N 183

These requirements are stated in the article 7 of the Law that says that "quality and security of foods… should meet the requirements specified in relevant technical regulations, sanitary, veterinary, phytosanitary laws and regulations…"

The food security level characterised by these criteria is seen as a result that is achieved through a certain "state of economy" and is the basis for continued and sustainable food security.

A list of measures required to achieve the necessary "state of economy" in Kyrgyzstan is reflected in national programmes at country and sector levels, such as the National Strategy for Sustainable Development for 2013-2017, the Programme of Transition of the Kyrgyz Republic to Sustainable Development for 2013-2017, the Food Security and Nutrition Programme of the Kyrgyz Republic, and others. The latter two programmes have shifted the traditional vision of food security in the Kyrgyz Republic as systems that ensure criterial values and response to various food supply risks. They have expanded the objectives of food security into the areas of improving the quality of diet and health of the population.

The harmonisation of food security and nutrition issues with the global food security concept that is based on the four components: food availability; food access; food utilisation and stability of food supply, has been a critical change.

Discrepancies between the legislation of Kyrgyzstan and FAO's position in the definition of "food security"

In all of the above-stated definitions by EAEU, including Kyrgyzstan, food security is related to the capacity to provide food to the population, primarily from domestic production. However, it does not comply with the FAO position, which, among main provisions of the Food Security Concept, emphasises the key ones[12]:

- food security is not food self-sufficiency;
- a country has to produce a sufficient amount of food for its own needs, if it has comparative advantages;
- a country must be able to import the necessary quantity of food and meet the food needs of its citizens;
- the government must ensure physical and economic access to safe food.

This is a critical difference between the above-stated approaches of EAEU states, including Kyrgyzstan. In other words, there is a fundamental choice of economic policy to ensure food access – either to rely on own capacity, or focus on economic access to food considering the global food markets and to ensure access to such markets. Kyrgyzstan, as shown earlier, has made its political choice in favour of the achievement of adequate food security level based on food self-sufficiency through domestic production.

Turning this point into economic terms, it can be said that, in order to ensure economic access to food the state should focus its policy primarily on the support of food "supply", namely agricultural producers, or primarily on the support of the "demand", namely the consumer purchasing power. It should be noted that there is no pure "or-or" choice in practice, yet the choice is important.

In the first approach, the most important food security criterion is the level of own production of the basic types of food required to comply with the specified criteria. A country producing at least 80% of basic foods domestically is regarded as a food secure country. The advantage of this approach is the decreased dependence on external food markets, and the increased capacity of the state to ensure current and emergency food needs of the population through own resources.

The main weakness of this approach is the inability of domestic agricultural producers to ensure competitive (in terms of prices) agricultural production of certain foods. The efforts to

[12] N. Shagaida, V. Uzun. Food Security: Assessment Challenges. – Economic Matters. 2015. No. 5. P. 63—78.

reduce prices and increase overall production of critical food security commodities results in significant additional public expenditures to stimulate such production. Therefore, this approach requires an increase in direct and indirect public costs to achieve food security, which can be cost ineffective when costs and benefits are compared.

The second approach that complies with the FAO position uses the level of food consumption by the population as the main food security criterion. Moreover, the sources of the supplied food – domestic or imported – are not important. Lower prices and stable supplies are key. Thus, domestic agriculture is not seen as the only or principal food source; the achievement of food security is focused on obtaining food based on the active utilisation of international cooperation and assistance.

The advantage of this approach is the reduction of food prices for consumers, which increases economic access to food. This approach becomes more sustainable due to the increased openness of international food markets and reduced protectionist practices.

Another advantage is the significant demand on agricultural producers in the market demand, which enables them to produce foods that are in-demand, to export them without any restrictions and thus increase the effectiveness of their own production. Reduction of poverty in rural regions may be an additional benefit. Besides, this approach requires fewer efforts from the state for the support of agriculture to ensure food security.

The main risk of this approach is the rapid deterioration of food security in key food items, the production of which has not been properly organised in the importing country, in case of crisis or creation/increase of obstacles in the international food market. This can happen due to a sharp decrease in "supply" in the worldwide markets, e.g. because of the decline in production due to environmental factors, introduction of quotas by exporting countries, licensing, etc., amid food shortages on their domestic market.

Conclusions

- Food Security policy in Kyrgyzstan involves addressing challenges in economic development in general, achieving the proper level of the state of economic development to meet the population's food needs
- The set of criteria used to assess food security determines priority areas of food security policy. Kyrgyz legislation does not include food safety in the definition of food security. The limited criteria for evaluating food security may lead to a lack of comprehensiveness of the entire policy.
- The most important aspect of food security policy is food security risk assessment in the context of approaches used to achieve food security and the level of the minimum food consumption guarantees for the most vulnerable population groups.

In Kyrgyzstan, like other EAEU countries, food security policy is aimed at developing domestic agriculture production to ensure food security. Therefore, risk of food shortages that cannot be reduced by the import of food, including from EAEU countries, is very high. Domestic production reduces dependence on import, but requires support of the production of certain products that are not competitive under the equal conditions in the market.

In Kyrgyzstan, a number of social assistance programmes are actively used to support vulnerable groups of the population. This assistance is comprised of direct financial, in-kind, including food assistance. Assistance is one of the aspects of social justice of the society towards the most vulnerable groups, and the amount of assistance is the level of justice that society can afford. Despite the support provided, part of the Kyrgyz population suffers from inadequate Kcal intake.

Additional evidence of the inconsistency in food security policy is the lack of data on the amount of resources that are required to support non-competitive domestic staple food production

(instead of importing), and the cost to comply with the existing level of "social justice", i.e. support of the most vulnerable.

Public discussion of these policies, knowledge of the actual costs of food security could help optimize the food security policy.

1.3. Main Directions of Food Security Policy in the Kyrgyz Republic

The food security policy in any country depends on the level of economic development in terms of consumption and may have several priority levels (suggested by P.V. Mikhailushkin[13]).

Level 1 – protection of the least well-off groups of the population. The main solution is to increase production of the cheapest, easily produced foods on the list of basic foodstuffs.

Level 2 – radical improvement of food consumption patterns by means of a significant increase in the share of more expensive foods rich in proteins and vitamins. The main solution is to step up the requirements to food quality, which leads to a change in the demand structure and an increase in food expenditures, and an increase in the production of protein and vitamin-rich foods.

Level 3 – gradual increase of energy value and specialty foods in the diet. The main solution is to sharply improve food quality, increase the focus of domestic agricultural production on global food markets. This means focus on changing the structure and volume of demand and expenditures, increase food production for the domestic market and for export, ensure unrestricted import of delicacies, and domestically competitive foods not produced in the country to such extent as to meet the needs.

Level 4 – consumption of a wide range of environmentally safe foods. The main solution is to stimulate the production of organic food, use technologies instead of bio-stimulants, pesticides and herbicides, and ensure wide integration of the country into global markets for quality foods.

Kyrgyzstan is currently focused on the protection of the least wealthy groups of the population and, to some extent, on the improvement of food consumption patterns based on the increased share of proteins and vitamin-rich foods. This has been specified in the law of the Kyrgyz Republic "On food security in the Kyrgyz Republic"[14] and in the "Food Security Monitoring and Indicators Regulations of the Kyrgyz Republic"[15].

However, in the longer term the country should be willing to improve the level of food security and ensure improvements in food consumption patterns in order to have an active life. The achievement of food security objectives will require a results-based policy in the three directions.

First, the development of the economy so that it is capable of meeting food availability criteria established by the society. It should be based on the requirement of a systematic increase in the food availability for the population for a wide range of food availability criteria and agricultural production sustainability.

Second, an increase in the effectiveness of public authorities that aggregate the food security governance system. In the longer term, an effective system of food security governance with high performance achievements and public expenditures on its functioning should be created. Society should know how much food security costs. Relevant authorities within their mandates and functions should form an effective food security policy, own effective mechanisms and tools of

[13]P.V. Mikhailushkin Conditions and main criteria ensuring food security. http://cyberleninka.ru/article/n/usloviya-i-osnovnye-kriterii-obespecheniya-prodovolstvennoy-bezopasnosti-1

[14] Article 9 of the law of the Kyrgyz Republic "On food security of the Kyrgyz Republic" dated 4 August 2008 No. 183

[15] Approved by Decree of the Government of the Kyrgyz Republic dated 3 March 2009 No. 138

early warning, food insecurity risk prevention, impact on economic entities that contribute to achieving food security in the course of their activities.

Third, the improvement of institutions and regulatory frameworks, including laws, regulations, instructions, should create an environment conducive for managerial decision-making in the field of food security and contribute to the achievement of food security.

This direction should be developed based on requirements on the effectiveness of laws and regulations. They should be assessed by reviewing the ability of existing legal frameworks to implement activities of economic entities in the area of food supply to the population through cost-benefit analysis. Additionally the needs of agricultural producers and food importers, wealthy members of the society and vulnerable population groups must be reviewed and included.

Conclusions

- The whole society with its diversity of consumer demand, must constantly move towards a higher level of consumption, determined by the quality and nutritional value of food. This should be one of the objectives of the food security policy.
- Moreover, despite the extent of development of the most wealthy population groups, support to the poorest and vulnerable groups should be considered as a priority of the food security policy.
- The food security policy should focus on the following key strategic directions: accelerating economic development, improving governance and enhancing the legal framework for food security.

2. Food Security Governance in the Kyrgyz Republic

2.1. Normative frameworks on food security

Kyrgyzstan has a reasonably developed normative framework system (laws and regulations) that guide relations in dealing with food security issues. The main laws and regulations that regulate the food security issues are as follows:

Law "On Food Security" (dated 4 August 2008 No. 183) introduces a fundamental regulation. The definition of "food security" therein has a key impact on the determination of food security policy directions (for details see 1.2 Food Security Management Approaches in the Kyrgyz Republic).

The law specifies that the main subjects of legal relations in food security are the population of the country, vulnerable groups, domestic economic entities and appropriate executive authorities within the scope of their competence. The regulation of legal relations between the subjects is intended:

- to define the criteria for national food self-sufficiency;
- to provide state support to food production;
- to coordinate actions and decision-making related to stable and uninterrupted food supply in the country;
- to organise emergency response operations in case of risks to food security;
- to provide information on monitoring and analysis of food security;
- to ensure food quality and safety.

Analysis of the Law in terms of relations between the four pillars of food security - availability, access, utilisation and stability, has shown the following:

"Food availability" is formed of the combination of state materials reserves, imports, food aid and domestic production. Each of these components of "availability" is specified in the Law (item 4 art. 3 of the Law).

"Food access" of the population is divided into physical and economic access in the Law. The physical access is not defined in any other way but "foodstuffs must be accessible both physically and in terms of purchasing power" (item 5 art. 3).

The definition of the objective of food security describes food access as the quantity of food in relation to the minimum normative consumption. Economic access is specified in some articles of the Law, mainly, in art. 4 on the main directions of state support of food production, in art. 5 on the crisis response measures, and in art. 9 on food security achievement criteria. However, art. 9 describes food access of vulnerable groups only, rather than of all social groups.

The regulation of *"Food utilisation"* is related to the importance of quality and safety assurance (art. 7), yet this article leaves management of these issues to the relevant technical regulations, sanitary, veterinary, phytosanitary laws and regulations, etc.

The Law lacks articles that regulate nutrition issues. However, it should be noted that currently the Government has initiated the amendments to the draft law "On food security in the Kyrgyz Republic". The law suggests that healthy nutrition is considered when dealing with food security issues in the Kyrgyz Republic. The proposed amendments to the draft law are under consideration in the Zhogorku Kenesh of the Kyrgyz Republic.

The "Stability to food security" component is regulated through state interventions into price formation in food security crisis situations – guaranteed raw material prices, delivery and distribution of basic food items at affordable prices among vulnerable groups. Article 6 proposes monitoring and indicator analysis in the field of food security, which implies continuous tracking of the situation.

The analysis of the Regulation "On monitoring and indicators of food security" and regulation "On approval of average physiological norms of consumption of basic food items for the population" is given in the paragraph 2.4. Monitoring and evaluation of food security and nutrition.

In addition to the above key normative frameworks, other applicable policies regulate relations within every food security component.

Food availability

Food availability is determined by own production, state material reserves, imports, food aid. The key normative frameworks regulating the relations in the "availability" component are as follows:

The objectives of the **Law on the agricultural development are to ensure food security** (dated 26 May 2009 No. 166), develop the agriculture sector, create conditions for competitive agricultural production and develop social and other infrastructure for rural production. The provisions of the Law are focused on the contribution to achieve high productivity levels in national agriculture and achieving food security through increased food production. However, the law does not separate the standards of agriculture development regulation and food security regulation.

The **Regulations on the procedures of interventions into the market of agricultural products, raw materials and food** (Decree of the Government of the Kyrgyz Republic dated 27 November 2008 No. 651) specify the article 5 of Law on food security and are intended to protect and regulate domestic market based on state-led purchasing interventions and commodity interventions with the purpose of market stabilisation of agricultural products, raw materials and food.

Protection of the domestic market is ensured by the **Law "On protective measures"** (dated 31 October 1998 No. 141) that regulates the levels and terms of food supplies to the country, which can seriously harm or threaten domestic producers, as well as the interests of the Kyrgyz Republic.

The availability of the sufficient food amounts in the state material reserves is the next component of food availability. The **Law of the Kyrgyz Republic "On state material reserves"** (dated 26 May 2014 No. 78) regulates the creation, placement, storage, utilisation, replenishment, rotation and replacement of state material reserves. One of the purposes of the Law is to implement national and targeted food security programmes. The provisions of the Law focus mainly on the distribution of available or received stocks and have no regulation on mitigating the stock shortages.

Food aid is another component of the food availability component, which is regulated by the **Regulation "On the procedure of receipt and distribution of humanitarian supplies in the Kyrgyz Republic"** (Government Decree of the Kyrgyz Republic dated 10 October 2007 No. 459). The regulation covers distribution of the received aid, and lacks mechanisms of sourcing for aid depending on the shortage of basic foodstuffs.

Import, as a mechanism of ensuring food security, is provided in the Law on food security, where national budget funding of basic food supplies can be used in order to ensure food security.

Thus, the regulatory framework in the "Food availability" component covers all of its elements: regulation of own production, state material reserves, imports and food aid. However, as noted above, each of normative document has areas where insufficient regulation measures are described, which creates risks during the food security governance process.

Food access

The main objective of this component is to ensure stable access to food for vulnerable groups of population and their protection from high food prices. The key policies regulating the relations in the "Food access" component refer to the regulation of social assistance measures and do not refer to the subject of this research.

Food utilisation

The objective of this component is to ensure safety of produced and imported foods, as well as the access of the most vulnerable groups (mainly, children) to good nutrition, public access to food enriched (fortified) with essential supplements.

Among the state instruments intended to ensure safety of foods are various technical regulations, sanitary and epidemiological laws and regulations, production and sales licences.

Law on the principles of technical regulation (dated 22 May 2004 No. 67) is one of the basic laws specifying requirements to technical regulations, accreditation, certification, as well as to government control thereof. The main purpose of developing the **technical regulations** is to ensure protection of life and health of people while consuming foods, as well as to prevent producers and distributors from misleading actions. There are multiple technical regulations related to food safety – safety of bread, bakery products and macaroni products, iodised salt, soft drinks, etc. Policies on environmental safety, food production hygiene are also established.

The measures to protect public health are also secured by **Law on public health care** (dated 24 July 2009 No. 248) and **sanitary regulations and standards** (SRS). They define sanitary requirements to the location, structure, layout, sanitary condition, maintenance of enterprises, to the working environment and personal hygiene of the personnel, etc. The goal is to prevent emergence and spread of infectious and non-infectious diseases among the population of the Kyrgyz Republic. Sanitary rules also include legal liability in terms of violation of the requirements.

Law on safe drinking water (dated 25 March 1999 No. 33) regulates relations in the area of utility and drinking water supply system and assurance of drinking water quality.

Law on licensing and permission system (dated 19 October 2013 No. 195) regulates the licensing of specific types of activities, actions and operations, and is implemented in order to prevent incompetent producers and sellers from entering the market, particularly food market and causing harm to life, health of people, environment, property, public and national security, as well as to manage limited public resources.

Basic normative frameworks regulating consumer rights and protection:

The objective of the **Law on consumer rights protection** (dated 10 December 1997 No. 90) is to protect consumer rights to purchase goods of proper quality and safe for consumers' life and health. The law specifies requirements to information specified in the labels in order to assure the food quality. Such information should contain the name of the food item, information about manufacturer, country of origin, expiry date, as well as content and ingredients.

Law on advertising (dated 24 December 1998 No. 155) contains mechanisms designed to protect public health. The law prohibits any advertising of tobacco and tobacco goods, as well as intends to protect the minors during the production, placement and dissemination of advertising. The Law covers the norms intended to prevent breach of laws, describes the norms of inappropriate advertising that can mislead the consumers of advertising or cause harm to health.

The state legally binds producers to inform consumers about the specifications of products, leaving them free to choose quality products, and concurrently supervises and monitors the execution of the norms.

Basic normative frameworks regulating nutrition improvement among certain population groups and increase in quality of foods in terms of vital ingredients are as follows.

Infants and young children. The Law "On protection of breastfeeding of children and marketing regulation of products and means of bottle feeding of children" (dated 17 December 2008 No. 263) is designed to protect health of children, particularly, infants and young children, by protection and promotion of breastfeeding of children, regulation of marketing of foods and means and methods of bottle feeding.

Children attending preschool settings (PSS). Law on preschool education (dated 29 June 2009 No. 198) defines the responsibilities of PSS to serve food to children according to their age and physiological standards of nutrient intake. The Law defines the norms of food supply to children in PSS such as supply of safe good-quality foods and responsibility for the foods supplied. The law designates the public authority in charge of supervision and monitoring of food quality.

School students. In 2006, according to the Decree of the President of the Kyrgyz Republic "On organizing the feeding for 1-4 grade students of general education schools of the Kyrgyz Republic" (dated 12.07.2006 No. 372) and the Government Decree on approval of regulations "On organizing the feeding for students of general education schools of the Kyrgyz Republic" (dated 18.09.2006 No. 673), free school meals are organized for 1-4 grade students of all public and municipal schools, in order to create necessary conditions for favourable learning environment and ensure additional social assistance, with a value of 5 KGS per student per day (7 soms from 2008, 14 soms in Bishkek). In 2014, the Government Decree on general guidelines for school meals development in the Kyrgyz Republic (dated 26 December 2014 No. 734), the purpose of which is to strengthen the state guarantee of school meals provision, was adopted to improve the school meals system.

Students of vocational and specialized schools. Law on primary vocational education (dated 26 November 1999 No. 129) provides for the state support through grants and benefits, including the school meals, to the primary school students of the national educational institutions.

The following laws have been adopted to improve nutrition of the country's **population**. Law on prevention of iodine deficiency disorders (dated 18 February 2000 No. 40) determines the

system of public measures to prevent iodine deficiency disorders in the Kyrgyz Republic. Law on fortification of wheat flour (dated 11 March 2009 No. 78) determines the legal basis for the supply of safe flour fortified with vitamin-mineral or mineral supplements for the population of the Kyrgyz Republic.

Thus, the regulatory framework in the "Food utilisation" component covers all essential elements: safety of produced and imported goods, consumer protection, supply of safe and accessible foods to the most vulnerable groups, improvement of public nutrition by means of access to foods containing vital ingredients. The important condition of implementation of the legislative requirements, apart from effective law enforcement practices, is the adequate funding of all activities. However, this part has certain issues that have impact on the efficiency of legislative execution.

Stability of food security

The goal of the component is to ensure stable food supplies, which implies stability of agricultural production amid global warming, rational use of natural resources, prevention of their degradation, sustainable pricing and sufficiency of financial resources for the procurement of foods from abroad in the times of crisis.

The sustainable food production is primarily based on the sustainable natural factors of agricultural production. In this regard, the **Law "Common technical regulations on ensuring environmental safety in the Kyrgyz Republic"** (dated 8 May 2009 No. 151) has been adopted, in order to regulate the production processes that have been or will be applied to economic or other entities with a class of hazard or whose planned activities need to be assessed for the environmental impact, as well as the processes of storage, transportation and disposal of products.

Law "On environmental protection" (dated 16 June 1999 No. 53) determines the policies and regulates legal relations in the area of environmental management and protection of environment in the Kyrgyz Republic.

Decree of the Government of the Kyrgyz Republic on approval of priority areas of climate change adaptation in the Kyrgyz Republic until 2017 (dated 2 October 2013 No. 549) determines support of specific measures focused on the mitigation of negative consequences of climate change for the population, country and economic sectors on priority areas: water resource, agriculture, power system, emergency, healthcare, forests and biodiversity.

The Kyrgyz Republic is the member of international conventions on climate change (**Law of the Kyrgyz Republic "On the Kyrgyz Republic joining the United Nations Framework Convention on Climate Change and the UNECE Long-range Transboundary Air Pollution** dated 14 January 2000 No. 11; **Law of the Kyrgyz Republic "On ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change"** dated 15 January 2003 No. 9)

Kyrgyzstan has the legislative basis that ensures the management of natural resources, including land-use management.

Land Code (dated 2 June 1999 No. 45) regulates land relations, procedure of exercising and termination of land rights and their registration. It also focuses on the creation of land market relations in the conditions of state, municipal and private ownership of land and rational use and protection of land.

Law "On protection of soil fertility of agricultural land" (dated 10 August 2012 No. 165) regulates relations in the area of protection of soil, fertility, maintenance of quality and protection from degradation and other negative developments related to the ownership, use, disposal of agricultural land.

Law "On conversion (transformation) of land use" (dated 15 July 2013 No. 145) specifies legal basis, conditions and procedure of conversion (transformation) of land from one category to another or from one type of land to another.

According to the **Regulations on monitoring of agricultural land of the Kyrgyz Republic** (dated 1 March 1999 No. 115), agricultural land is monitored for the timely detection of land use change, assessment, prevention and control of negative consequences.

A number of laws and policies exist on regulating land use focusing the certain categories of land. The use of pastures is regulated by the **Law of the Kyrgyz Republic "On pastures"** (dated 26 January 2009 No. 30). The law is designed to manage, improve and use the pastures. The use of forests is regulated by the **Forest Code of the Kyrgyz Republic** (dated 8 July 1999 No. 66). The forest legislation focuses on the conservation, protection, reforestation, rational and sustainable forestry, preservation of biological diversity of forest ecosystems, increase in the environmental and economic potential of forests, satisfaction of public needs in forest resources.

The water legislation contains the following key laws and policies:

Water Code of the Kyrgyz Republic (dated 12 January 2005 No. 8) regulates water relations in terms of use, conservation and development of water resources for the guaranteed, sufficient and safe water supply to the population of the Kyrgyz Republic, conservation of the environment and rational use of water resources of the country.

Law of the Kyrgyz Republic "On water" (dated 14 January 1994 No. 1422-XII) regulates relations in the field of use and conservation of water resources (waters), prevention of environmentally hazardous impact of economic and other activities on water bodies and water facilities and their upgrading, strengthening of legality in the field of water relations.

Decree of the Zhogorku Kenesh of the Kyrgyz Republic "On water irrigation self-sufficiency of the Kyrgyz Republic" (dated 26 June 2008 No. 566-IV) focuses on the prevention of ethnic conflicts, protection of constitutional rights of citizens and national food security.

Decree of the Government of the Kyrgyz Republic "Guidance on Surface Water Conservation of the Kyrgyz Republic" (dated 14 March 2016 No. 128) regulates the issues of surface water conservation from pollution, clogging and depletion during various types of business activities carried out by water users regardless of their status, and also regulates the procedure of surface water conservation measures.

The stability implies the creation of continuously functioning food price monitoring system. The regulation is based on the **Government Decree "On state regulation of prices of certain kinds of basic foodstuffs"** (dated 22 April 2009 No. 242) that focuses on the regulation of prices for the basic foodstuffs and ensuring economic access to foods for vulnerable populations.

Thus, the normative framework in the "Stability of food security" component covers essential elements: mitigation of risks for stable agricultural production amid global warming, avoidance of degradation, and rational use of natural resources, price stability. It is important that sufficient attention of the government to the mentioned risks is given and that the risks are reflected in the targeted programme designs and action plans, as well as that sufficiency of funding of all measures is ensured.

Conclusions

- The normative framework only partially reflects four pillars of food security (availability, access, utilization, stability).

- Major regulatory gaps are also observed. For example, the Law on Food Security does not focus on the physical access to food as a separate component, while economic access to food is not reflected to a full extent – it only focuses on access of the most vulnerable population groups and during food crisis, rather than for all population at all times. Food utilization pillar of food security is not distinguished separately in the law, but is indicated rather indirectly, as the means to achieve food security "if quality, energy value and safety of food is ensured". Responsibility to ensure adherence to the normative requirements to ensure food security is described insufficiently, the mechanism of regulation of inter-agency coordination (horizontal and vertical) for the integrated approach to food security issues is absent.
- A developed normative framework is existing for the regulation of relations within each food security pillar ("Availability", "Access", "Utilisation", "Stability"). However, it also has deficiencies. The effectiveness of implementation of the normative frameworks is limited due to unidentified responsibilities of relevant authorities for the implementation of the established norms, lack of funding, as well as insufficient attention of authorities to the risks for the agricultural production related to the need for climate change adaptation.

- **Recommendations**

- The Law "On food security" should cover all pillars of food security by introducing comprehensive and adequate regulation of each of them: availability, access, utilisation and stability. The essential point is to fill the legal gap concerning the public nutrition.
- The integrated approach should also imply the specification of the food security governance mechanism, defining responsible parties for not achieving food security objectives, including the failure to fund it duly.
- The accession of Kyrgyzstan to EAEU, with the anticipated full implementation of the four freedoms – goods, services, capital and labour force should ensure the elimination of any potential barriers to the stable supply of food commodities to the country, which are produced in abundance and at favourable prices in the member states of EAEU. It is necessary to assess new opportunities of ensuring food security that should be reflected in the legislation.
- The list of applied food security measurement indicators should be clarified and expanded in four key areas of food security, and all indicators should be given the target values. Besides, it makes sense to introduce integral [*composite*][16] indicators to assess food security in the Kyrgyz Republic and respective methods of their calculation, to strengthen the mechanism and tools of real-time provision of information on the food market situation.
- Addressing food security related issues should be considered as the cross-sectoral task, which should be reflected in the relevant policies. The clearly defined roles and responsibilities of authorities for the policy implementation in the laws and regulations shall strengthen the process of interaction in the implementation of the food security and nutrition programme.

2.2. Food Security and Nutrition Strategies and Programmes

The Kyrgyz Republic has a range of targeted policies that reflect the food security as a whole or in its separate components. The relevant policies and strategies of Kyrgyzstan are:

[16] Translator's specification

- National Sustainable Development Strategy of the Kyrgyz Republic for 2013-2017 (hereinafter referred to as NSDS);
- Programme of Transition of the Kyrgyz Republic to Sustainable Development for 2013-2017 (hereinafter referred to as PTSD);
- Food Security and Nutrition Programme of the Kyrgyz Republic for 2015-2017 (hereinafter referred to as Programme).

These startegies and programmes contain the policies and measures designed to implement the integrated system approach in understanding the food security issues and in coordinated efforts to achieve the goals set.

Kyrgyzstan has also adopted and developed a range of policies and programmes such as:

- National Healthcare System Reform Programme of the Kyrgyz Republic "Den Sooluk" for 2012-2016;
- Strategy of Drinking Water Supply and Disposal System Development in Residential Areas of the Kyrgyz Republic until 2026;
- Social Development Programme of the Kyrgyz Republic for 2015-2017;
- Priority Areas of Climate Change Adaptation in the Kyrgyz Republic until 2017;
- National Quality Infrastructure Development Concept of the Kyrgyz Republic until 2020;
- Transport Development Strategy of the Kyrgyz Republic for 2012-2015;
- Government Programme of the Kyrgyz Republic "Trust and Unity";
- Public Health Care and Promotion Strategy of the Kyrgyz Republic until 2020 ("Health – 2020");
- SUN Movement Strategy in the Kyrgyz Republic for 2016-2020.

These and other similar programmes focus on the addressing the issues in relevant economic sectors and social sphere, which contain policies and measures on specific food security related issues.

According to the authors of this study, the food security policy implies the integrated understanding of the complex set of issues and the system approach to their solution. The analysis of the above targeted programmes has shown significant gaps in integrity and completeness of food security policy, mainly in country-level policies. These gaps entail no need for the analysis of sectoral targeted programmes since as this will not influence the results of the study. Therefore, the below analysis of food security policy covers only country-level policies and programmes.

National Strategy for Sustainable Development of the Kyrgyz Republic for 2013-2017

The problem analysis in this strategy does not cover food security as a separate concern and is seen in the context of environmental threats and risks, including the biodiversity decrease, degradation of agricultural land, scarcity of irrigation water and shortage of drinking water and adaptation to climate change. The significant national dependence on international food markets is seen as a risk.

However, food security has been declared as one of the four key focus areas of the economic policy in the medium term. Achievement of food security is viewed through increased domestic production and agricultural productivity, as well as through creation of sufficient quantities of state material reserves.

The NSDS section of agricultural sector development directly states the objective of food security. In the context of achieving food security, the section places special emphasis on irrigation projects through construction and rehabilitation of irrigation systems.

Food security related indicators have not been set in the NSDS. The plan of NSDS implementation has not been developed. However, it has been reflected in the plans of the

Government of the Kyrgyz Republic and in the plans of the ministries and agencies, including addressing food security related issues. No public reports have been made on NSDS implementation, including in the component of agricultural development and food security. However, the reports are prepared on a quarterly basis and submitted to the Presidential Administration of the Kyrgyz Republic, namely to the Department of Financial and Economic Analysis and Monitoring of Development, which is the Secretariat of the National Council for Sustainable Development of the Kyrgyz Republic. The results of performance of the Government of the Kyrgyz Republic have also been reported and duly submitted to the Zhogorku Kenesh of the Kyrgyz Republic.

Programme of Transition of the Kyrgyz Republic to Sustainable Development for 2013-2017

PTSD includes the issues of addressing food security issues in the section of food security and diet quality and in the agricultural development section.

The document describes in detail the key issues of food security in Kyrgyzstan: lack of fair government oversight system of statutory compliance in the area of antimonopoly regulation, food price control, state system of monitoring and early prevention of food price increase; incompliance with legal requirements on sufficient financing of grain procurement for the state material reserves; pending issues of inventory management; low control of food safety and incompliance with technical requirements.

The document declares that the main priority direction for 2013-2017 in the area of addressing food security issues is the governance system reform and working in the following areas to achieve food security (objective tree is provided in Annex 1).

- Ensuring food availability including the issues of: meeting domestic needs of the country in agricultural and processed products; timely allocation and distribution of food reserves.
- Ensuring food access including the issues of: antimonopoly regulation and improvement of the government pricing policy; enhancement of efficiency of the public treasury management policy in food security.
- Improvement of food utilisation including the issues of: ensuring state control over safety of produced and imported agricultural products; ensuring access to safe foods.
- Ensuring stability to food security including the issues of: ensuring food security to maintain macroeconomic stability; ensuring access to food commodities for vulnerable populations according to standards; improvement of quality and access to food security related information.

The PTSD uses a range of indicators to assess food self-sufficiency of the population: “share of undernourished population” (of the total population) and “level of self-sufficiency of basic food (staple foods)” with no target values set. The PTSD implementation plan in the area of food security has been reflected in the plans of the Government of the Kyrgyz Republic and in the plans of ministries and agencies. However, the implementation of food security components of the PTSD has not been reported to the public. The results of PTSD implementation have been reported to the Government of the Kyrgyz Republic and submitted to the Zhogorku Kenesh of the Kyrgyz Republic.

Food Security and Nutrition Programme of the Kyrgyz Republic for 2015-2017

This is the main food security programme that currently operates. The status [in terms of the document hierarchy][17] of the Programme is lower than that of NSDS and PTSD. The Programme

[17] Translator’s note

includes the measures in four areas: (1) Ensuring food availability in the country, (2) Ensuring physical and economic access to food, (3) Ensuring quality, diversity and energy value of food, (4) Food safety control and supervision.

Every component of the Programme has policy priorities that are implemented by a set of sub-objectives (the objective tree is provided in Annex 2).

The Programme has no food security indicators. It has a detailed plan of implementation. However, it has no public performance reports.

As we can see, the Programme with minor deviations contains the PTSD-adopted principle of harmonisation of approaches to food security with the globally adopted food security pillars.

Generally, the analysis of NSDS, PTSD and the Programme (hereinafter referred to as the Documents) has shown the following.

a. Analysis of duplication and inconsistency

First, the actions to ensure food security in Kyrgyzstan are duplicated measures within one policy paper.

Thus, the PTSD section "Food security and nutrition quality" contains the measures targeted at development and launch of new Programmes on crop farming development and soil enrichment; Programme for food and processing industry development until 2017; development and introduction of mechanisms of restoration and strengthening of selection and breeding, and other measures.

However, these measures duplicate to some extent the measures described in the same policy but in the "Agricultural Development" section. These measures include the development of processing industry, enhancement of effectiveness of land resources use, creation of contemporary market infrastructure for the agricultural sector, including restoration and strengthening of selection and breeding.

Second, the objectives and measures specified in NSDS, PTSD and the Programme are inconsistent with the key food security policy measures of the various policies.

Thus, the "Access" component in PTSD must solve the following tasks: antimonopoly regulation and improvement of the government pricing policy; enhancement of efficiency of the public treasury management policy in terms of food security.

However, the Programme sets three priorities for the same objective: ensuring stability of the domestic consumer market; state support to increase incomes of vulnerable populations; enhancement of efficiency of the government food aid to the vulnerable groups. In other words, the measures set for the same objective in various programmes rarely coincide while they should form a single, consistent objective tree.

Third, PTSD and the Programme have inconsistency in the composition of the food security policy component. Thus, the "Stability" component in the Programme is not separated in its action plan. In NSDS, the food security policy is not viewed by the four pillars of food security as is commonly practiced globally.

Fourth, all the Documents have either very restricted list of indicators for the food security policy performance, or have no such indicators, which prevents from effective monitoring of measures taken to achieve food security objectives.

Identified deficiencies are substantial as they demonstrate the lack of the system approach to shaping and implementation of the food security policy (it is impossible to plot the integral objective tree).

Ensuring food security is a cross-sectoral task that needs a project-oriented approach. The food security policy unity is demolished by the disintegrated approach with the focus on local non-directly related measures, as well as by not using the project-oriented approach, or significant deficiencies during its implementation. The existing policy can be successful in certain areas, yet

will not allow to ensure a high level of food security for the whole country, and to achieve higher results at lower public costs.

This fact misleads the ministries and agencies planning activities in terms of implementing measures to ensure food security and will definitely lead to problems during attempting to apply the programme-based budgeting to achieve food security policy goals.

b. Analysis of the determinacy of political and governance decisions.

First, the food security problems in the described policies have been mainly identified in terms of consequences, rather than root causes. In fact, such deficiencies as the lack of any management or monitoring system are the consequences of other, deeper problems, determined by the absence of political attention or decisions. The resulting consequences are the non-inclusion of food security risks into the list of main challenges and risks for the economy, uncertain principles, objects and subjects of policy, key beneficiaries, priority level of resource allocation.

Second, law "On food security" and the Documents declare the food security policy to be focused mainly on the development of domestic agricultural production. However, in reality, the level of domestic food production (mainly, sugar, vegetable oil) has failed to meet the statutory level for a long time (for details see paragraph 3.1. "Food availability"). The domestic consumption is secured mainly through imports. This fact has not become the subject of the focused policy to resolve the situation. In fact, an alternative approach of ensuring food availability is applied – through international food markets. This implies the declarative nature of certain food security policy measures.

Third, the Documents do not set targets for increasing the level of government guarantee of food consumption. As noted above, according to the laws of the Kyrgyz Republic, there are seven levels of food security – the first level sets average daily per capita consumption at the level of 1800-2300 kilocalories and the seventh level implies the situation when the nature of food consumption patterns can improve the human nature and prolong their active life.

Fourth, the PTSD specifies that the government institution systems regulating food security issues should be reformed to address food security issues effectively and systemically, including creation of the new coordination mechanism. However, there are no suggestions on what kind of mechanism this should be. This is caused by uncertainty of principles, objects and subjects of the policy, key beneficiaries and level of priority of resource allocation.

The vague policy leads to the untargeted implementation measures. It is not clear how the reforms should take place – either through creation of a separate system of food security governance system with additional authorities or through improving the existing system by introducing innovative solutions in economic and social sector management. This leads to inaction in this regard. Another question is how to develop an efficient planning and management system, which obviously should use the project-oriented approach and emphasise important business processes.

c. Analysis of the level of certainty of economic decisions.

First, the Law "On food safety" requires sufficient level of food self-sufficiency. The considered Documents are intended for stimulating the development of domestic agricultural production. It is not deniable that the development and growth of agricultural production in general, as well as a reliance on high-yielding types of products is an advantage of the policy on agricultural development.

However, policy of agricultural development and policy on food security intersect with each other, yet these are not coinciding policies. The former should be based on the criterion of effectiveness of agricultural production, its self sufficiency, while the latter should be based on the criterion of achieving food security objectives, which can be achieved not only by increasing

production and its efficiency, but also by targeted and costly measures to support the necessary production structure.

The programme offers a solution to this problem by identifying farmers producing basic products (wheat products, potato, fruits and berries, vegetables, sugar, vegetable oil, milk and dairy products, meat and meat products, eggs). The Programme suggests providing state support to these producers. However, this mechanism is not defined in the NSDS and PTSD, which leads to the lack of clear investment and structural policies in agriculture, to the ineffective distribution of public funds.

Second, the economic policy to ensure the economic access to food is associated with supporting of the "demand", i.e. the purchasing power through the direct support of consumers and/or supporting of the "supply" of foods predominantly through the support of food market actors, as well as measures on the development of competition. In the NSDS and PTSD, there is no clear preference of one of the listed options; accordingly, there are measures for increasing the domestic production of foods, and measures for the social support of vulnerable members of the society.

In reality, these policies are interconnected and in some way compete for the resources that the society can allocate to the implementation of appropriate measures. This requires an optimal balance between economic and social priorities. The unaccented policies lead to their multi-vector nature, which, with limited resources, can become high costly and inefficient in all areas.

Third, the need to ensure the quality and safety of foodstuffs is set in the Law "On food security". This is also indicated in the considered Documents. Moreover, the policy of food quality and safety is not seen as a balance of benefits and costs between the adoption of a predominantly strict and costly safety monitoring system and the adoption of less strict requirements.

The former may ensure greater level of consumer safety, but tighten market access and control over the activities of food business entities, which can reduce competition, increase costs and, finally, negatively affect the price of food products and may encourage corruption. The latter reduces the administrative and content load on food producers but will inevitably shift some of the risks of food safety to the consumer.

The unaccented policy in this regard can also lead to its multi-vector nature, and high costs, respectively.

d. Analysis of the certainty of decisions in terms of the food and/or economic crisis and the shift in consumer demand.

First, the Documents do not cover the issues of demand management (market behaviour of consumers) and supply management (market behaviour of sellers). The necessity of these issues occurs during the time of food and/or economic crisis, the speculative demand on the food market and the shift in the consumer demand to the cheap food sector and to the segment of less controlled food sales points.

A policy is needed to cover these risks and to solve the task of market stabilisation based on the use of predominantly administrative mechanisms or predominantly market mechanisms. None of the considered Documents sees this issue as an object of management.

Second, the Documents do not cover the issues of food safety management and consumer awareness under normal conditions, for example, dietary preferences related to the consumption of large amounts of animal fats. A policy is needed to increase the requirements for public awareness of the characteristics of foods they purchase in terms of improving health safety and improving the quality of nutrition and raising awareness of consumers. Absence of such policy leads to the unbalanced nutrition, uninformed consumption (not taking into account the nutritional value of foods), as well as to various diseases caused by inadequate nutrition.

Third, the Documents do not cover the issues of demand management (consumer behaviour) in such delicate topics as traditions and norms of food consumption. This refers to the tradition of

large-scale events, for example, feasts, funeral feasts, which require large amounts to be spent on food. The policy of influencing the consumer behaviour is required to optimise it. As a result of the lack of such policy, people make excessive expenses to purchase food for large-scale events and then sharply reduce their expenditures to ensure required consumption and savings.

Fourth, the Documents contain no measures to enhance the efficiency of food security monitoring.

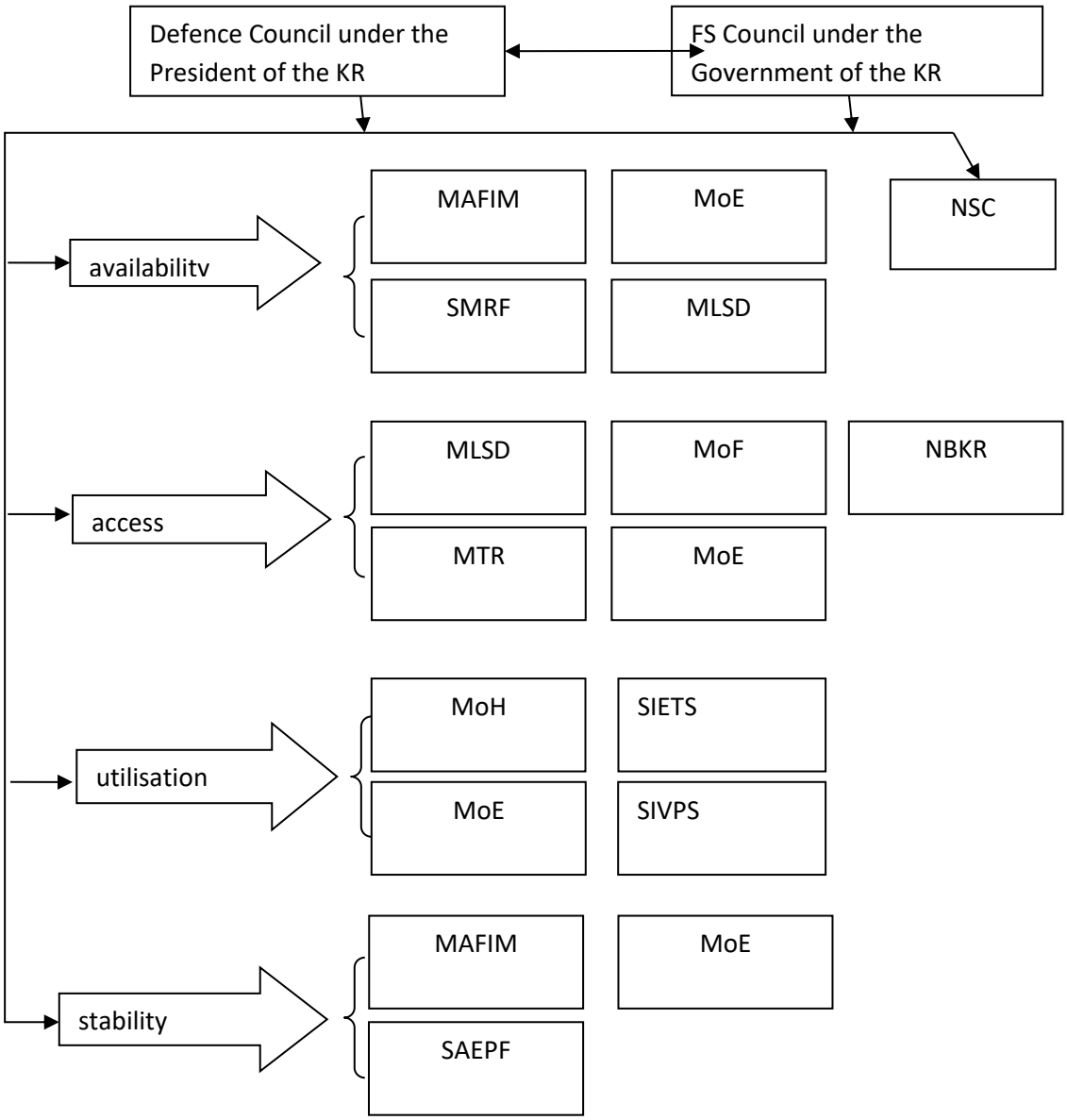
Recommendations for the development of targeted food security programmes

- Ensuring food security is an inter-sectoral task. It is necessary to develop a single "objective tree" to implement the policy of ensuring food security in the country, regardless of which ministries and departments the specific target relates to. This "objective tree" should cover all four components of food security: availability, access, use and stability. For the "objective tree" of the food security, appropriate monitoring and evaluation indicators should be formulated.
- The food security policy is generally reflected in a variety of country and sectoral strategies and programmes. All policies covering the issues of food security must form a logically (taking into account the fact that this is an inter-sectoral task) and hierarchically aligned system; they need to ensure the certainty of all decisions related to governance: in the field of policy formation, the choice of alternatives to economic decisions, the crisis management.
- It is necessary to avoid substituting the policies for ensuring food security with policies in other areas. To do this, it is important to ensure accurate formulation of food security policies, a clear division of targets and measures directed at ensuring food security with tasks and measures set in other related policy areas. It is also important to achieve consistent wording of goals / objectives in various programmatic targets. Changes in country programmes (goals, priorities and targets) should be adequately reflected in relevant parts of all sectoral policies.
- A set of measures should be targeted at improving the system of food security resource allocation, which should be implemented based on the principles of programme budgeting and linked to the targets defined in the common food security objective tree. Objective tree implementation mechanisms should be based on application of project and results-based approach with clear distinction of all key business processes and responsibilities of government agencies and their managers.
- The third set of measures should be targeted at creation of effective food security monitoring system in Kyrgyzstan, which should be developed in accordance with the targets defined in the common food security objective tree and reflecting food security situation in all four pillars of food security (availability, access, utilization, stability).

2.3. Institutional Food Security Mechanism

The Kyrgyz Republic has a functioning food security institutional mechanism.

Diagram 1. Food Security Institutional Mechanism



The state agencies specified in the diagram have to take part in implementation measures of at least one of the pillars of food security – availability, access, utilisation of food and/or stability of food security.

According to the **Regulations on the Food Security Council of the Kyrgyz Republic** (Decree of the Government of the Kyrgyz Republic dated 8 October 2007 No. 454), it is an advisory body formed by the Government of the Kyrgyz Republic and designed to make immediate decisions related to the stable and uninterrupted supply of food to the country and measures on food quality improvement. The Council may request information, hear information, reports, involve heads of executive agencies, business entities and others, form task forces and other groups on the issues within its competence, as well as submit proposals regarding food security situation to the Government of the Kyrgyz Republic.

Thus, the Council is an entity with limited rights that may not exert a significant impact on food security situation within its power.

National Statistical Committee (NSC) is the central statistical agency of the country. Its tasks are to collect, process, analyse and distribute statistical information about large-scale economic, social, demographic and environmental developments and processes in the country. NSC issues a monthly bulletin on food security and poverty, which contains information on food security in the country. It combines and organises materials about food availability, food production, indicators of food access, information on food consumption per capita. It also contains information on average retail prices of foods, food balance by basic foodstuffs, nutritional balance in the form of energy value, as well as food security indicators.

According to the **Regulations on the Ministry of Agriculture, Food Industry and Melioration** (MAFIM), its mission is to ensure food security, development of agricultural production and food industry.

The scope of MAFIM activities mostly include the issues of the "availability" and "stability" components of food security. Among the main tasks of MAFIM under the "availability" component are the formulation and implementation of the unified state policy on agriculture, food and processing industry, fishery, as well as veterinary-sanitary, phytosanitary security and safe circulation of pesticides and agrichemicals, veterinary drugs; meeting the domestic needs of the state in agricultural products.

The "stability" issues refer to meeting the needs in water resources of all water consumers; performance of works to conserve land and protect soil from degradation, establishment of boundaries of land users; pursuing state policy to ensure effective and rational management and use of lands of the State fund of agricultural lands and pastures and others.

According to the **Regulations on the Ministry of Economy (MoE)**, its purpose is to ensure social and economic progress and sustainable development of the Kyrgyz Republic. The task of "ensuring food security" is absent in any form on the list of tasks of MoE.

The scope of MoE activity contains the food security issues in all of the three components: "availability", "utilisation", and "stability". In the "availability" component, MoE pursues the state policy in the area of 'halal' industry development; develops proposals on conclusion of international contracts on foreign economic relations, ensures fulfilment of obligations under such contracts by the Kyrgyz party; develops proposals on the measures of customs tariff and non-tariff regulation of foreign economic activity, carries out antidumping probes, drafts laws and regulations on accumulation, exemption, borrowing of tangible assets from the state material reserves, volumes of annual supplies of tangible assets to the state material reserves, and on the amounts of their public funding, etc.

In the "utilisation" component, MoE develops the unified state policy of business regulation in the licencing and regulatory areas; develops proposals on the development and implementation of the unified state policy in the area of technical regulation and assurance of uniformity of measurements; proposes the improvement of legislation on consumer right protection, advertising, improvement of the procedure of pricing and application of price (tariffs); develops recommendations on taking measures focused on the protection and promotion of competition; forms the list of products subject to compulsory certification of compliance, etc.

In the "stability" component, MoE develops and implements the state policy in the field of foreign and domestic trade, tracking and analysis of retail prices of basic foodstuffs and basic non-foods and others.

According to the **Regulations on State Material Reserves Fund** (SMRF), its mission is to ensure the effectiveness of use, management and privatisation of the public property. The task of "ensuring food security" is absent in any form on the list of tasks of SMRF.

The scope of activity of SMRF contains food security issues on the "availability" component: accounting and inventory-taking of the public property, particularly, foods, as well as the proper transfer of public property (food).

According to the **Regulations on the Ministry of Labour and Social Development** (MLSD), its mission is to pursue the state policy and manage social development and labour, including the issues of improvement of the quality of life and increase in incomes of the population, labour remuneration, pension and social coverage, conditions and protection of labour, social partnership and labour relations, demographic policy, social protection of people, including support to families, children and senior citizens.

The scope of activity of MLSD contains food security issues in "availability" and "access" components. Among main tasks of MLSD under the "availability" component, is the improvement of legal and organizational principles of involvement, accounting and distribution of humanitarian aid, coordination of humanitarian aid services.

In the "access" component is the development and implementation of the state social policy in the area of labour remuneration, social protection of people, pension and social coverage, support to families and children, senior citizens; improvement of legislation in social protection, social and pension coverage of people, development of social standards and minimum social standards; development and implementation of measures to improve the quality of life and income of people, system of state benefits and compensatory payments, as well as to develop pension coverage.

According to the **Regulations on the Ministry of Transportation and Roads (MTR)**, it pursues the state policy and manages the motor, railroad, air, electric and water transport.

The scope of activity of MoF contains implementation of food security issues within the "access" component in terms of physical access. Among the main tasks of the ministry is development of the services market in the area of road and transport complex and consumer protection, creation of conditions for the construction, maintenance and improvement of the technical condition of public roadways.

According to the **Regulations on the Ministry of Finance (MoF)**, it is the central executive agency ensuring development and implementation of the state policy of public fund management, as well as the policy of internal audit and public procurements.

The scope of activity of MoF contains implementation of food security issues within the "access" component. Among the main tasks of the ministry is to shape the state policy of public finance management. MoF carries out the cash execution of the state budget through the treasury system and authorised agent banks serving regional treasury departments.

According to the law "On the National Bank of the Kyrgyz Republic, banks and banking operations", the **National Bank** (NBKR) owns and manages all international reserves, including reserves for food procurement. Thus, it is involved in the "access" component of food security.

According to the **Regulations on the Ministry of Health** (MoH), it pursues the state policy of health promotion of people. The scope of activity of MoH contains addressing food security issues in the "utilisation" component, namely the sanitary and epidemiological welfare.

According to the **Regulations on the State Inspectorate for Veterinary and Phytosanitary Security** (SIVPS), its mission is to supervise and monitor the safety of life and health of people, animals and plants. The scope of activity of SIVPS contains addressing food security issues within the "utilisation" component. Among the main goals of the agency are prevention, detection and suppression of violations of legislation of the Kyrgyz Republic by

individuals and legal entities, requirements to food safety set forth in technical regulations, as well as products subject to veterinary and quarantine phytosanitary control; prevention and suppression of violations of the rules of compulsory certification of product compliance; rights protection of consumers of regulated products.

According to the **Regulations on the State Inspectorate for Environmental and Technical Safety (SIETS)**, its mission is to ensure state supervision and monitoring of compliance with the rules and regulations on life and health of people, fauna and flora, environment, and prevention of negative consequences. The scope of activity of SIETS contains food security related measures within the "utilisation" component. Among its main tasks are state supervision and monitoring of compliance with the requirements of laws and regulations, technical regulations on biological, chemical safety of products (facilities) and/or related processes of production, operation, storage, transportation, utilisation, marketing, placement and disposal.

According to the **Regulations on State Agency for the Protection of Environment and Forestry (SAEPF)**, its mission is to ensure the conservation of the unique ecological system of the Kyrgyz Republic and the environmental protection for current and future generations. Among the main tasks of SAEPF are the implementation of the policy and regulation in the area of environmental protection and use of natural resources, as well as the forest hunting facilities; prevention of possible adverse effects of the planned managerial, economic and other activities on the environment through the state ecological assessment.

Conclusions

The institutional scheme of food security has a hierarchical scheme, each component of which requires functions to be implemented by the relevant authority.

Such scheme has no apparent gaps. The composition of authorities and potential tasks to be completed by them within their powers may cover all the needs for the effective regulation.

However, there are gaps if only existing regulations on these authorities are considered.

First, the task of ensuring food security is stated only in the regulations of MAFIM. The regulations on other authorities do not contain this term whatsoever. The result is the failure to accept goals/tasks of food security as the task of the authority, and the failure to assume responsibility accordingly.

Second, incomplete food security related tasks of state authorities exist. The regulations do not cover tasks addressing food security and complying with the profile of the given authority. Thus, the regulations on MAFIM do not contain tasks related not only to the commercial agricultural or industrial agricultural production, but also to the manufacture of products ensuring food security. Or, the regulations on the MoH contain no tasks specifying the policy of public supply with foods with essential ingredients.

Third, due to the lack of food security tasks, there is no responsibility. This situation allows authorities to focus on their specific tasks and prevents all authorities from concerted food security efforts.

Recommendations

The first set of measures should be targeted at improving policies, which support food security management as a complex of measures. This requires all government agencies that are engaged in addressing food security related issues in one way or another, to have clearly defined functions and measures to address food security related issues within their responsibilities in their internal Decrees.

The second set of measures should be targeted at increasing the activeness of the Food Security Council to control implementation of measures outlined in the common food security objective tree and business processes, related to ensuring food security.

The third set of measures should be targeted at improving the food security reporting systems of all government agencies that implement food security related measures to the Food Security Council for more in-depth food security situation analysis and provision of recommendations for policy measures to improve governance. Besides, it is important to strengthen information management systems to inform the Council, including application of information technologies and improving information visualization.

2.4. Monitoring and evaluation of food security and nutrition

The main normative frameworks in the monitoring of food security and nutrition:

The monitoring and evaluation system of the food security is based on the following key laws and policies that define the criteria, indicators, targets, as well as the methodology and monitoring parties.

According to the Law of the Kyrgyz Republic on August 4, 2008 N183 "On Food Security of the Kyrgyz Republic", monitoring and analysis of the state of agriculture and food sector should include the following (Article 6):

- balance of required and actual levels of food production in the Kyrgyz Republic;
- state of production of food products, volumes of agricultural food production, national and regional balance of the required and actual levels of food production;
- state of development of the agro-industrial complex;
- information on the volume of produced and imported food, its movement, price, quality, as well as the dynamics of consumption during the calendar year;
- state and development trend of the domestic market for agricultural raw materials and food;
- availability and volume of the state material reserve;
- availability and condition of storage facilities for storing the state material reserve;
- wholesale of food, agricultural products and related products;
- purchasing power of population groups;
- implementation of national and targeted programs, contracts, agreements and implementation of measures to ensure food security;
- availability of technical regulations, international, interstate and national standards, norms and regulations in force in the Kyrgyz Republic, as well as regulatory legal acts in force before the entry into force of the relevant technical regulations.

The food security of the Kyrgyz Republic is considered as secured (Article 9):

- if the level of reserves of the state material reserve covers not less than 90 days of the need of socially vulnerable population groups in basic food products;
- if the state budget of the country has the opportunity to finance the supply of basic food products in accordance with the requirements of this Law;
- if quality, caloric content and food safety are ensured, in accordance with the regulatory requirements in force in the Kyrgyz Republic.

According to the Decree of the Government of the KR dated February 19, 2010 No. 111 "On the approval of average physiological norms for the consumption of basic food products for the population of the Kyrgyz Republic," and the Decree of the Government of the KR dated November 6 2009 № 694 "On the approval of minimum subsistence level structure for the main social and demographical population groups of the KR", the country has established the average-physiological and minimal norms for the consumption of main food commodities, which can be used for assessment and estimatino purposes.

According to the Resolution of the Government of the KR dated March 3, 2009 No. 138 "Regulations on Monitoring and Indicators of Food Security of the Kyrgyz Republic", the monitoring system of food security has the following components:

• Criteria and indicators characterizing the state of the food security in the Kyrgyz Republic

• Government institutions - the monitoring parties of the state of food security in the Kyrgyz Republic

Criteria and indicators characterizing the state of food security in the Kyrgyz Republic (according to the Government Resolution No. 138 of March 3, 2009):

Criteria for assessing food security

I. Degree of meeting the physiological needs in terms of food components and energy content of the food ration.

II. Compliance of domestically produced and imported food products with safety indicators.

III. Physical and economic access to food and purchasing capacities of the population groups to afford rational diet.

IV. The degree of dependence of the country's food and agro-industrial complex resource supply on imports.

V. The volume of strategic and operational food stocks in accordance with regulatory requirements.

The composition of the indicators of the food security (see Annex 3. Food security indicators in the Kyrgyz Republic)

(1) daily energy value of diet among the population

(2) diet sufficiency in terms of basic products

(3) state material reserve grain stocks sufficiency

(4) economic accessibility of products

(5) differentiation of expenditure on food by social groups

(6) domestic market capacity by product

(7) food self-sufficiency by product

(8) balance of required and actual levels of food production

(9) capacity of the state budget of the Kyrgyz Republic to finance the purchase and supply of basic foodstuffs for socially vulnerable groups of the population

(10) compliance of quality, caloric content and food safety with regulatory requirements

The indicators also include the average physiological norms of consumption of the basic food by the population of the Kyrgyz Republic.

Analysis of food security indicators

A. Categories and indicators for assessing food security

I. Degree of meeting the physiological needs in terms of food components and energy content of the food ration.

Corresponding indicators (3 indicators): (1) the individual daily energy value of the diet; (2) the level of individual consumption by key food items. This also includes average physiological norms of consumption of basic food products for the population of the Kyrgyz Republic

II. Compliance of domestically produced and imported food products with safety indicators.

Corresponding indicator (1 indicator): (10) compliance of quality, caloric content and food safety with regulatory requirements

III. Physical and economic access to food and purchasing capacities of the population groups to afford rational diet.

Corresponding indicators (3 indicators): (3) sufficiency of grain stocks in the state material reserve; (4) economic accessibility of products; (5) differentiation of food expenditure levels by social groups.

IV. The degree of dependence of the country's food and agro-industrial complex resource supply on imports.

Corresponding indicators (3 indicators): (6) the capacity of domestic market by main food products; (7) food self-sufficiency by main products; (8) balance of necessary and actual levels of food production

V. The volume of strategic and operational food stocks in accordance with regulatory requirements.

The corresponding indicator (1 indicator): (9) the capacity of the state budget of the Kyrgyz Republic to finance the purchase and supply of basic foodstuffs for the socially vulnerable population groups

B. Indicators for assessing the situation by four components of food security

• "Availability" component

Corresponding indicators (5 indicators): (3) the sufficiency of grain stocks in the state material reserve; (6) the capacity of the domestic market by main food products; (7) food self-sufficiency by main food products; (8) the balance of the required and actual levels of food production; (9) the capacity of the state budget of the Kyrgyz Republic to finance the purchase and supply of basic foodstuffs for socially vulnerable population groups.

• "Access" component

The corresponding indicators (4 indicators): (1) the individual daily energy value of the diet; (2) the level of individual consumption by key food items; (4) economic accessibility of products; (5) differentiation of food expenditure levels by social groups

Average physiological norms of consumption of basic food products for the population of the Kyrgyz Republic

• "Utilisation" component

Corresponding indicators (1 indicator): (10) compliance of quality, caloric content and food safety with regulatory requirements.

• "Stability" component

No relevant indicators

C. Indicators for assessing he progress in achieving the food security policy objectives (according to the established thresholds)

• The thresholds are set for the following indicators:

Corresponding indicators (5 indicators): (1) the individual daily energy value of the diet; (2) the level of individual consumption by key food items; (3) sufficiency of grain stocks in the state material reserve; (4) economic accessibility of products; (7) food self-sufficiency by main products

• The thresholds are set for the following indicators in other programmes and policies:

Corresponding indicators (2 indicators): (8) the balance of the required and actual levels of food production (there is no explicit indication in the methodology for calculating the indicators, but the corresponding level requirements are included in the indicator of tactical monitoring); (9)

the capacity of the state budget of the Kyrgyz Republic to finance the purchase and supply of basic foodstuffs for socially vulnerable population groups (in the Kyrgyz Food Security Law)

• Thresholds are not set for the following indicators:

Corresponding indicators (3 indicators): (5) differentiation of food expenditure levels by social groups; (6) the capacity of the domestic market by main food products; (10) compliance of quality, caloric content and food safety with regulatory requirements.

Government institutions – are the monitoring parties for the state of food security in the Kyrgyz Republic (in accordance with the Government Resolution No. 138 of March 3, 2009)

The authorities responsible for collecting information on food security are as follows:

1) the individual daily energy value of the diet - responsible: Ministry of Health

2) the level of individual consumption by key food items - responsible: National Statistical Committee

3) sufficiency of grain stocks in the state material reserve - responsible: State Agency for Public Procurement and Material Resources

4) economic accessibility of food - responsible: Ministry of Economy in cooperation with the Ministry of Labour and Social Development and the National Statistical Committee

5) differentiation of food expenditure levels by social groups - responsible: Ministry of Labour and Social Development, in conjunction with the National Statistical Committee

6) the capacity of the domestic market by main food products: responsible: Ministry of Agriculture, Food Industry and Melioration together with the National Statistical Committee of the Kyrgyz Republic on an annual basis;

7) food self-sufficiency by main products - responsible: Ministry of Economy jointly with the Ministry of Agriculture, Food Industry and Land Reclamation, State Customs Service (formerly State Customs Committee)

8) the balance of the required and actual levels of food production - responsible: Ministry of Agriculture, Food Industry and Melioration in cooperation with the National Statistical Committee of the Kyrgyz Republic

9) the capacity of the state budget of the Kyrgyz Republic to finance the purchase and supply of basic foodstuffs for socially vulnerable population groups - responsible: the Ministry of Finance in conjunction with the State Material Reserves Fund (formerly the State Agency for Public Procurement and Material Reserves)

10) compliance of quality, caloric content and food safety with regulatory requirements - responsible: Department of Sanitary and Epidemiological Surveillance, Department of State Veterinary, National Institute of Standards and Metrology.

Data collection process

Ministries, state committees and administrative agencies, local state administrations and local governments, within their competencies prepare and submit food security monitoring data and analysis to the Ministry of Agriculture, Food Industry and Melioration no later than the 25th day of the month following the month of the reporting period. The ministry prepares a general analysis of food security status and submits the summarised information on food security no later than the 10th day of the month following the reporting period to the Government of the Kyrgyz Republic and to the Food Security Council of the Kyrgyz Republic.

Indicator reporting due dates:

Annually (6 indicators): (1) individual daily energy value of the diet; (2) level of individual consumption by key food items; (4) economic accessibility of food; (5) differentiation of food expenditure levels by social groups; (6) capacity of the domestic market by main food products; (8) balance of the required and actual levels of food production

Twice a year (1 indicator): (9) capacity of the state budget of the Kyrgyz Republic to finance the purchase and supply of basic foodstuffs for socially vulnerable population groups

Quarterly (2 indicators): (3) sufficiency of grain stocks in the state material reserve, (7) food self-sufficiency by main products

Without indicated reporting date (1 indicator): (10) compliance of quality, caloric content and food safety with regulatory requirements

Conclusions

- The existing package of categories and indicators reflects the state of food security in the Kyrgyz Republic widely enough. At the same time, the distribution of indicators by food security monitoring categories shows that for two of them (II and V) only one indicator is applied, which cannot sufficiently reflect the situation.
- The distribution of indicators by four pillars of food security shows that there are no indicators for physical accessibility and stability of food security.
- Analysis of indicator target values shows that for three indicators, the threshold values are not established in the methodology (indicators 5, 6, 10). For indicators 8 and 9 the threshold values are not established either, however threshold values that are available in other sections of this resolution, as well as in other key food security programmes can be applied.
- The indicator "capacity of the domestic market by main food products" is an intermediate level indicator and does not have sufficient meaning when assessing food security.
- There are no direct and real-time indicators that can characterize the situation of price dynamics for basic food products. The minimal time period for the reporting of indicators in the monitoring system is quarterly. At the same time, statistics bodies collect and process information on prices.
- The Kyrgyz Government Decree No. 138 of March 3, 2009 has no glossary introduced, which leads to uncertainty in the use of data for calculation of indicators for strategic and tactical monitoring.

Recommendations

- Completely revise the normative frameworks on food security monitoring and measurement in the Kyrgyz Republic. In order to fully reflect all relevant food security aspects, the applied criteria and indicators need to be better defined in terms of its content and numbers.
- Apply wider the international approaches to food security measurement in four pillars:

– Food availability (through the following indicators: production volume, yield/productivity, level of stocks, losses, etc.);

– Food access (through the following indicators: physical access – supply possibility and time of delivery of foods (road condition and road capacity), economic access – capability to obtain foods in necessary volumes with existing income levels, etc.);

– Food utilisation (through the following indicators: actual consumption levels against the physiological norms: calories, proteins, micronutrients, etc.);

– Stability of food security (through the following indicators: food price change, risks for agricultural production related to the deterioration of natural factors, with possible food shortages caused by natural disasters, conflicts, etc.);

- Introduce indicators in the “stability” component, as well as crop yield forecasting indicators for basic food items. Consider introducing the indicator to measure the level of carry-over grain stocks in the Kyrgyz Republic, as well as physical access indicators.

- Introduce integral [composite] indicators to assess food security by pillars "Availability", "Access", "Utilisation" and "Stability", as well as the integral indicator of food security status in the Kyrgyz Republic and design relevant calculation methods[18].
- Introduce the system of preparation of analytical reports to reflect food security situation findings, as well as the global food markets situation.
- Introduce the mechanism of real-time updates on the food market situation, including the list of indicators and the reporting process. The data acquisition platforms, especially the real-time data, should involve information technologies.

3. ASSESSING FOOD SECURITY STATUS IN THE KYRGYZ REPUBLIC BY KEY INDICATORS

As noted above (see 2.4. Monitoring and Evaluation of Food Security and Nutrition), the ministries and agencies of the Kyrgyz Republic submit information to the Ministry of Agriculture, Food Industry and Melioration based on monitoring and analysis of food security indicators. The Ministry conducts an overall analysis of food security state and submits summarised information to the Government of the Kyrgyz Republic and Food Security Council of the Kyrgyz Republic. This information is not public; therefore, this study contains no links to it.

However, the National Statistical Committee of the Kyrgyz Republic publishes the "Information bulletin of the Kyrgyz Republic on food security and poverty" report on a quarterly basis together with the indicators that can be used to calculate food security indicators accepted in the country. To analyse the current situation, the data from these publications during 2010-2016 were used.

3.1. Food Availability

Indicators specified in the Regulations on food security monitoring and indicators of the Kyrgyz Republic have been used to assess food security in the Kyrgyz Republic.

As noted above (see 2.4. Monitoring and Evaluation of Food Security and Nutrition), the following indicators are applied to assess food availability:

(3) sufficiency of grain stocks in the state material reserve

(6) the capacity of the domestic market by main food products

(7) food self-sufficiency by main products

(8) balance of the required and actual levels of food production

(9) capacity of the state budget of the Kyrgyz Republic to finance the purchase and supply of basic foodstuffs for socially vulnerable population groups

"Sufficiency of grain stocks in the state material reserve" indicator

This indicator is calculated as the ratio between the volume of food grain in the state food reserve and the volumes of domestic consumption of bread and wheat products in terms of grain according to minimal consumption requirements.

Due to the confidentiality of information on the volumes of food grain in the state food reserve, this indicator is not publicly accessible.

However, "the closing stock" indicator, which is calculated on the quarterly basis, based on the Food balance of basic foodstuffs may be used in expert assessments to estimate grain

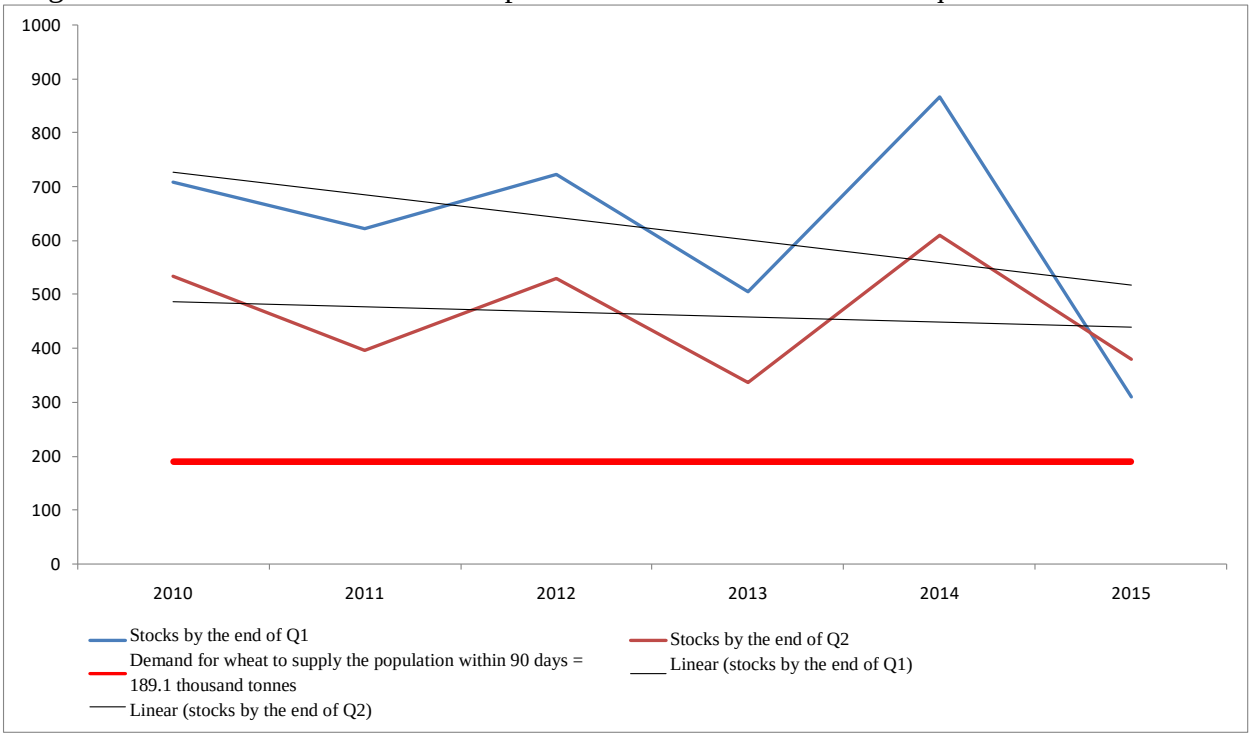
[18] Integral measurement indicator is an indicator expressed in percentage and calculated by a certain formula based on other indicators characterising different aspects of food security. Thus, "average level of food security in EAEU states" mentioned in 3.1. Food availability can refer to such indicators.

sufficiency in the country[19]. Even though this indicator is based on estimation, its deviation from the actual stocks indicator should not be significant.

Calculations show that to cover the 90-day public need in wheat, with population size 6 million people and at minimum wheat flour consumption rate of 7.88 kg per month[20], the aggregate need in wheat would be 189.1 thousand tonnes[21].

The diagram shows that the estimated stock of wheat and wheat products at the end of 1st and 2nd quarters in 2010-2015 is much higher than the 90-day requirement of the whole population. Even in the most difficult period, at the end of 2nd quarter, when the stocks are exhausted, the stocks exceed the 90-day requirement by 1.5 times.

Diagram 1. Stocks of wheat and wheat products at the end of 1st and 2nd quarter of 2010-2015



"Capacity of the domestic market by main food products" indicator

This indicator is calculated as the composition of consumption of a certain product and the average annual number of population. However, it does not have a target value and is applied to derive other indicators. The indicator has no valuable meaning and is not elaborated in this report.

"Food self-sufficiency by main products" indicator

This indicator is calculated as the ratio of volume of imports of a certain product in physical terms and the domestic market capacity. The threshold value is not more than 20% of the domestic market volume.

Table 1. Share of import in the domestic consumption by product*

	2010	2011	2012	2013	2014	2015
Wheat products	**44%**	**53%**	**68%**	**60%**	**55%**	**42%**

[19] Information Bulletin of the Kyrgyz Republic on food security and poverty for 2010-2016. Issue of the National Statistical Committee

[20] Decree of the Government of the Kyrgyz Republic dated 6 November 2009 No. 694 "On approval of the structure of subsistence rate for main demographic groups of populations of the Kyrgyz Republic"

[21] Conversion rate has been used: 1 kg of grain = 0.75 kg of flour. See Governmental Decree No. 694

Potato	0%	0%	0%	0%	1%	1%
Vegetables	1%	1%	1%	1%	2%	2%
Fruits and berries	11%	9%	8%	9%	7%	6%
Meat and meat products	**50%**	**42%**	**40%**	**34%**	**34%**	**11%**
Milk and dairy products	3%	2%	2%	2%	2%	1%
Eggs	14%	14%	10%	7%	14%	0%
Vegetable fats	**64%**	**60%**	**69%**	**72%**	**77%**	**82%**
Sugar and confectionery products	**61%**	**81%**	**84%**	**77%**	**81%**	**72%**
Normative standard	20%	20%	20%	20%	20%	20%

*Calculated on the basis of data of "Information Bulletin of the Kyrgyz Republic on Food Security and Poverty" for 2010-2015.

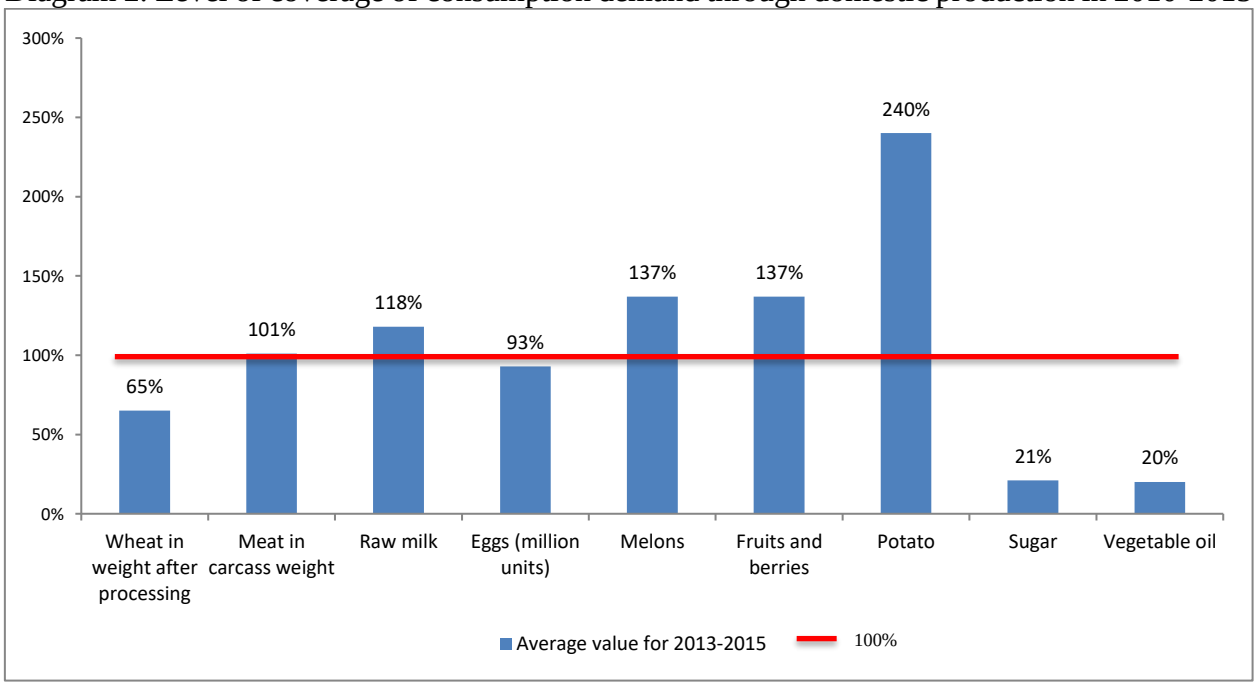
As shown in table 1, the normative standard is not met for "Wheat products", "Meat and meat products", "Vegetable fats", "Sugar and confectionery products". Sometimes the deviations from the normative standard can reach 3-fold difference. The situation with meat and meat products is positive over time and in 2015 the indicator was met. Such products as "Wheat products", and especially "Vegetable fats" and "Sugar and confectionery products" negatively deviate from the standard chronically.

"Balance of the required and actual levels of food production" indicator

This indicator is calculated as the ratio between the necessary level of production and the actual level of production according to the minimum required and actual consumption rates in percentage. The target value has not been set.

The analysis of the ratio of actual food production and domestic market capacity has shown that Kyrgyzstan can meet the domestic demand for four products: milk, vegetables, fruits and berries and potato. The production demand for eggs can be nearly met. The production demand for wheat is covered by two-thirds. There is a stable domestic production deficit for sugar and vegetable oil.

Diagram 2. Level of coverage of consumption demand through domestic production in 2010-2015



"Capacity of the state budget of the Kyrgyz Republic to finance the purchase and supply of basic foodstuffs for socially vulnerable population groups" indicator

The methodology of calculation of necessary national financial reserves for the purchase and supply of basic foodstuffs for socially vulnerable population groups is not available. The target value has not been set.

Conclusions

- In general, the average level of the Kyrgyz Republic's food security in comparison with the EAEU countries is at the similar level. However, other EAEU countries have better performance for the indicators of average consumption levels of main agricultural and food products per capita.
- The described food security monitoring indicators in the food availability component show that a number of indicators are not achieving the set target values.
- The steady discrepancy between the indicators "Vegetable fats" and "Sugar and confectionery" to the target values of the "Share of imports by product in domestic consumption" indicator for many years indicates the presence of systemic problems in food security governance.
- Lack of effective efforts to achieve the target values for these indicators are related to ineffectiveness of existing institutions, legislation and law enforcement practices, as well as problems in the economy. However, this can also be interpreted as the fact that for a number of products Kyrgyzstan is adhering to the position of FAO's on self-sufficiency of food, rather than to the set normative requirements (see the Discrepancy between Kyrgyz legislation and FAO's position in the definition of "food security").

Information on agricultural production in the country

According to the Food Security and Nutrition Programme of the Kyrgyz Republic for 2015-2017, the goal in this component is to "Ensure basic food items availability in the Kyrgyz Republic according to the set normative specified standards and increase in sustainability of food supply to the population". This implies a reasonable level of domestic agricultural development.

Currently, the agriculture of the Kyrgyz Republic in the GDP amounts to 14%[22], with 29%[23] of economically active population involved in the sector. The sector is a priority sector of economy, which is reflected in the main country strategic development strategies. Generally, the sector is characterised by mainly extensive development focused on a preferential treatment. The sector is in the constant need for preferential financial support to agricultural producers as well as for preferential provision of goods and services that are used in the production process.

The state has scarce financial capacities for the large-scale support of agricultural producers. The main financial support tools in 2011-2016 have been the agriculture funding projects ("Accessible loans to farmers", "Accessible loans to farmers – 2", "Funding the agriculture", "Funding the agriculture – 2", "Funding the agriculture – 3", "Funding the agriculture – 4" projects).

The funding projects of 2015 and 2016 have included the measures to affect the structure of agricultural production. Thus, the 2015 project has stimulated large-scale farms as an additional credit condition; the 2016 project has stimulated the crop and livestock production for some basic food items, as well as agricultural processing enterprises.

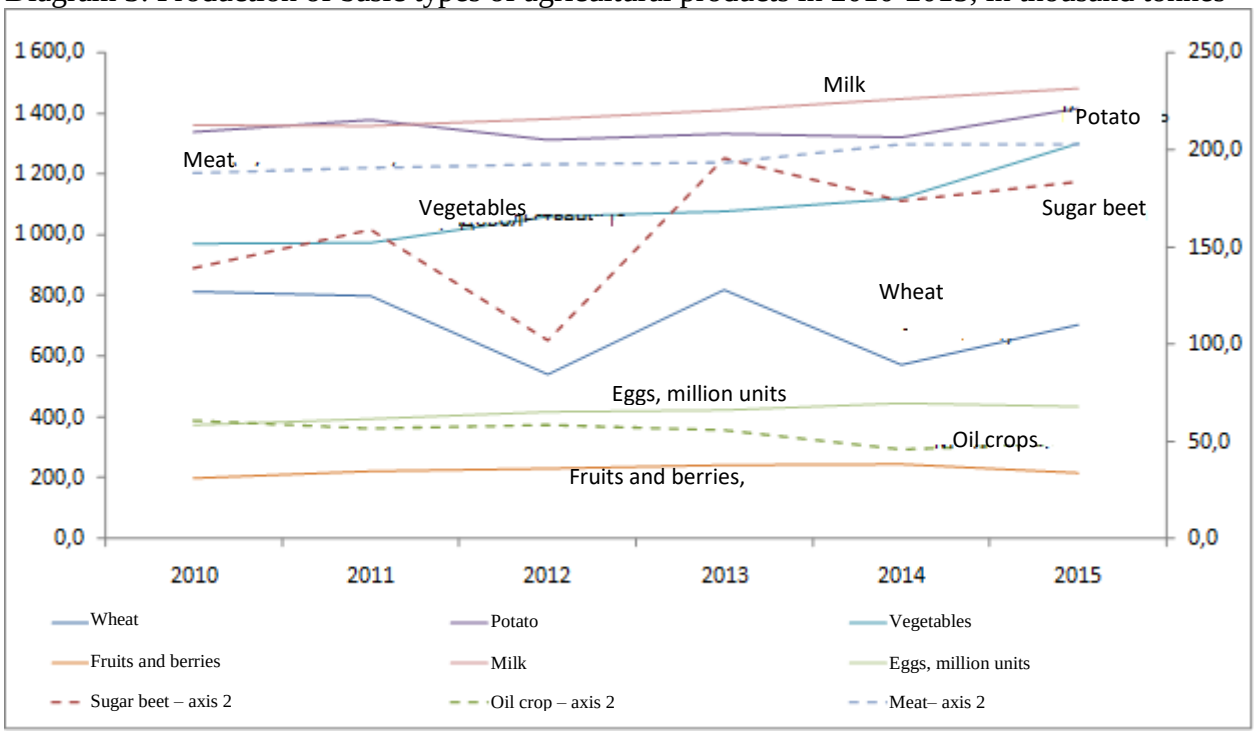
[22] GDP by kinds of economic activity in current prices. http://www.stat.kg/ru/statistics/nacionalnye-scheta/

[23] Number of economically active population by kinds of economic activity http://www.stat.kg/ru/statistics/zanyatost/

Moreover, the country implements large-scale irrigation projects in the framework of NSDS, seed farming and livestock breeding projects, development of veterinary and phytosanitary control laboratories, etc.

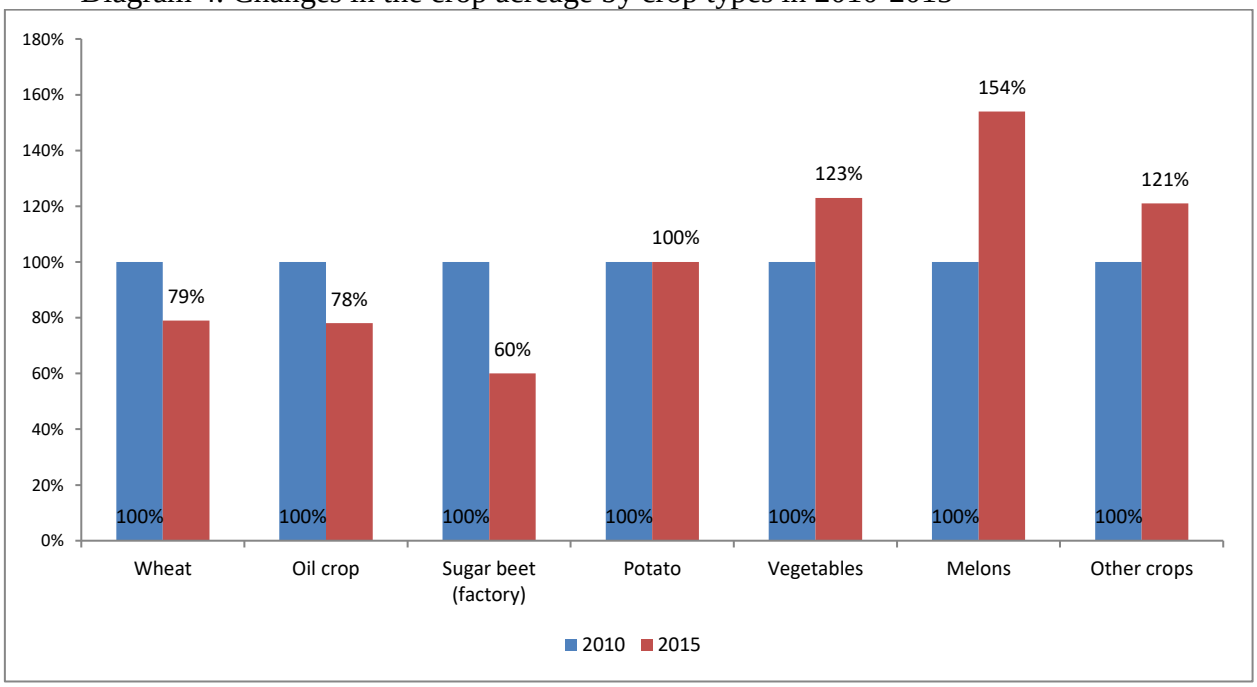
The pattern of agricultural production from the basic foodstuffs list in 2010-2015 is multidirectional. The estimation of the patterns based on the indicators of physical production volumes has shown that in 2015 the decline in the physical production volumes was observed in wheat and oil crops as compared to 2010, by 13% and 19% respectively (according to the linear approximation data, by 17% and 22%, respectively). The increase in the physical volume of production was observed in “Vegetables” by 34%, “Fruits and berries” by 9%, and in livestock farming – “Eggs” by 16%, “Milk” by 9% (according to the linear approximation data, by 32%, 11%, 17% and 10% respectively).

Diagram 3. Production of basic types of agricultural products in 2010-2015, in thousand tonnes



One of the main reasons of the decrease in production is the change of the cropping pattern in response to the market demand.

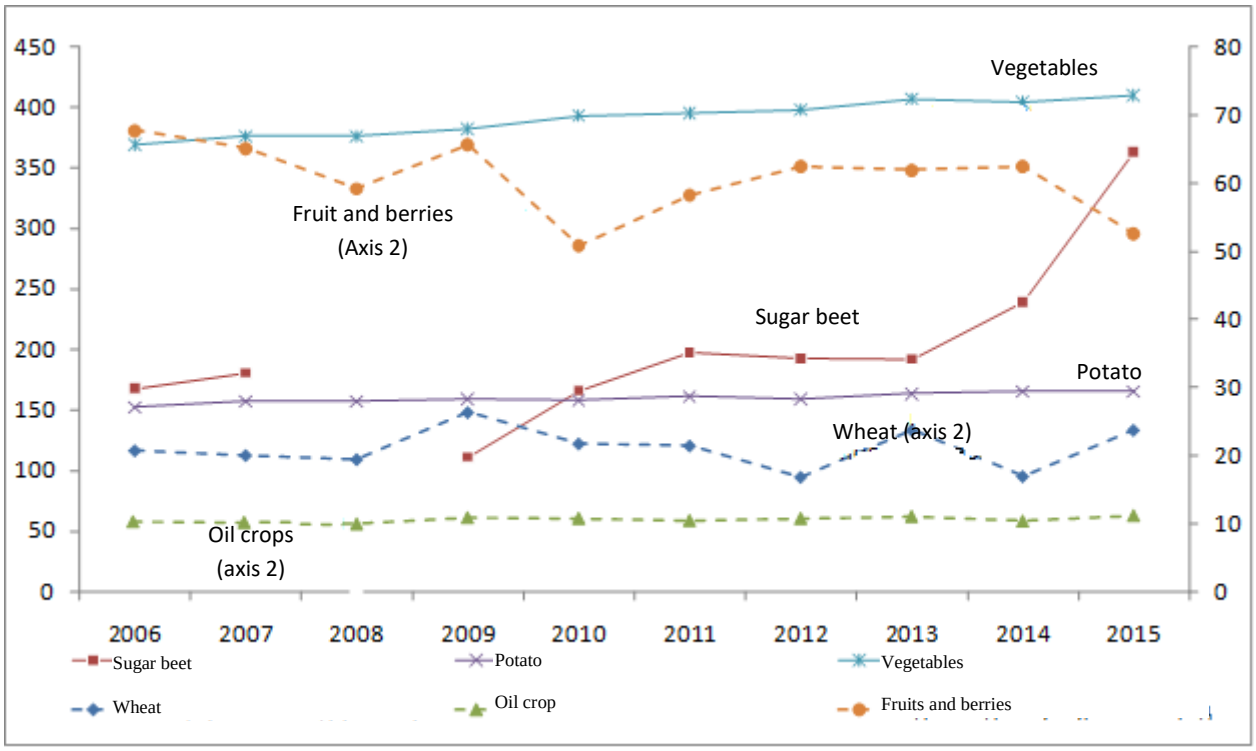
Diagram 4. Changes in the crop acreage by crop types in 2010-2015



The analysis of the crop acreage indicators in 2010-2015 has shown it has reduced by 2015 for wheat – by 21%, oil crops – by 22%, sugar beet – by 40%, potato – no changes (according to the linear approximation data, reduced by 18%, 25%, 32% and 3% respectively).

However, the vegetable acreage has increased by 23% and melon acreage – by 54% (according to the linear approximation data, increased by 18% and 55% respectively).

Diagram 5. Agricultural crop yield in the Kyrgyz Republic in 2010-2015, centner/ha

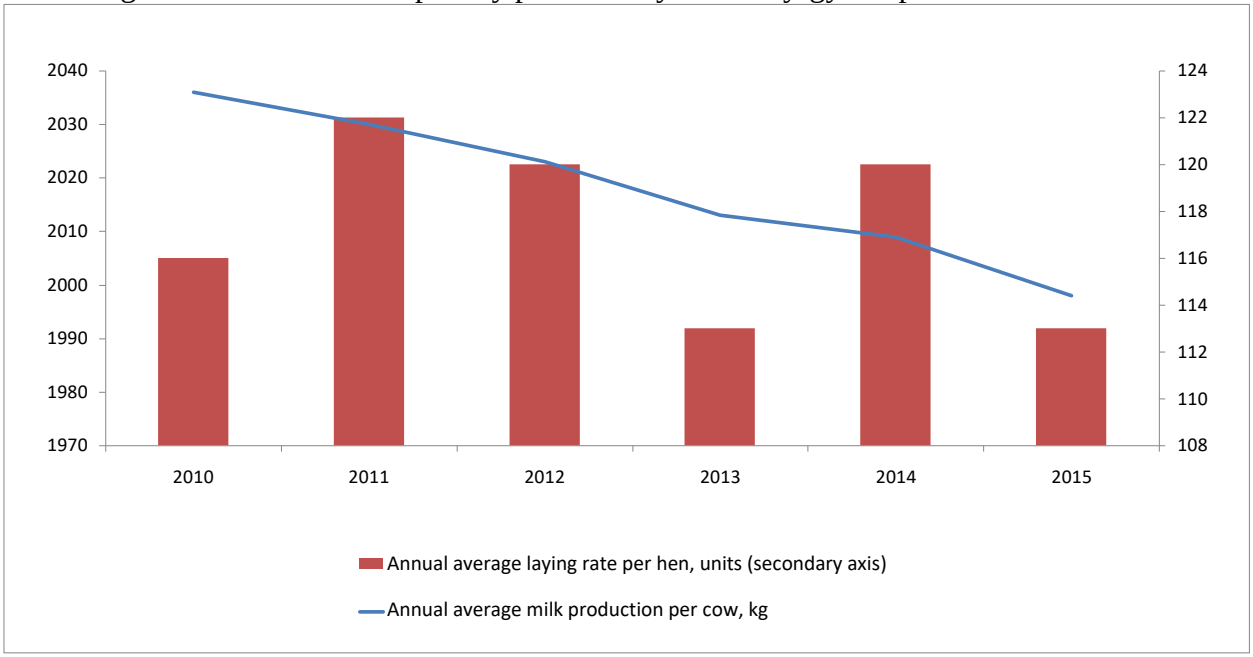


The analysis of crop yield indicators in 2010-2015 shows that since 2010 the increase is observed in all crops from the basic list: wheat – by 9%, all other crops, excluding sugar beet – by 4% (according to the linear approximation data: wheat – by 2%, oil crops – by 3%, potato – by 5%, vegetables– by 4%, fruit and berries – by 5%).

The average wheat yield in 2013-2015 was 21.4 centner/ha, crop variations by regions are – from 17.8 centner/ha in Batken province to 26.7 centner/ha in Jalal-Abad province. In Chuy province, the granary of the nation, the wheat yield has amounted to 25.6 centner/ha. These indicators of wheat yield are higher than those in Kazakhstan, the largest wheat producing country, where it varies depending on the region and have averaged from 12.5 centner/ha in 2014 to 13.5 centner/ha in 2015. However, the scale of production, greater labour productivity, as well as a higher quality of wheat in Kazakhstan turns out to be more competitive in the market of Kyrgyzstan.

The analysis of indicators of productivity of livestock farming has shown that the situation in this agricultural sector is not improving. Thus, in 2015, the reduction in the average annual milk production per cow as compared to 2010 was 2%, the reduction in the egg production was 3% (according to the linear approximation data, 1.5% and 0.1% respectively).

Diagram 6. Livestock and poultry productivity in the Kyrgyz Republic



Conclusions

- Kyrgyzstan has not yet implemented a policy of preferential support of agricultural production of the basic products by supporting separate selected groups of relevant producers and providing them with multifaceted targeted assistance, as foreseen in the Food Security and Nutrition Programme in the Kyrgyz Republic for 2015-2017. At the same time, in recent years, the policy of targeted support of agricultural producers with preferential loans has been implemented, which partially addresses this problem.
- So far, the policy of supporting the production of basic agricultural products and the structural policy in agricultural production did not show the expected effect. Thus, the growth rates of wheat and oil crops production is negative. The production volume of other basic types of crops is increasing. There is also a reduction in the planting area of wheat and oil crops. Apparently, one of the reasons for this situation is the low competitiveness of domestic products compared to imported products. Moreover, this factor is more significant than the preferences provided by the state.
- In spite of the actions undertaken in Kyrgyzstan, in general, the yield indicators are at low or medium levels for a long time, there is a decrease in the livestock productivity. This is a consequence of the presence of unresolved problems in the areas of intensification of production, use of high-grade seeds and high-quality breeding products, efficiency of the use of natural resources - land and water, protection of plants and animals, adherence to production technologies, etc.

Recommendations:

The first set of measures should be targeted at improving the effectiveness of agricultural production and increasing agricultural productivity through enhancing effectiveness of the use of natural resources (water and land in agricultural sector, pastures in the livestock breeding sector and water resources in the fishery sector). Despite existence of community led water resources and pasture management, these measures did not demonstrate effective solutions.

A separate focus is supporting measures targeted at poor rural households to increase their agriculture production and improve incomes and food consumption. The extreme poverty is likely

to occur in rural areas, among women and elderly, households depending on agriculture and related livelihood activities.

The second set of measures should be targeted at increasing the access of agricultural producers to goods and services used in the production process. This includes financial resources, high quality seeds and livestock breeding inputs, as well as veterinary services and services to protect crops, safety and certification issues. For the majority of producers these inputs and services are currently not accessible.

The third set of measures should be targeted at creation of value chain development, cooperation, creation of clusters, improving sustainability of direct access to markets. Measures of this direction should ensure positive synergetic effect as a result of improved production links, including increase of production volumes and its effectiveness, decrease of non-productive expenditures, as well as fair distribution of added value between the parties of production, processing and marketing processes. Currently the existing targeted measures did not show the expected results.

The fourth set of measures should be targeted at introduction of new technologies, increasing institutional capacity of agricultural producers and consultation services. This also includes reducing the barriers associated with gender disparities in access to resources. Currently the existing targeted measures did not show the expected results.

3.2. Food access

According to the Law of the Kyrgyz Republic on Food Security, physical and economic access to food products must be ensured. **Physical access** is the uninterrupted supply of food products to their consumption points in quantities sufficient to meet the needs of the population.

Legislation of Kyrgyzstan does not establish criteria for physical access to food. Nevertheless, it can be assessed by the "possibility for the uninterrupted delivery of food products to their places of consumption" criterion.

After gaining independence, there were settlements in the country, road communication with which was carried out through the territory of Uzbekistan. These are roads that were built during the Soviet era and did not take into account the possible territorial demarcation of the countries formed, as well as the roads passing through some enclaves (Sokh, Shakhimardan, Chon-Gara, Tash-Dobye, Kairagach and Vorukh). This circumstance created a risk to physical food access due to the not always unobstructed movement of vehicles with Kyrgyz plate numbers. However, active road construction in Kyrgyzstan in recent years has made it possible to connect all the settlements of the country along internal roads. Thus, in case of emergency food delivery, this problem can obviously be solved.

Ensuring physical food access can be hindered by natural disasters that are frequent for Kyrgyzstan (mudslides, snow avalanches, earthquakes, etc.), which could lead to destruction of roads. However, as practice shows, the relevant services have the potential, in a relatively short time, to restore the roadways for delivery of goods to the affected areas.

Thus, the issue of ensuring physical access to food through the "possibility for the uninterrupted delivery of food products to their places of consumption" criterion, in general, can be considered as solved.

The **economic access** to food is the capacity to obtain food products by the population in accordance with the norms of food consumption under the existing consumption structure, the price system, the level of incomes and social benefits.

As noted above, the following indicators are applied to assess the access to food[24]:

(1) economic accessibility of food products;

[24]Decree of the Government of the Kyrgyz Republic, March 3 2009 № 138

(2) differentiation of food expenditure levels by social groups;
(4) individual daily energy value of the diet;
(5) level of individual consumption by key food items

Thus, inability to meet the set minimal consumption levels is mainly related to lack of economic access to food products for some population groups.

"Economic access to food products" indicator

This indicator is estimated as a share of aggregate expenditures on food in the total aggregate expenditures of households. The threshold (cut-off) level for this indicator is 63.96%.

As seen in table 4, population of all provinces and major cities have the sufficient level of economic access to food.

Table 2. Balance of food expenditures per capita and income per capita by provinces of the Kyrgyz Republic, in %

Provinces	2010	2011	2012	2013	2014	2015
Batken	34,7	36,7	32,3	29,8	33	36
Jalal-Abad	36	39,6	38,1	34,3	35	34
Issyk-Kul	39,1	45,9	43,6	55,6	40	43
Naryn	29,4	28,3	26,3	31,3	29	33
Osh	49,7	46,4	41	42,5	44	45
Talas	37,4	39,7	29,4	33,7	30	36
Chuy	47,6	46,9	41,8	44	37	41
Bishkek city	53,1	50,5	36	34,4	34	32
Osh city	34,7	36,7	32,3	29,8	33	36
Nation-wide (weighted average)	44,3	44,2	38,2	38,5	37	38

However, the average values show that the most successful provinces in 2013-2015 have been Talas and Naryn oblasts. These provinces have the lowest levels of share of food expenditures. In Bishkek, high food expenditures are offset by higher per capita incomes. Less successful areas have been Issyk-Kul and Osh provinces, where the level of food expenditures is consistent with Bishkek given lower household incomes.

"Differentiation of food expenditures by social groups" indicator

This indicator is estimated as the ratio between the food expenditures of 20 per cent of households with highest incomes and the food expenditures of 20 per cent of households with the lowest incomes. The threshold value has not been set.

Economic access to food is problematic for the first quintile group (see table 5). The ratio between the "Food expenditures per capita" and "Income per capita" has exceeded the determined threshold values of indicators.

Table 3. Differentiation of food expenditures by social group

	2010	2011	2012	2013	2014	2015
Average weighted balance for the first quintile group[1]	70,1	77,5	70,3	83,1	70	74
Average weighted balance for the fifth quintile group[1]	32,6	32,3	28,1	26,8	26	27

Coefficient of food expenditure differentiation (ratio of food expenditures of first and fifth quintile groups)	39,9	47,6	49,7	52,0	50,2	49,7

[1]Calculated as the quotient obtained from indicators “Food expenditures per capita” and “Income per capita” during a month.

[2]Calculated as the quotient obtained from indicators “Food expenditures per capita” of the first quintile group (lowest income) and “Food expenditures per capita” of the fifth quintile group (highest income).

Expenditures among the first quintile group in 2015 amounted to 1,106 soms, third group – 1,462 soms, fifth group – 2,224 soms. The difference between the first and third groups is 356 soms, and between the first and fifth groups is 1,118 soms, respectively. The coefficient of food expenditure differentiation (ratio of food expenditures between the first and fifth quintile groups) is about 50%, which indicates the significant difference in the expenditures among these groups of consumers.

According to the available data, the population from the first quintile group has negative balance of calorie, protein and fat intake. The balance of calorie intake becomes positive from the third group; the balance of protein intake becomes positive only from the fifth quintile group. The population of the fifth group is the only group with a positive balance of energy value.

In other words, if other conditions remain unchanged, the population of the first quintile group should increase food expenditures by 32% in order to have positive balance of calorie intake and increase it twice in order to have positive balance of calorie, protein and fat intake.

This indicates the formidability of existing disproportions in consumption between various population groups.

The restricted economic access to food among some population groups has the inevitable effect on the energy value of consumption.

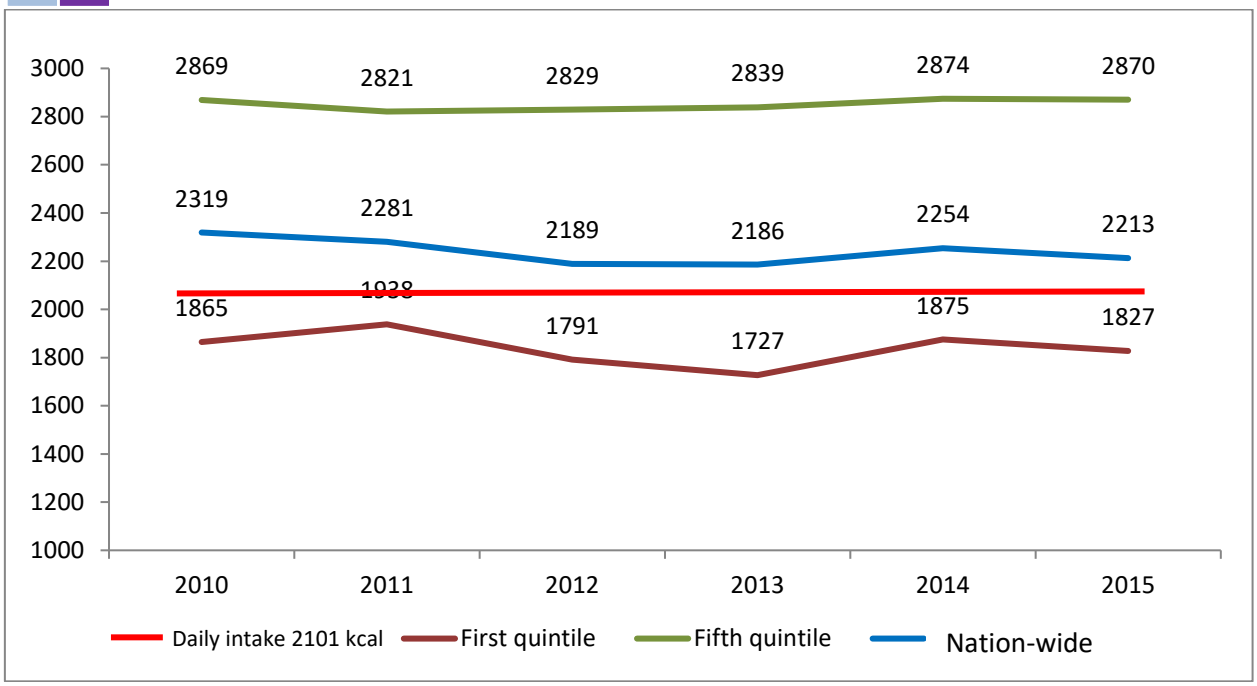
Indicator "Individual daily energy value of the diet"

The indicator is calculated as the sum of multiplication of the unit of mass of certain types of products consumed by a person during the day, and their energy value. The threshold level has been established and depends on the person's age.

As is obvious from the figures, the energy value of the diet of the whole population by **daily calorie intake per capita** (Kcal) is sustainably above the minimum level of 2101 Kcal[25]. This is the case for all provinces and major cities.

Diagram 7. Daily consumption per capita, Kcal
Nation-wide, first and fifth quintiles

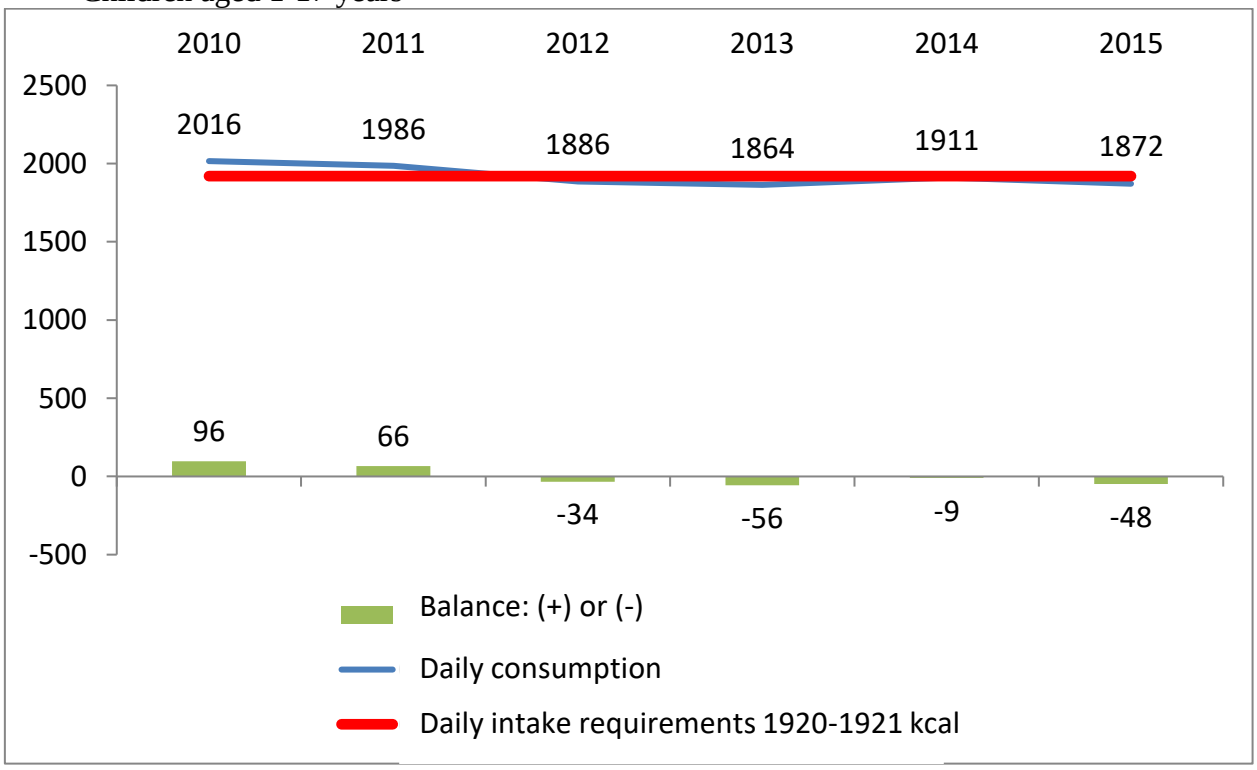
[25]Decree of the Government of the Kyrgyz Republic dated 6 November 2009 No. 694



However, the differentiation of the population by "income level" and "age group" criteria reveals the groups whose consumption is significantly and sustainably below the minimum level. Thus, the population classified as the first most vulnerable quintile group by income level (group size in 2015 was 1,205 thousand people) has been continuously lacking calorie intake for a long time in their daily diet.

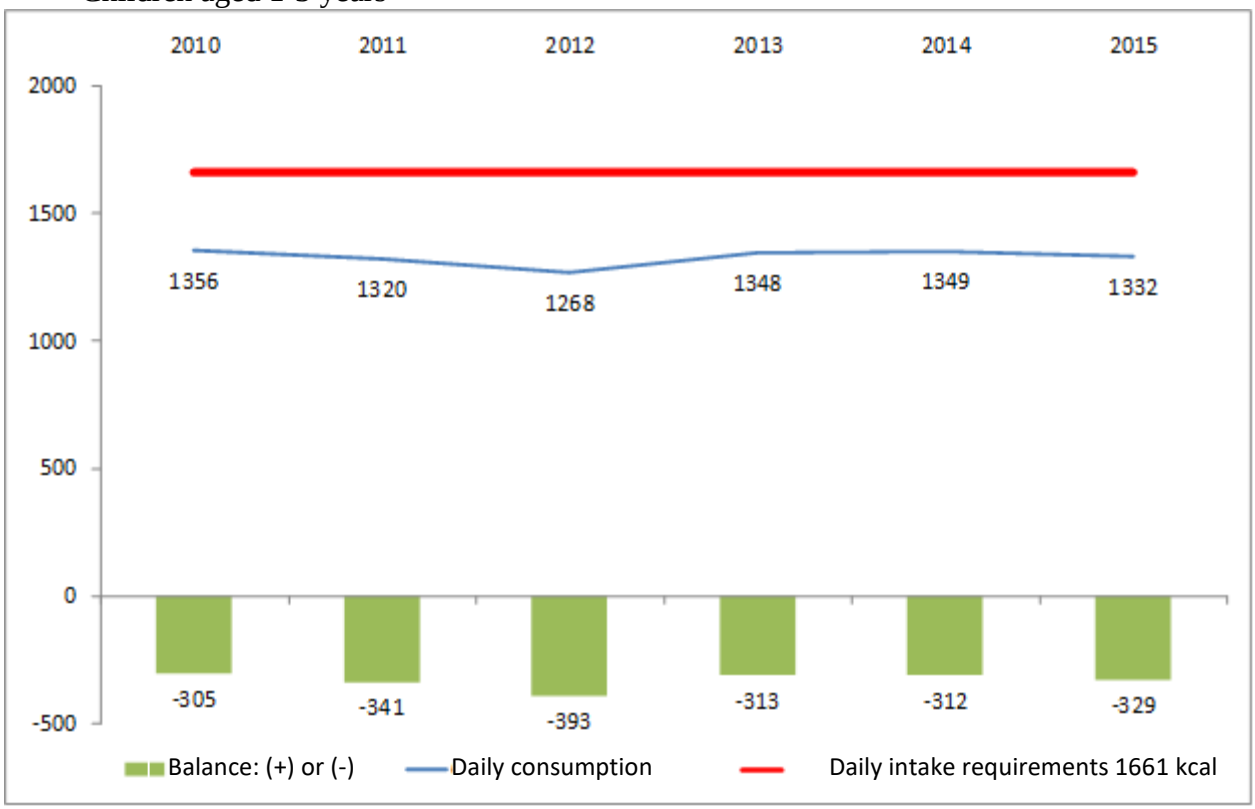
The energy value of consumption in children aged 1-17 years (the group size in 2015 was 2,204 thousand people) has been virtually at the minimum level of daily requirement, 1920-1921 Kcal per day, with some deviations in both directions.

Diagram 8. Daily consumption per capita, kcal
Children aged 1-17 years



However, the indicator of the energy value of food consumption among children aged 1-3 years (the group size in 2016 was 440,6 thousand people) is chronically below the minimum requirement of 1661 Kcal per day. This is the only age group of children with the stable negative balance of daily calorie intake.

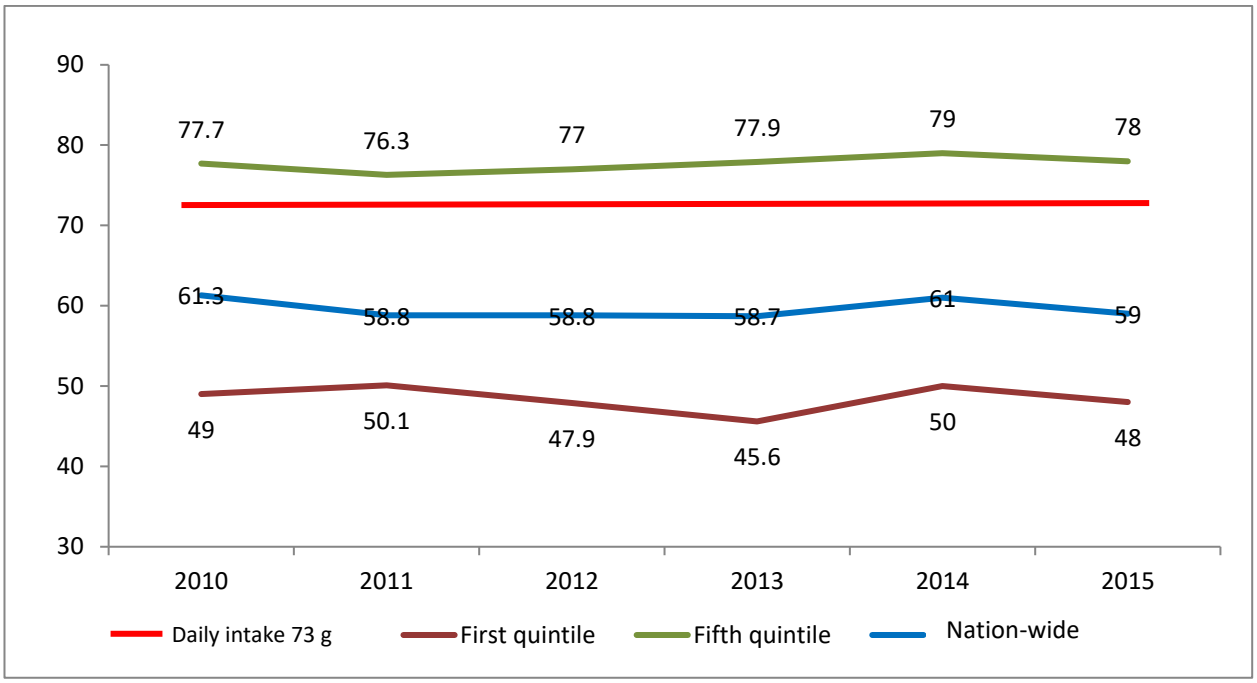
Diagram 9. Daily consumption per capita, Kcal
Children aged 1-3 years



The indicator of **"Daily protein intake per capita"**[26] demonstrate the worst situation.

Diagram 10. Daily consumption per capita - proteins, grams. Nation-wide, first and fifth quintiles

[26]Proteins are high molecular weight organic compounds. Main sources: meat, poultry, fish, milk, nuts, legumes, cereals; to a lesser degree: vegetables, fruits, berries and mushrooms.

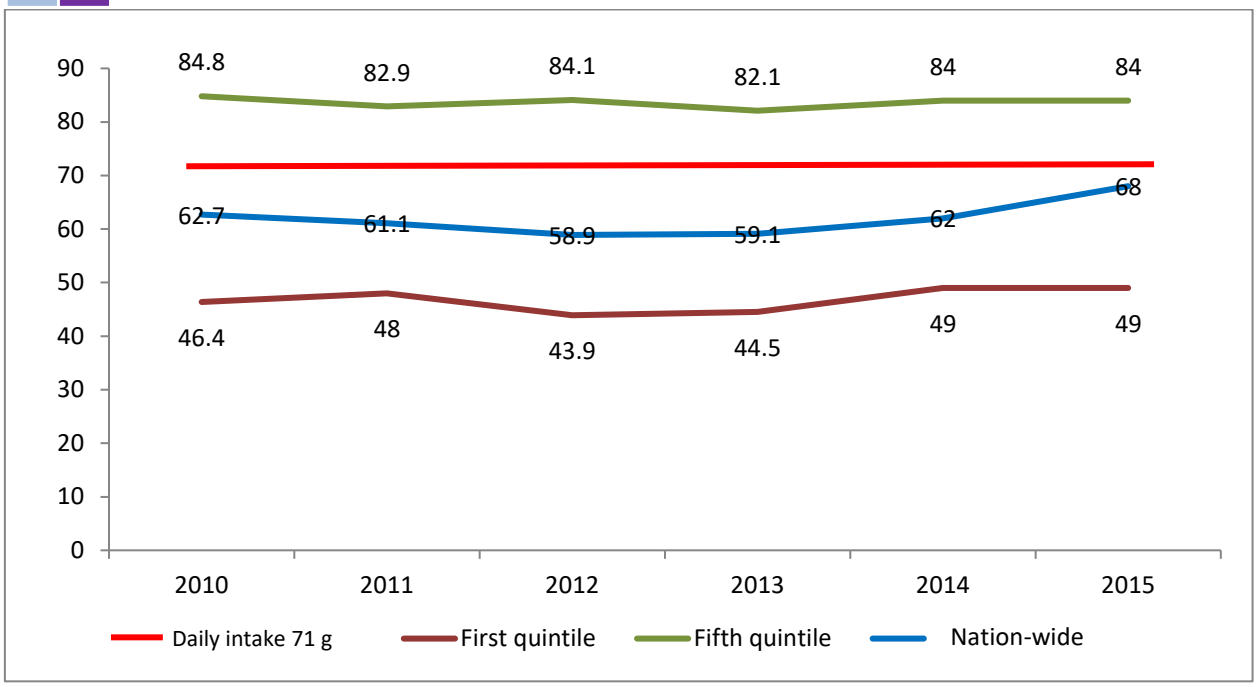


As seen from diagram 10, the indicator of consumption is below the minimum daily protein intake of 73 grams nation-wide in Kyrgyzstan. However, the negative balance of protein intake in the population in 2015 was 14 grams below, and in the first quintile group 25 grams below. In other words, the population consumes 81% of minimum requirement, while the poorest population consumes 66%. In general, only the population in the fifth quintile group by income level consumes the required amount of proteins.

Moreover, the "Daily consumption per capita – proteins" indicator in children is worse. All children (1-17 years of age) consume proteins at the level below the minimum daily intake, which is 69-70 grams. In 2015, this group consumed 72% of the requirement in average. Children aged 1-3 years have the maximal protein deficiency – 56% of the requirement. This group's negative balance was 27 grams. Protein deficiency prevalence reduces as children grow.

The similar situation is with the **"Daily consumption of fats per capita"** indicator. The population of Kyrgyzstan suffers from the fat deficiency, which minimum daily intake should be 71 grams. An exception is the population of the fifth, the most well off group.

Diagram 11. Daily consumption per capita – fats, grams
Nation-wide, first and fifth quintiles



Moreover, the "Daily consumption per capita – fats" indicator is worse in children, as well. All children (aged 1-17) have daily intake of fats below the required 69-70 grams per day. In 2015, they consumed only 77% of the minimum standard in average. The negative balance was 22 grams in children aged 1-3 years and consumption was 63% of the minimum standard.

"Consumption of basic food products in a diet" indicator

This indicator is calculated as the ratio of the actual consumption of an individual product and its minimum standard. The minimum standards of food consumption for demographic groups are approved by the Zhogorku Kenesh of the Kyrgyz Republic.

For the purpose of analysis, the deviation of the level of per capita consumption of basic foods products in Kyrgyzstan from the average physiological standards specified in the legislation has been assessed: relevant indicators of actual consumption have been deducted from the standard requirements indicators.

The data provided in table 6 show various deviations of the average per capita consumption from the minimum and average physiological standards. Thus, in Kyrgyzstan, meat consumption (proteins) is below the standard, and consumption of eggs, fruits and berries is far below the standard. Meat is consumed within minimum standards, yet far below the average physiological standards. Bread (carbohydrates) as well as vegetables are consumed in quantities well above the recommended standards. Potato, sugar and vegetable oil are consumed within normal limits with slight deviations.

Deviations from the actual values of milk and dairy product consumption are far below the minimum standards, yet a bit more than that the average physiological standards. This is due to the differences in the structure of these standards – the minimum requirements are by the non-proportional reduction of absolute values, yet consider the access to food products.

Table 4. Deviations of actual average per capita indicators of food consumption from minimum and average physiological standards of per capita consumption

Period	Bread and wheat products	Meat and meat products	Milk and dairy products	Eggs (pieces)	Vegetables	Fruits and berries	Potato	Sugar	Vegetable oil
1	2	3	4	5	6	7	8	9	10

Deviations of actual average per capita indicators of food consumption from minimum consumption rates per capita									
2010	+5,4	0,0	**-15,8**	**-9,4**	+5,7	**-5,3**	+3,4	0,1	+0,2
2011	+5,3	0,0	**-15,7**	**-9,2**	+5,7	**-5,4**	+3,5	0,1	+0,2
2012	+5,2	0,0	**-15,6**	**-9,3**	+5,8	**-5,4**	+3,6	0,0	+0,1
2013	+4,5	-0,6	**-16,5**	**-9,5**	+4,9	**-5,5**	+3,1	0,0	+0,2
2014	+4,8	-0,5	**-16,5**	**-9,6**	+5,0	**-5,5**	+3,1	-0,1	+0,2
2015	+4,6	-0,1	**-15,3**	**-9,2**	+5,8	**-6,3**	+3,8	-0,3	+0,2
Deviations of actual average per capita indicators of food consumption from the average physiological standards of consumption per capita:									
2010	+6,3	**-1,9**	+1,0	**-8,6**	+3,0	**-7,8**	-0,1	**-0,3**	+0,2
2011	+6,2	**-1,9**	+1,1	**-8,4**	+3,0	**-7,9**	0,0	**-0,3**	+0,2
2012	+6,1	**-1,9**	+1,2	**-8,5**	+3,1	**-7,9**	+0,1	**-0,4**	+0,1
2013	+5,4	**-2,5**	+0,3	**-8,7**	+2,2	**-8,0**	-0,4	**-0,4**	+0,2
2014	+5,7	**-2,4**	+0,3	**-8,8**	+2,3	**-8,0**	-0,4	**-0,5**	+0,2
2015	+5,5	**-2,0**	+1,5	**-8,4**	+3,1	**-8,8**	0,3	**-0,7**	+0,2
Actual consumption vs. WHO norms (2015)	+5,1	-2,9	-17,0	-13,7	-0,1	-4,4	0,0	-1,5	-0,1
For reference									
Minimum standards[1]	10,51[27]	3,16	33,5	16	6,83	7,76	4,69	1,66	0,79
Average physiological standards[2]	9,61	5,11	16,67	15,21	9,52	10,31	8,21	2,13	0,76
WHO recommendation[3]	10,04	5,84	33,67	20,25	11,69	6,69	8,06	3,04	1,09

[1] Government Decree dated 6 November 2009 No. 694 "On approval of the structure of minimum needs for main social and demographic groups of population of the Kyrgyz Republic"

[2]Decree of the Government of the Kyrgyz Republic dated 19 February 2010 No. 111 "On the approval of average physiological standards of consumption of basic foods products for the population of the Kyrgyz Republic"

[3]World Health Organisation standards. Source: Food Security Analysis of the Republic of Belarus and Countries Worldwide. – Collection of scientific practical articles.-No. 34-35 20.12.2014.

If the average per capita consumption of foods is compared with the WHO recommendations on food consumption, the deviations in 2015 were as follows: negative balance increased for meat and meat products, eggs and sugar, while for fruits and berries, it decreased. However, the balance became negative in milk and dairy products, with a large degree of deviation from the norm.

Conclusions

[27] Calculated indicator due to various units of measurement used in the normative frameworks. The indicator of minimum consumption of flour – 7.88 kg/month was converted to grain using multiplying factor 1,33 (=1/0,75).

- Physical access to food in the country is sufficient. Existing road density enables uninterrupted supply of food commodities to the markets in accordance to the consumption needs.
- Analysis of economic access to food has shown the following:

- For the indicator "daily energy value of the diet" in Kcal a day, the consumption needs are not met for the first income quintile and among children 1-3 years old. The normative consumption requirements of protein and fat are met only for the fifth income quintile group. One of the potential reasons of this is insufficient awareness among the population about healthy nutrition.
- Analysis of the indicator "level of individual consumption by key food items" shows that the consumption practices are shifted towards starchy based products with limited consumption of meat, eggs and fruits.
- For the indicator "economic accessibility of food products" the normative standard is met nation-wide in Kyrgyztan as well as by provinces. However, it is not met for the first income quintile group, who spends up to 75% of their budget on food.
- Analysis of the indicator "differentiation of food expenditure levels by social groups" shows a significant differentiation among the population in terms of levels of food expenditures. The first income quintile group spends on food around two times less than the fifth group. This problem, considering the degree of this differentiation, cannot be resolved only through the social assistance mechanisms.

Recommendations:

- Population in the country is not prone to hunger. However, it is prone to significant problems of access to adequate energy-rich consumption. Despite a number of social assistance programmes implemented, these programmes did not affect the problems of ensuring adequate food access of certain population groups.
- The degree of difference of the share of expenditures devoted to food between the fifth income quintile group, who have sufficient access to adequate energy-rich food products, and other population groups, especially the first quintile group, who are deficient in terms of access to such consumption, is significant. This indicates that improving consumption of the most vulnerable population groups (especially first and second quintile groups) to meet the levels of normative requirements of consumption of energy-rich food products, cannot be addressed through social assistance mechanisms. The key policy direction to improve food consumption should be support of the population in improving access to income generation activities.
- At the same time, the support through social assistance instruments should be strengthened to address consumption practices among all children aged 0-17 years. Improving consumption among children aged 1-3 years old should be the priority measure.

3.3. Food utilisation

Assessing food security "Utilisation" component in the Kyrgyz Republic is based on the indicator (10) compliance of quality, caloric content and food safety with regulatory requirements (Regulation on food security monitoring and indicators of the Kyrgyz Republic).

"Compliance of quality, caloric content and food safety with regulatory requirements" indicator

This indicator is estimated based on the normative requirements to the quality of foods and their safety, production control, compliance with regulatory requirements, technical regulations, and other quality assessment systems. Target values of this indicator are not established in the Regulations of the Government of the Kyrgyz Republic dated 3 March 2009 No. 138 "Regulations on food security monitoring and indicators of the Kyrgyz Republic". Agencies in charge of the indicator – Department of Sanitary and Epidemiological Surveillance, Department of State

Veterinary, National Institute of Standards and Metrology. Reports of these agencies are not public.

The indicator contains three separate sub-indicators to measure quality, calorie content and safety, which have specific norms and requirements. The threshold levels for quality and safety standards are set individually for each type of food product. The study provides the analysis of the dietary energy values in the "Access" section, as there is a direct relation between the low calorie intake and economic food access.

For the reasons above, the expert assessment in this study is based on some indicators have been used internationally to assess food security in the "Utilisation" component.

This includes anthropometric and medical indicators for children and adults related to the deviations of actual diets from the recommended norms: **among children under 5 years of age** – wasting, stunting, underweight, anaemia; **among adults** – underweight, vitamin A deficiency, and iodine deficiency; **among pregnant women** – prevalence of anaemia.

Table 5. International food security indicators (utilisation)[28]

Food security indicators of USA	Food security indicators of FAO
Utilisation	
Share of children under 5 years of age with dystrophy	Percentage of children under 5 years of age with wasting
Share of children under 5 years of age with atrophy	Percentage of children under 5 years of age with stunting
Share of children under 5 years of age whose weight is below the norm	Percentage of children under 5 years of age with underweight
Share of adults whose weight is below the norm	Percentage of adults with underweight
	Prevalence of anaemia among pregnant women
	Prevalence of anaemia among children under 5 years of age
	Prevalence of vitamin A deficiency in population
	Prevalence of iodine deficiency

1) Anthropometric and medical indicators of children and adults in the Kyrgyz Republic are related to the dietary deviations from the recommended norms.

a. Breastfeeding and infant and young child feeding

According to UNICEF studies[29], 97.6 per cent of children have ever been breastfed, while, only 41.1 per cent have been exclusively breastfed and 69.5 per cent of children aged 0-5 months have been predominantly breastfed until 6 months. 50.9 per cent of children have received age-appropriate breastfeeding.

Table 6. Breastfeeding and infant feeding

[28] Cited from: D.V. Baldov, S.A. Methodology of food security level assessment. Nizhny Novgorod State University of Engineering and Economy, Journal Vestnik NGIEI Issue No. 1 (56) / 2016. http://cyberleninka.ru/article/n/metodika-rascheta-urovnya-prodovolstvennoy-bezopasnosti

[29] Kyrgyz Republic, Multiple Indicator Cluster Survey 2014 Annual Results Report. UNICEF, December, 2014. - P. 7.

Indicator	Description	Value
Children ever breastfed	Percentage of women with a live birth in the last 2 years who breastfed their last live-born child at any time	97,6
Early initiation of breastfeeding	Percentage of women with a live birth in the last 2 years who put their last newborn to the breast within one hour of birth	82,5
Exclusive breastfeeding under 6 months	Percentage of infants under 6 months of age who are exclusively breastfed	41,1
Predominant breastfeeding under 6 months	Percentage of infants under 6 months of age who received breast milk as the predominant source of nourishment during the previous	69,5
Continued breastfeeding at 1 year	Percentage of children age 12-15 months who received breast milk during the previous day	60,7
Continued breastfeeding at 2 years	Percentage of children age 20-23 months who received breast milk during the previous day	22,5
Median duration of breastfeeding	The age in months when 50 percent of children age 0-35 months did not receive breast milk during the previous day	15,4
Age-appropriate breastfeeding	Percentage of children age 0-23 months appropriately fed during the previous day	50,9

The proper breastfeeding of infants and young children can increase their chances of survival and contributes to the gain in health and development of a child, especially during a critical period from birth to the age of two. However, many mothers fail to start breastfeeding right after the birth or, in contrast, stop it too early, before a child reaches the recommended age of 6 months. The extended breastfeeding after the age of 6 months has been proved to improve health and development, and can reduce stunting in the first two years of age.

b. Malnutrition in children

The nutritional status of children reflects their overall health. The problems of malnutrition in children have been and are still urgent in Kyrgyzstan. If children have no chances to consume the sufficient quantity of quality foodstuffs, they tend to suffer from diseases more, their development based on age deteriorates, and they are more likely to die.

One of the main reasons for this may be the so-called relative starvation or the “hidden hunger”, which is characterised by the chronic consumption of low quality foodstuffs with low content of nutrient and vitamins (micronutrients). The consequences of such hunger is numerous diseases and reduced life expectancy.

The research carried out by the UNICEF[30] on the nutritional status of children aged under 5 on the basis of three anthropometric indices (weight-for-age, height-for-age, and weight-for-height) has shown that 2.8 per cent of children under 5 years of age have moderate underweight, 0.6 per cent of children have critical underweight. A share of children with moderate stunting, i.e.

[30] Kyrgyz Republic. Multiple Indicator Cluster Survey 2014 Annual Results Report. UNICEF, December, 2014. - P. 6.

low height-for-age, is 12.9 per cent, with moderate wasting, i.e. low weight-for-height – 2.8 per cent of children. A share of children with moderate overweight is 7 per cent.

Table 7. Nutritional status of children

Indicator	Description	Value
Underweight prevalence (a) Moderate and severe (b) Severe	Percentage of children under age 5 who fall below (a) minus two standard deviations (moderate and severe) (b) minus three standard deviations (severe) of the median weight for age of the WHO standard	 2,8 0,6
Stunting prevalence (a) Moderate and severe (b) Severe	Percentage of children under age 5 who fall below (a) minus two standard deviations (moderate and severe) (b) minus three standard deviations (severe) of the median height for age of the WHO standard	 12,9 3,4
Wasting prevalence (a) Moderate and severe (b) Severe	Percentage of children under age 5 who fall below (a) minus two standard deviations (moderate and severe) (b) minus three standard deviations (severe) of the median weight for height of the WHO standard	 2,8 0,8
Overweight prevalence	Percentage of children under age 5 who are above two standard deviations of the median weight for height of the WHO standard	7,0

c. Anaemia in children and women

Due to the poor nutrient and calorie intake, children and adults have high prevalence of diseases caused by malnutrition. The poor intake of vitamins and various micronutrients causes stunting and mental retardation of a child. Anaemia is a serious problem for pregnant women that leads to premature birth and low birth weight.

The studies show[31] that the percentage of children aged 6-59 months that are classified as having any form of anaemia, according to secondary characteristics, is: from 54.8% in children aged 6-8 months, up to 25.6% in children aged 48-59 weeks.

Table 8. Prevalence of anaemia in children

Specification	Anaemia status by haemoglobin level				Number of children
	Any anaemia (<11,0 g/ dl)	Mild anaemia 10,0-10,9 g/ dl)	Moderate anaemia (7,0-9,9 g/dl)	Severe anaemia (<7,0 g/dl)	
Age in months					
6-8	54,8	25,8	27,7	1,4	213
9-11	59,4	27,6	28,8	3,0	275
12-17	57,8	25,6	28,5	3,6	480
18-23	55,1	25,1	29,1	0,9	456
24-35	44,7	22,7	21,0	1,0	879
36-47	32,8	20,8	11,2	0,8	868
48-59	25,6	17,2	7,9	0,5	800

In the same study, the percentage of women aged 15-49 years with anaemia (any form of anaemia) by major characteristics[32] was 30-40%.

[31] Kyrgyz Republic demographic and health survey, 2012.- P. 201.
[32] Kyrgyz Republic demographic and health survey, 2012.- P. 208.

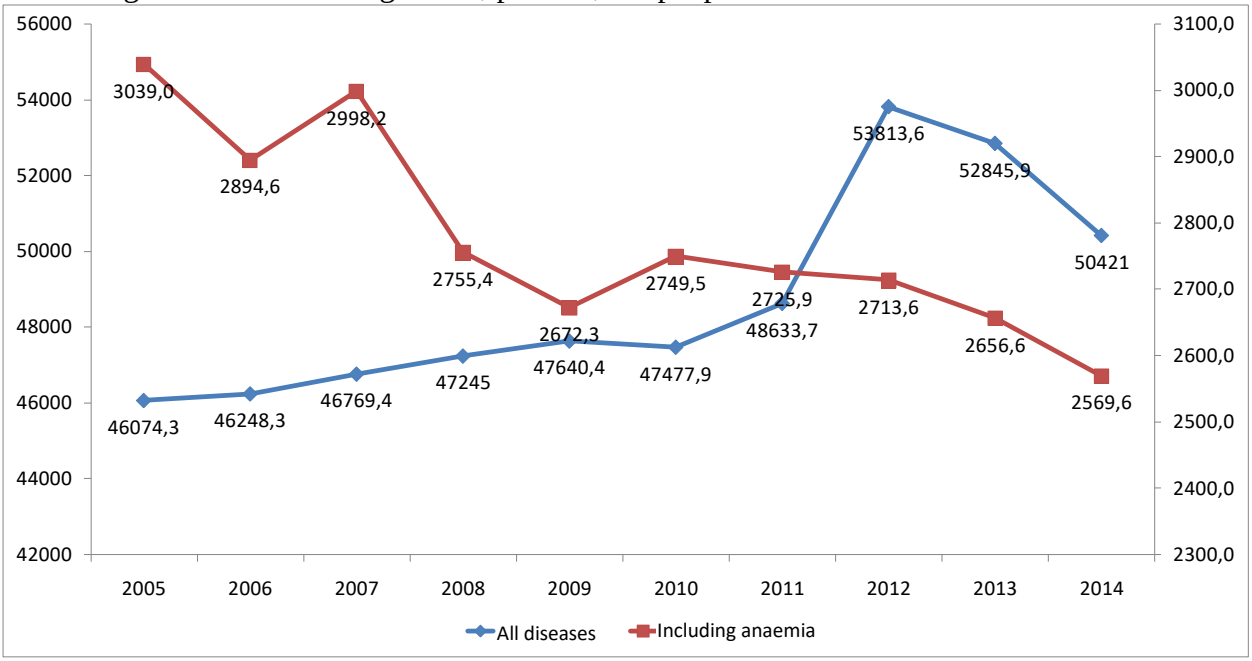
Table 9. Prevalence of anaemia in women.

Specification	Status	Anaemia status by haemoglobin level				Number of women
		Any anaemia	Mild anaemia	Moderate anaemia	Severe anaemia	
	Not pregnant	<12.0 g/dl	10.0-11.9 g/dl	7.0-9.9 g/dl	< 7.0 g/dl	
	Pregnant	<11.0 g/dl	10.0-10.9 g/dl	7.0-9.9 g/dl	< 7.0 g/dl	
Age						
15-19		34,5	27,7	6,4	0,5	1576
20-29		38,3	28,2	9,5	0,7	2729
30-39		37,9	27,7	9,4	0,7	1914
40-49		28,3	19,5	7,5	1,4	1782

In 1997-2012, the prevalence of any anaemia in women aged 15-49 years decreased from 38 per cent in 1997 to 35 per cent in 2012[33].

These findings are confirmed by the national statistics of Kyrgyzstan[34], which demonstrates the sustainable decline in the prevalence. As seen from diagram 12, the indicator of registered patients (for 100,000 people) keeps steadily decreasing in 2005-2014.

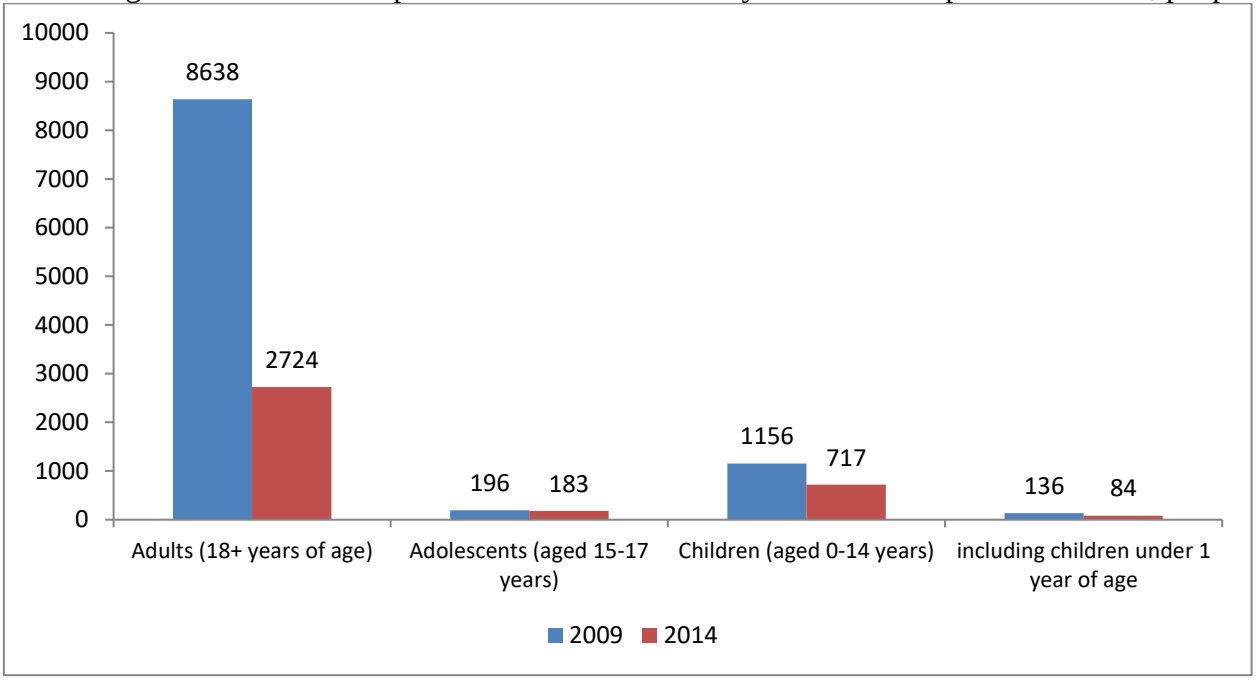
Diagram 12. Patients registered, per 100,000 people



The number of patients with iron deficiency anaemia at in-patient facilities is decreasing significantly. Among adults, the number of patients with iron deficiency anaemia at in-patient facilities has decreased almost by 70%, among adolescents – by 7%, among children under 14 years of age – almost by 40%.

[33] Kyrgyz Republic Demographic and Health Survey, 2012.- P. 207.
[34] Public health and healthcare in the Kyrgyz Republic in 2005-2009 and 2010-2015, NSC.

Diagram 13. Number of patients with iron deficiency anaemia at in-patient facilities, people

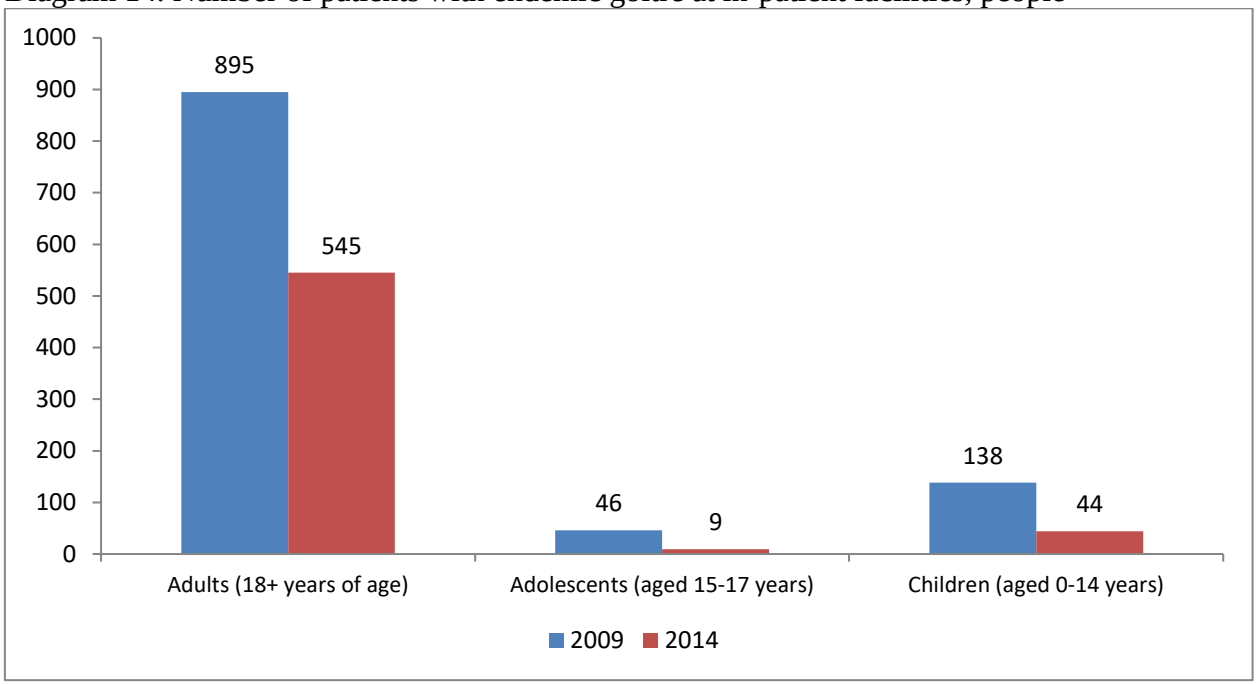


d. Iodine deficiency diseases

All over the world, iodine deficiency diseases have been one of the main causes of preventable mental retardation and psychomotor retardation in young children. The prevalence of iodine deficiency diseases (IDD) in Kyrgyzstan poses a serious social threat for the country. Severe iodine deficiency causes cretinism. It also scales up the risk of stillbirth and miscarriage in pregnant women. IDDs cause mental retardation leading to the poor progress at school, decreased mental abilities and reduced labour efficiency.

Goitre is the most frequent and obvious demonstration of iodine deficiency.

Diagram 14. Number of patients with endemic goitre at in-patient facilities, people



It should be noted that in 2009-2014 the situation with endemic goitre in Kyrgyzstan improved. Among adults, the number of patients with endemic goitre at in-patient facilities has decreased almost by 40%, among adolescents – by 80%, among children under 14 years of age – almost by 70%.

e. Unbalanced diet among adults

The frequency and quality of a diet during a long period of time affect person's body mass, at all ages. Among adults, the overweight and obesity are a more serious problem than undernourishment.

According to statistical data, the overweight was in 36.2 per cent of males and 30.7 per cent of females. Obesity was found in 12.4 per cent of females and 8.3 per cent of males. The preretirement and retirement age people prevail in the age groups with overweight, among both males and females:

Table 10. Body mass index of adults by sex and age in 2015 (in percentage)[35]

	Males				Females			
	Low body mass (BMI<18, 5)	Normal body mass (18,5<= BMI<25)	Excess body mass (25<= BMI<30)	Obesity (BMI>=30)	Low body mass (BMI<18, 5)	Normal body mass (18,5<= BMI<25)	Excess body mass (25<= BMI<30)	Obesity (BMI>=30)
Total	0,8	54,8	36,2	8,3	2,3	54,6	30,7	12,4
Out of them aged 18-29	2,0	79,8	16,6	1,5	5,5	81,5	11,1	1,8
30-39	0,1	55,9	37,1	6,8	2,0	59,4	32,1	6,5
40-49	0,7	42,2	45,8	11,3	1,2	48,1	35,0	15,7
Preretirement age	0,2	35,9	48,8	15,1	0,7	34,7	42,3	22,3
Retirees	0,2	41,8	47,4	10,6	0,5	37,3	41,9	20,2

[35] Living standard of the population of the Kyrgyz Republic 2011-2015, Bishkek, NSC, 2016

f. Diseases related to poor access to safe drinking water

The poor access to safe drinking water and its poor quality lead to the increased prevalence of diseases among people, additional expenditures on health care and reduced living standards.

Kyrgyzstan has faced the increased prevalence of acute enteric infections (2007 – 479,0; 2008 – 524,6; 2009 – 432,8 per 100,000 people) and viral hepatitis (2007 – 249,0; 2008 - 251,1; 2009 – 263,4 per 100,000 people), which is first related to the problem of safe drinking water supply.

In five years, the share of people with no access to safe drinking water has increased in the country. The access has slightly decreased in Jalal-Abad (5% vs. 12,3%), Osh (17,7% vs. 25,5%) and Issyk-Kul (1,2% vs. 3,6%) oblasts. Access to safe drinking water was one of the indicators in the Millennium Development Goals.

Table 11. Share of people with no access to safe drinking water[36] (in percentage)

	2010	2011	2012	2013	2014	2015
Kyrgyz Republic	8,5	7,6	6,8	10,4	11,1	10,9
Batken province	27,3	30,3	30	26,9	25,7	26,7
Jalal-Abad province	5	4,6	4	8,4	10,5	12,3
Issyk-Kul province	1,2	1	1	6,3	3,2	3,6
Naryn province	9,9	10,8	10,9	13,2	15,6	9,7
Osh province	17,7	13,6	11,3	26,3	27,1	25,5
Talas province	3,1	3,5	2,4	0,3	0,3	0,8
Chuy province	1	0,4	0,2	0	0	0
Bishkek city	0	0	0	0,2	0,2	0
Osh city	0	0	0	0,3	3,5	3,3

2) State support of nutrition and food safety

The state has adopted laws and various programmes to improve the nutritional status of the population, including the most socially vulnerable groups:

Measures to improve breastfeeding and feeding of infants and young children

Kyrgyzstan has adopted the Law “On protection of breastfeeding of children and marketing regulation of products and bottle feeding of children”. In execution of the law, the country has taken various measures to promote breastfeeding since 2009.

Currently, the coverage of children with breastfeeding is rather high, 99 per cent of children born in the last two years have ever been breastfed at some moment of their life[37]. The comparison of the three studies carried out in the last fifteen years (DHS KR 1997, MICS 2006, DHS 2012) has shown that the percentage of children with early initiation of breastfeeding within an hour after birth has increased almost twice (45% in 1997, 65% in 2006, 84% in 2012).

Measures to ensure school meals provision

Ensuring rational and healthy nutrition of school students is one of the important factors to prevent diseases and support health of the younger generation in the country. These measures contribute to the solution of the problem of provision of adequate diet, education to school students and offer other advantages in the social and economic sphere. As recommended by the Ministry of Health, school meals should cover 25% of the recommended dietary allowance.

[36] NSC data. http://stat.kg/ru/statistics/uroven-zhizni-naseleniya/

[37] Kyrgyz Republic demographic and health survey, 2012.

The Government of Kyrgyzstan has adopted the Regulations on main areas of school meals development in the Kyrgyz Republic, which address the needs of the school meals system in terms of food products, strengthening state guarantees of availability of high quality school meals, creation of conditions for the promotion of competitiveness of industrial agriculture and protection against internal and external risks to food security.

School meals are also a social protection measure intended to protect the vulnerable categories of school students. The republican budget spends 475 million soms annually on school meals.

In recent years, the awareness of school meal issues has helped to cover students with hot meals in general education institutions of the republic: 333 pilot schools (31% of the total number of schools in the republic) provide hot meals to students as a result of the improved models of school meals introduced by World food Programme (WFP).

Measures to decrease iron deficiency among the population

In order to eliminate iron deficiency anaemia, the Government has adopted such measures as iron supplementation to target groups (women of fertile age, young children); Flour fortification; Changes in eating habits; Control over infectious and parasitic diseases. In order to improve the nutritional status in the population, the Kyrgyz Republic has adopted laws "On fortification of wheat flour", Technical regulations "On the safety of fortified flour" and "On protection of breastfeeding of children and marketing regulation of products and bottle feeding of children".

Since 2015, the production of fortified flour has significantly increased, for instance, the share of such production has increased tenfold as compared to 2014. However, flour production tends to decline, and has amounted to 98,1 thousand tonnes in the first six months of 2016, which is 40,3% of the total wheat production in 2015. Production of fortified flour is the important measure of the Government designed to protect public health, thus solving the problem of prevention of micronutrient deficiency in the population. This measure needs to be supported by the Government; producers should be encouraged to produce fortified flour.

Table 12. Production of flour in the Kyrgyz Republic, (thousand tonnes)[38]

	2013	2014	2015	2016
Total produced	276,6	319	243,3	233,2
including fortified	2,1	5,5	43,4	44,8
Share of fortified flour in the total volume	0,8	1,7	17,8	19,2

Measures to prevent iodine deficiency diseases

In general, share of population consuming iodised salt is increasing in Kyrgyzstan. In the majority of provinces iodised salt consumption exceeds 90%, the lowest share of households has been recorded in Jalal-Abad (74,5%) and Talas provinces (77,8%).

Table 13. Share of households consuming adequately iodised salt (15 ppm or more) (in per cent)[39]

	2010	2011	2012	2013	2014	2015
Kyrgyz Republic	81,1	86,7	81,2	89,2	88,5	89,1
Batken province	92,9	82,6	78	90	97,9	95,3

[38] Information statement of the Kyrgyz Republic on food security and poverty for 2013-2016.- NSC.
[39] Information statement of the Kyrgyz Republic on Food Security and Poverty 2 / 2016. - NSC

Jalal-Abad province	78	83,5	74,2	88	66,4	74,5
Issyk-Kul province	64	82,8	75,1	88,8	92,2	84,4
Naryn province	79	89,2	82,2	83,3	79,2	90,3
Osh province	78,1	84,6	77,6	85,1	93,9	98,6
Talas province	71	69,3	58,5	74,7	76,2	77,8
Chuy province	87,1	89,3	88,3	89,2	94,1	84
Bishkek city	99,7	99,6	99,6	99,5	100	100
Osh city	0	0	0	96,5	99,5	97,8

In order to prevent iodine deficiency diseases, the Government has taken a package of measures to eliminate iodine deficiency diseases among the population. The Decree "On elimination of iodine deficiency diseases among the population of the Kyrgyz Republic" was adopted in 1994. In order to improve the nutritional status of households, the law "On prevention of iodine deficiency diseases" intended to prevent and eliminate iodine deficiency diseases in the territory of the Kyrgyz Republic for the purpose of public health protection, as well as the Technical regulations "On the safety of dietary iodised salt" were adopted in 2001.

Measures to raise public awareness about the balanced diets and healthy lifestyle

According to the legislation, the country implements a package of measures focusing on the hygiene training and education of its citizens and promotion of healthy lifestyle. In pursuance of the law "On public health care"[40], governmental strategies, departmental action plans and programmes on raising public awareness about the balanced diets, the prevention of micronutrient deficiency (iodine, iron), the diets of the pregnant women and breastfeeding mothers and children. In the structure of the Ministry of Health, Rural Health Committees (RHC) have become the key agent in the delivery of information to the majority of rural households. Also, international organisations (Global Alliance for Vaccines and Immunization, UNICEF and others) encourage the delivery of preventive measures among households, as well as trainings for the employees of the department of nutrition and leading specialists of medical facilities of the country on urgent issues of nutrition of young children, pregnant women, breastfeeding women and women of fertile age.

Measures to improve access to safe drinking water

In order to improve the quality of drinking water, the country has adopted the laws "General technical regulations "On the safety of drinking water", "General technical regulations "Requirements to the safety of foodstuffs and processes of their production, storage, transportation, sale, and disposal". The Government has adopted the Strategy of Drinking Water Supply and Disposal System Development in Residential Areas of the Kyrgyz Republic until 2026[41]. The strategy focuses on the improvement of quality drinking water supply to people, promotion of health and quality of life of people. The strategy targets include the construction, reconstruction and modernization of the drinking water supply and disposal system. The successful implementation of the strategy depends on its full and timely funding of measures focused on its implementation. The scope of tasks and high risks of incomplete and untimely funding require the support from international donors to implement this strategy in full.

Conclusions

40The law of the Kyrgyz Republic "On public health care" defines "Public health care is a set of measures designed to protect public health, prevent diseases, prolong life and promote human health by means of organisational efforts of all parties concerned, raising awareness of the public, state and private entities, communities and individuals."

[41] Decree of the Government "Strategy of Drinking Water Supply and Disposal System Development in Residential Areas of the Kyrgyz Republic until 2026" dated 28 March 2016, No. 155

- The indicator "compliance of quality, calorie and food safety, regulatory requirements", includes three separate stand-alone indicators that have different norms and requirements for calculations. Threshold values or specifications are set individually for each type of food products in accordance with the availability of technical regulations, or other regulatory frameworks. This indicator is not structured, therefore, it was not possible to present the information on compliance of food products by quality, caloric content and safety against the normative requirements.
- In the international practice, the indicators of the 'utilisation' component include indicators of dystrophy, stunting, wasting, anaemia prevalence - **among children under 5 years**; vitamin A deficiency and iodine deficiency - **among adults**; prevalence of anaemia - **among pregnant women**. These indicators are measured and applied in Kyrgyzstan, however, the target values have not been set.
- The findings of the studies, according to which 97,6 percent of children were ever breastfed, while only 41,1 percent were exclusively breastfed and 69,5 percent of children aged 0-5 months were predominantly breastfed until 6 months of age, suggest that there is a need in close and regular attention to the situation with breastfeeding.
- Anthropometric indexes, according to which 2,8 percent of children under 5 years old have a moderate underweight, 0,6 percent of children have a severe underweight, 12,9 percent are moderately stunted, etc. also suggest that there is need in implementing targeted policy measures.
- Anaemia prevalence among children and pregnant women in the country has reduced during 2009-2014. Although there are no studies confirming that there is a direct relation of the targeted measures taken and these results, it can be assumed, that in general, an effective policy has been implemented in this direction. A good indication of this would be increase in production of fortified wheat flour.
- As seen from the statistical data, the incidence of endemic goitre associated with dietary iodine deficiency is currently uncommon. It can be assumed, that the taken salt iodisation measures have turned out to be effective to achieve the notable progress.
- The body mass indexes statistics shows that 36,2 of men and 30,7 of women are overweight. Obesity levels are at 12,4 percent among women and 8,3 percent among men. This suggests that a significant part of the population has inadequate consumption practices, with high deficit of protein, fat, vitamin and micronutrient intake against the physiological norms, and excess consumption of carbohydrates, which leads to disorders of metabolic processes, decreased immunity and increased morbidity.
- Problems associated with poor access to safe drinking water are a policy priority during many years. However, the fact that, during five years, the share of population that has insufficient access to clean drinking water in the country has increased, requires re-thinking of the whole strategy in addressing this issue.

Recommendations:

The first set of measures should be targeted at defining a more accurate threshold and target values for the indicator "Compliance of quality, calorie and food safety". It is also necessary to consider inclusion of additional indicators to the "utilisation" component of food security. This are mainly the following indicators: dystrophy, below-the-norm height and weight, anaemia – **among children under five years old**; vitamin A and iodine deficiency – **among adults**; anaemia prevalence – **among pregnant women**.

The second set of measures should cover the process of implementation of the policy to address the issues of quality, caloric content and food safety, including the development of technical regulations on product standards, sanitary and epidemiological rules, as well as

monitoring and publicity of this information. Despite having a number of technical regulations for food products, they still do not cover all production processes and types of products.

The third set of measures should be targeted at ensuring increase in production of food products, fortified with necessary micronutrients. This requires a complex approach together with government support in production of fortified wheat flour, iodized salt, and effective policy on information dissemination and awareness raising, which should promote stable demand on such commodities among the population, driven by their rational understanding and behavior.

The fourth set of measures should be targeted at increasing awareness among the population on healthy nutrition. Separate measures should be targeted at the issues of rational use of financial resources directed on food, decrease of expenditures on large-scale events (social events and ceremonies, etc).

3.4. Stability of food security

As noted above, there are no approved indicators to assess the "Stability" component. However, in international practice, stability of food security is one of the criteria for food security, which is assessed through a number of indicators. They characterize stability of food prices, country's capacity for sustainable production and supply of foods commodities, stability of economic and political situation, etc.

Thereby, similarly as in the analysis of “utilization” component, the selected incidcators applied globally were used.

Table 1. Food security indicators for the Stability component applied in international practice

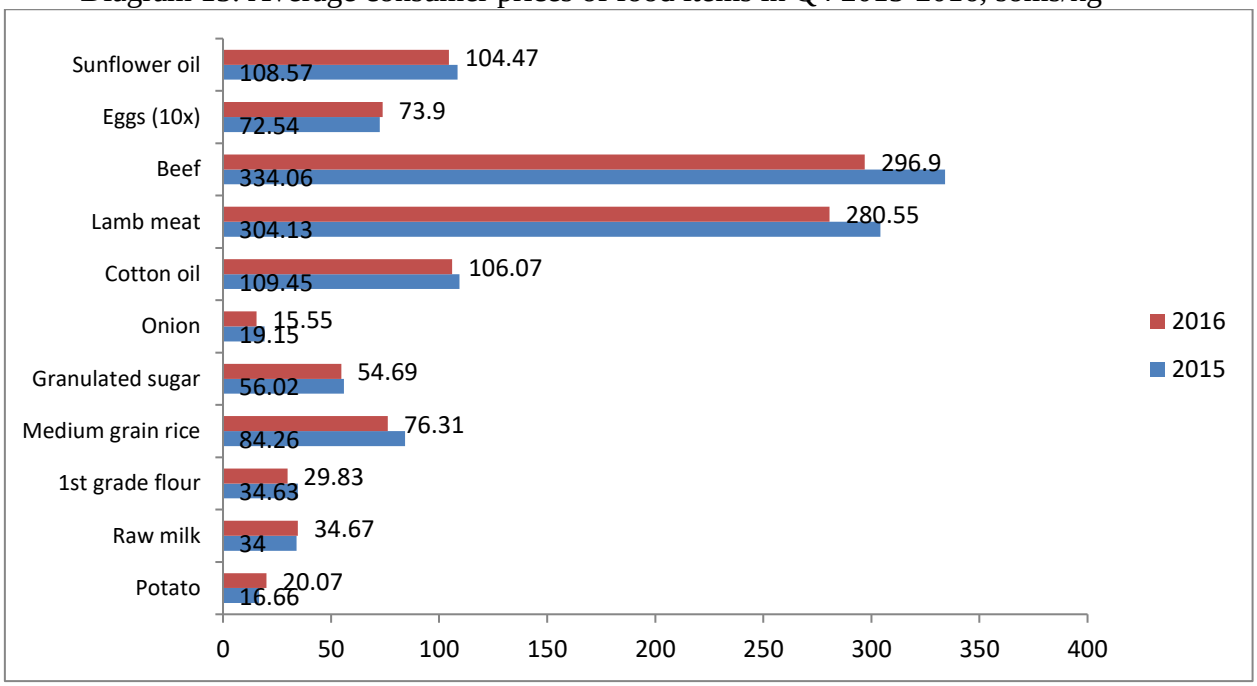
Food security indicators (USA)	Food security indicators (FAO)
Stability	
Index of volatility of domestic food prices	Volatility of domestic food prices
Volatility in per capita food production	Variability of food production per capita
Volatility in per capita food production	Variability of food supply per capita
Political stability and absence of violence / terrorism	Political stability and the absence of violence / terrorism
Volume of imported food in the total exports of goods	Share of food imports in total imports of goods
Percentage of arable land equipped with irrigation facilities	Percentage of arable land equipped with irrigation equipment
Level of dependence on imports of cereals	Degree of dependence on grain imports

Three groups of indicators were used in this study: stability of prices for basic food products, state and use of the key natural resources for agricultural production - land and water, and the climate change factor.

Price stability indicators

In 2016, the prices of certain basic foods items – meat, fruits, eggs – have decreased in Kyrgyzstan. Thus, the average price of meat in December 2016 was 296,8 soms/kg and declined by more than 45 soms as compared with December 2015. However, the domestic market depends on imports in other food items, such as sunflower oil and sugar, and their prices have increased. As seen from diagram 15, the prices decrease with various intensity.

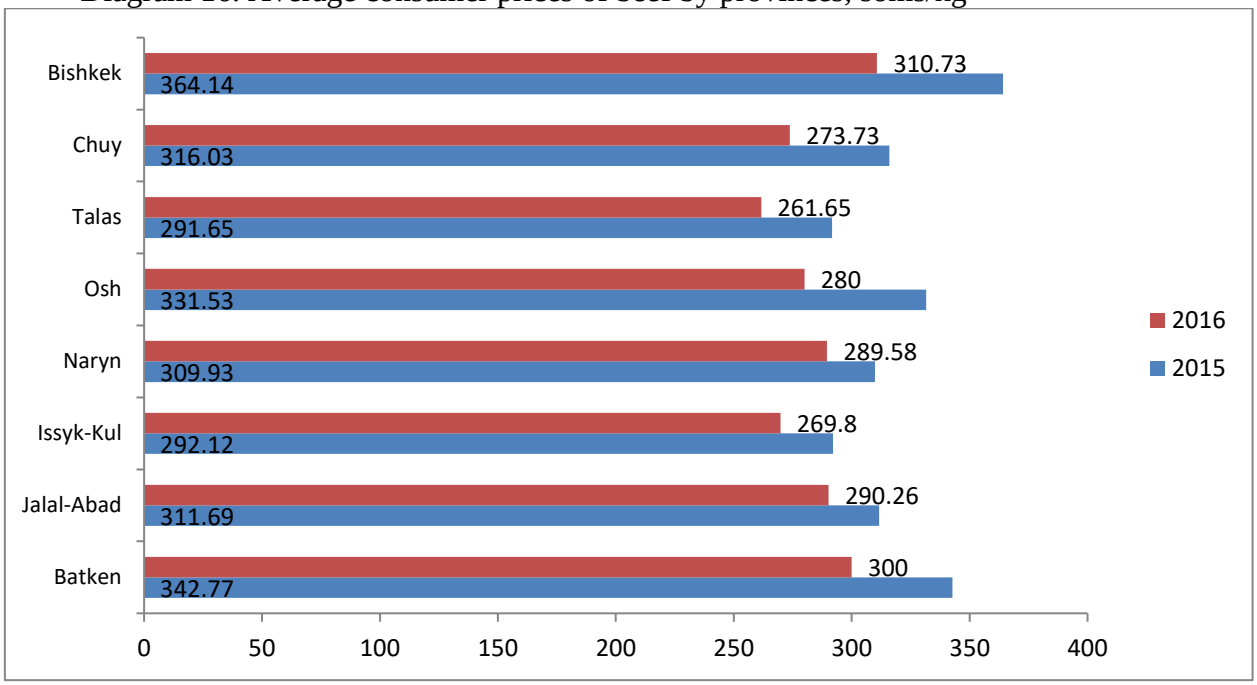
Diagram 15. Average consumer prices of food items in Q4 2015-2016, soms/kg[42]



Food prices in Kyrgyzstan are characterized by dispersion in provinces, which is related to a range of factors: production volumes of the given food items in the region, various overhead costs. Thus, meat prices (data as of December 2016) are usually the highest in Bishkek (310,73 soms) and lowest in Talas province (261,65 soms).

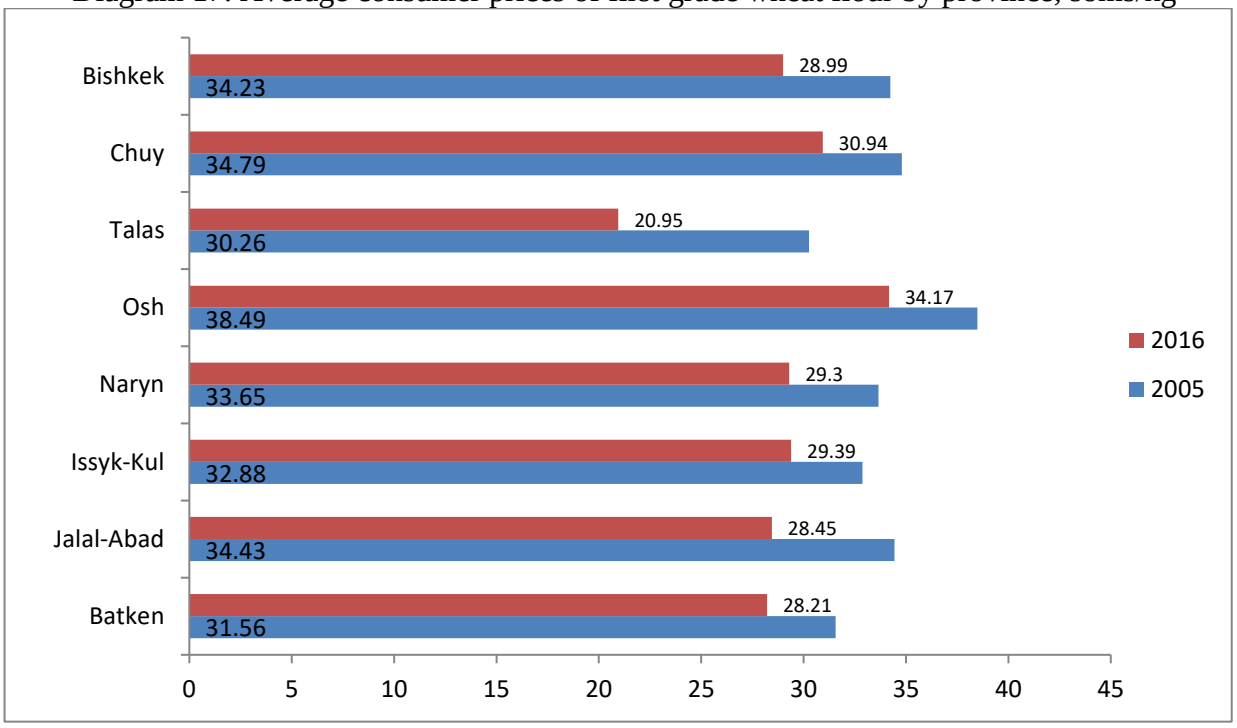
[42]Information bulletin of the Kyrgyz Republic on Food Security and Poverty, NSC, 2016

Diagram 16. Average consumer prices of beef by provinces, soms/kg



Suring a year, the prices of first grade wheat flour have decreased significantly. Thus, the average price in the country in 2016 was 29,83 soms vs. 34,63 soms in 2015. The substantial difference in prices is observed by provinces. The highest average price was in Osh province (34,17 soms), and the lowest price was in Talas province (20,95 soms).

Diagram 17. Average consumer prices of first grade wheat flour by province, soms/kg



Generally, in 2016 the prices of basic food items have been rather stable, and even decreased for some items. However, as shown above, it has not significantly increased the dietary intake among the vulnerable population groups.

Deterioration of quality and amount of agricultural lands

The domestic agricultural production is closely linked to the condition of natural resources – lands, pastures and access to irrigation water. More than a half of the land reserves of the country are composed of agricultural lands. 85% of them are pastures, 13.9% - cropland and hayfields[43]. The total area of crop land is 1194,0 thousand ha, including 788 thousand ha of irrigated land.

The area of irrigated land in 2016 was 65,9% of the total area of crop land. Every year 100-110 thousand ha of cropland are not used for agricultural production for various reasons. The area of lands vulnerable to water and wind erosion is about 5 million ha, or 45.7% of the total area of agricultural land. The total area of native pastures in the Kyrgyz Republic is 9.1 million ha. However, 49% of pastures are degraded to various extents.

Kyrgyzstan is a country with low cropland availability. The area of cropland has been steadily reducing in recent years (Table 15). The cropland availability per person (residential population) has decreased from 0.22 ha (2011) to 0.20 ha (2016) and irrigated crop land – from 0.14 ha to 0.13 ha. The reason is the population growth and inefficient use of new croplands. Moreover, recent land seizures, usually of cropland, for the purpose of housing construction, have had a negative impact. Currently, despite the blanket prohibition on the transformation of cropland[44], it is still takes place.

Table 15. Area of irrigated lands per capita*, total - ha

	01.01.2011	01.01.2012	01.01.2013	01.01.2014	01.01.2015	01.01.2016

[43]law of the Kyrgyz Republic, dated 31 July 2009 No. 257, "On introduction of a moratorium on transfer (transformation) of irrigated arable land to other land categories and types of land"
[44]law of the Kyrgyz Republic, dated 31 July 2009 No. 257, "On introduction of a moratorium on transfer (transformation) of irrigated arable land to other land categories and types of land"

Number of residential population	5478	5552	5663	5777	5895	6019
Area of crop land, total – ha	1203	1201	1190	1192	1193	1194
Irrigated	794	799	855	788	788	788
Area of crop land per capita, total - ha	0,22	0,22	0,21	0,21	0,20	0,20
Irrigated	0,14	0,14	0,15	0,14	0,13	0,13

(calculated from data based on Form #22 (annual) - NSC)

The cropland per capita varies in different regions. Thus, in southern provinces, the cropland per person is three times less than in northern regions (0.13-0.11 ha vs. 0.35-0.49 ha). Except for Naryn province, all other provinces have a decline in the availability of cropland per person.

Table 16. Area of irrigated lands by provinces per capita*, total – ha

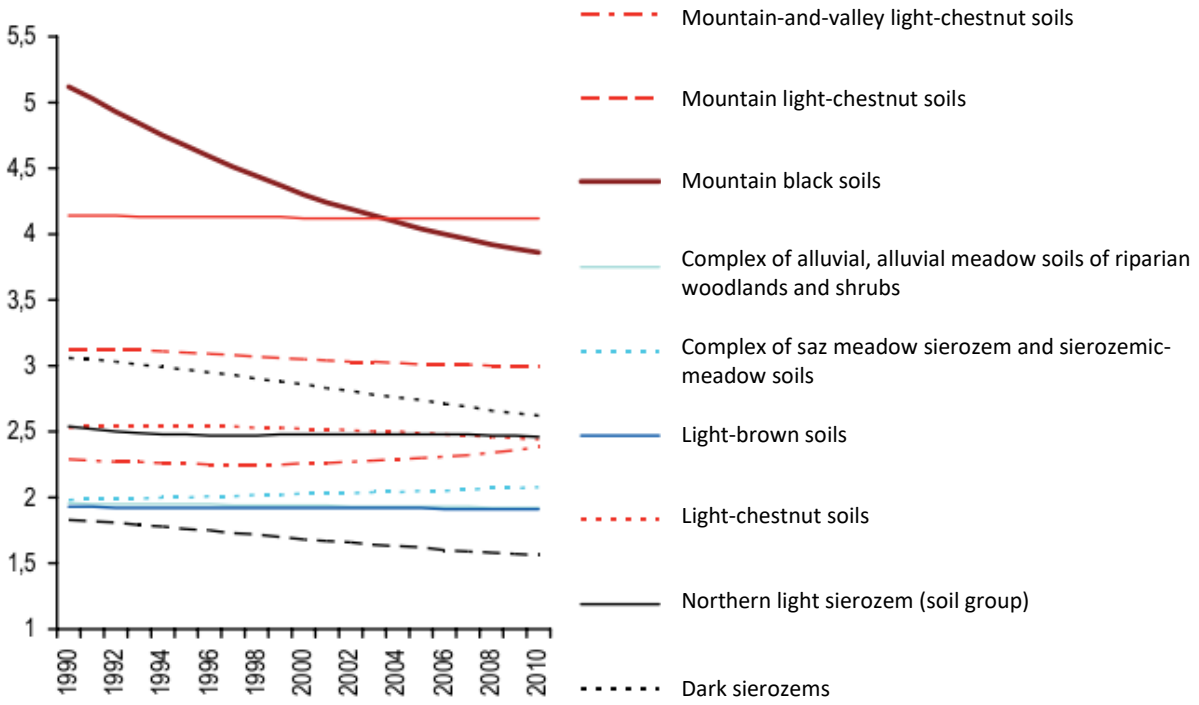
	2011	2012	2013	2014	2015
Batken province	0,13	0,13	0,13	0,12	0,12
Osh province	0,11	0,11	0,11	0,11	0,11
Jalal-Abad province	0,12	0,12	0,12	0,11	0,11
Issyk-Kul province	0,35	0,35	0,34	0,34	0,34
Naryn province	0,46	0,45	1,20	1,18	1,17
Chuy province	0,39	0,39	0,38	0,38	0,37
Talas **province**	0,49	0,48	0,47	0,46	0,46

* residential population (calculated based on data in Form No. 22 (annual) - NSC)

Despite the state funds allocated annually to the rehabilitation measures, the measures on soil conservation and reclamation, on prevention of soil degradation have failed to improve the situation. From 1990 till present time, the soil fertility tends to decline with a stable rate[45].

[45] The third national message of the Kyrgyz Republic concerning the UN Framework Convention on Climate Change

Diagram 18. Change of soil fertility by main types of agricultural soil[46].



In recent years, the Kyrgyz Republic has faced a stable tendency of intensive deterioration of the soil reclamation status, particularly, swamping and salinization of irrigated land, and consequently the loss of such land from the agriculture. Thus, 85% of irrigated land in the country has a good reclamation status, 6.5% is in satisfactory condition, and 8.5% is in unsatisfactory condition.

Table 17. Melioration conditions of irrigated lands

Province	Irrigated land, ha	Good, ha	Satisfactory, ha	Unsatisfactory, ha
Batken	57,316	51,807	1,571	3,938
Osh	134,164	128,369	2,069	3,726
Jalal-Abad	129,148	124,028	2,548	2,572
Naryn	120,241	98,384	12,024	9,833
Issyk-Kul	163,398	152,175	6,010	5,213
Talas	114,812	96,306	7,415	11,091
Chuy	328,875	241,834	37,676	49,365
Total	1,047,954	892,903	69,313	85,738

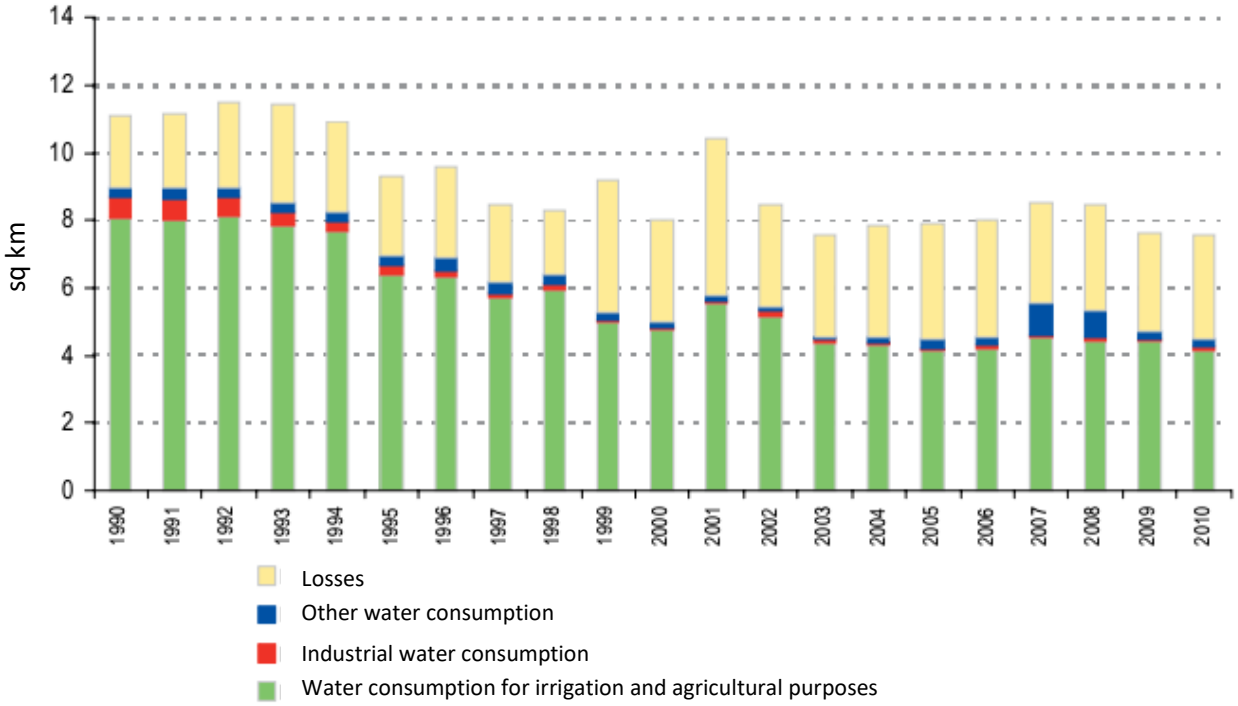
Indicators of degradation of irrigation systems, water losses

Currently, the irrigation systems are unable to provide sufficient irrigation water to the irrigated land. This creates significant risks for production, especially in recurring dry years.

Diagram 19. Change in the balance of water resources use in the last 20 years[47].

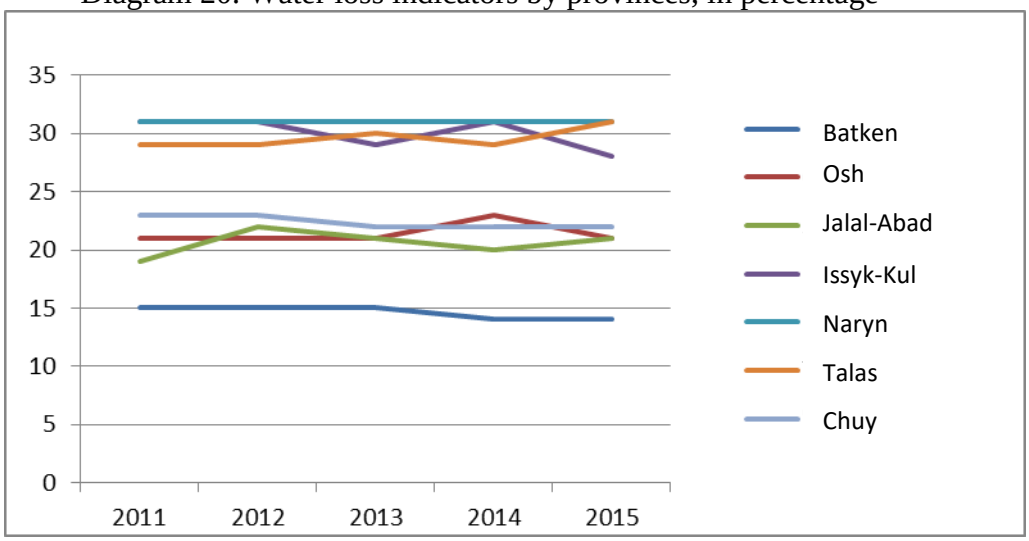
[46] The third national message of the Kyrgyz Republic concerning the UN Framework Convention on Climate Change. Bishkek, 2016

[47] Ibid



The country has high rates in terms of indicators measuring water loss, which are 20% to 30% depending on the region. Thus, Naryn province has losses up to 30% of total water supply, which amount to 189,1 million cubic meters of water. The least rates of water losses and the reduction dynamics are observed in Batken province - 15%.

Diagram 20. Water loss indicators by provinces, in percentage[48]



Indicators of resilience to climate change

Unfavourable weather conditions (late spring and early autumn frosts, high temperatures, etc.) in certain years, combined with the unfavourable melioration condition of land in some regions are the factors that restrict the full use of agro-climatic and land resources.

According to the National Statistical Committee, among all unfavourable climatic events, drought and lack of water resources have the most agricultural impact.

[48] NSC, Analysis of main water use indicators by provinces for 2011-2015

Table 18. Share of area (%) with moistening level 0,13 to 0,30 (semi desert) in the regions of the Kyrgyz Republic in 2000 and various climatic scenarios in 2100[49]

№	Province	Area, km2	2000 г.	RCP 2.6	RCP 4.5	RCP 6.0	RCP 8.5
1	Chuv	20025	15,48	27,91	30,64	32,01	37,19
2	Issyk-Kul	36823	8,86	12,19	13,68	14,47	17,78
3	Naryn	44958	8,29	13,31	16,41	18,05	24,82
4	Osh	29100	14,30	19,98	24,20	26,31	34,23
5	Talas	11441	23,94	29,51	32,53	34,03	39,56
6	Jalal-Abad	33273	14,07	18,99	21,50	22,80	27,85
7	Batken	16984	27,75	31,64	33,24	34,01	36,70
8	Kyrgyz Republic	192604	13,70	19,18	21,86	23,24	28,63

The quantitative assessment of the moistening level has shown that virtually all cropland of the country will be in the desert and semi desert zone under unfavourable climatic scenarios[50].

Conclusions

- In 2016 in Kyrgyzstan, decrease in prices with different intensity for almost all basic food products was observed. At the same time, this did not result in the increase in energy intake in consumption of the vulnerable population groups.
- Low availability of arable land and relatively high growth rates of the population in Kyrgyzstan, in future, may pose shortages of one of the main natural resources for agricultural production - arable land. The most unfavourable situation is in the southern regions, where availability of arable land per person is three times less than in the northern regions.
- The quality and use of basic natural resources for agricultural production - land and water - requires an enhanced conservation policy for these resources.
- During the last 20 years, the soil fertility deteriorates steadily;
- The percentage of agricultural land, which falls out from the agricultural circulation increases, one of the main reasons is deterioration of the ameliorative state.
- Water losses in the agricultural sector are 20-30%.

Recommendations:

The first set of measures should be targeted at improving the assessment of situation in the "Stability" component through introduction of new indicators, determination of accurate threshold and target values of these indicators. These indicators should be reflected in the relevant policies and programmes and duly monitored.

The second set of measures should be targeted at creation of mechanism of risk mitigation of price destabilisation, which is related to the market imbalances between "sellers" and "buyers" under the influence of various factors not related to food shortages.

The third set of measures should be targeted at increasing stability of agricultural production.

It is necessary to expand application of rational natural resource management principles and ecosystem approach. It is necessary to rigorously comply with requirements on ensuring inexhaustible and ecologically rational land and water use, at the same time, ensuring sustainable development.

Land use in agriculture and forestry should be based on the scientific assessment of production capacities of land; annual depletion of arable soil, fish stocks or forest resources must not exceed the recovery rates. Land users must not allow deterioration of quality of arable lands and surface and underground water.

[49] Ibidem, P. 21

[50] The third national message of the Kyrgyz Republic concerning the UN Framework Convention on Climate Change. Bishkek, 2016. P. 127.

This also includes measures of stability of food production considering climate change conditions - stability of crop farming through approbation of new seeds, changing the types of cultivated crops, stability of irrigation systems, etc.

3.4. Comparative assessment of food security status in the Kyrgyz Republic with EAEU member states

In recent years, as a result of accession of Kyrgyzstan to EAEU, the need for comparative assessment of food security has arisen. According to the Eurasian Economic Committee, the average level of food security in EAEU states[51] was as follows in 2014[52].

Table 19. Indicators of average level of food security in EAEU states in 2014

Country	Excluding supplies of EAEU member states	Including supplies of EAEU member states
Armenia	70%	75%
Belarus	100%	100%
Kazakhstan	70%	82,5%
Kyrgyzstan	80%	89%
Russia	89%	93%

As seen in table 19, Belarus is the leader in achieving food security, whose indicators are regarded as 100%. However, the average food security level of Kyrgyzstan is better than similar indicators, for example, of Kazakhstan or Russia. It shows the relatively adequate level of food security in the Kyrgyz Republic. However, the comparison of indicators on the level of consumption of basic agricultural products and food items by per capita with EAEU states is not favourable for the Kyrgyz Republic.

To compare absolute values, the indicators of EAEU states were deducted from the respective indicators of the Kyrgyz Republic. Thus, (see table 1), if Kyrgyzstan consumes less of a given product than in a given country, negative balance occurs, which is indicated by "-". If the Kyrgyz Republic consumes more, the positive balance occurs, which is indicated by "+".

Table 20. Deviations of actual average per capita consumption of basic agricultural products and foods items in the Kyrgyz Republic from respective indicators in EAEU states in 2014, in kg

Name of items	Armenia	Belarus	Kazakhstan	Russia
Cattle meat	-4,4	-1,7	-6,5	1,1
Pork	-4,5	-37,1	-5,5	-17,6
Poultry meat	-1,8	-24,8	-4,6	-16,1
Cattle meat +Pork+ Poultry meat	-10,7	-63,6	-16,6	-32,6
Dairy butter	-1,8	-3,8	-1,2	-2,3
Cheese and cottage cheese	-5,8	-12,9	-1,9	-4,7
Vegetables	-172,6	-38,1	-69,4	+27,5
Potato	-33,1	-423,7	+36,2	+12
Grapes	-83	-1,7	-7,2	-3,7

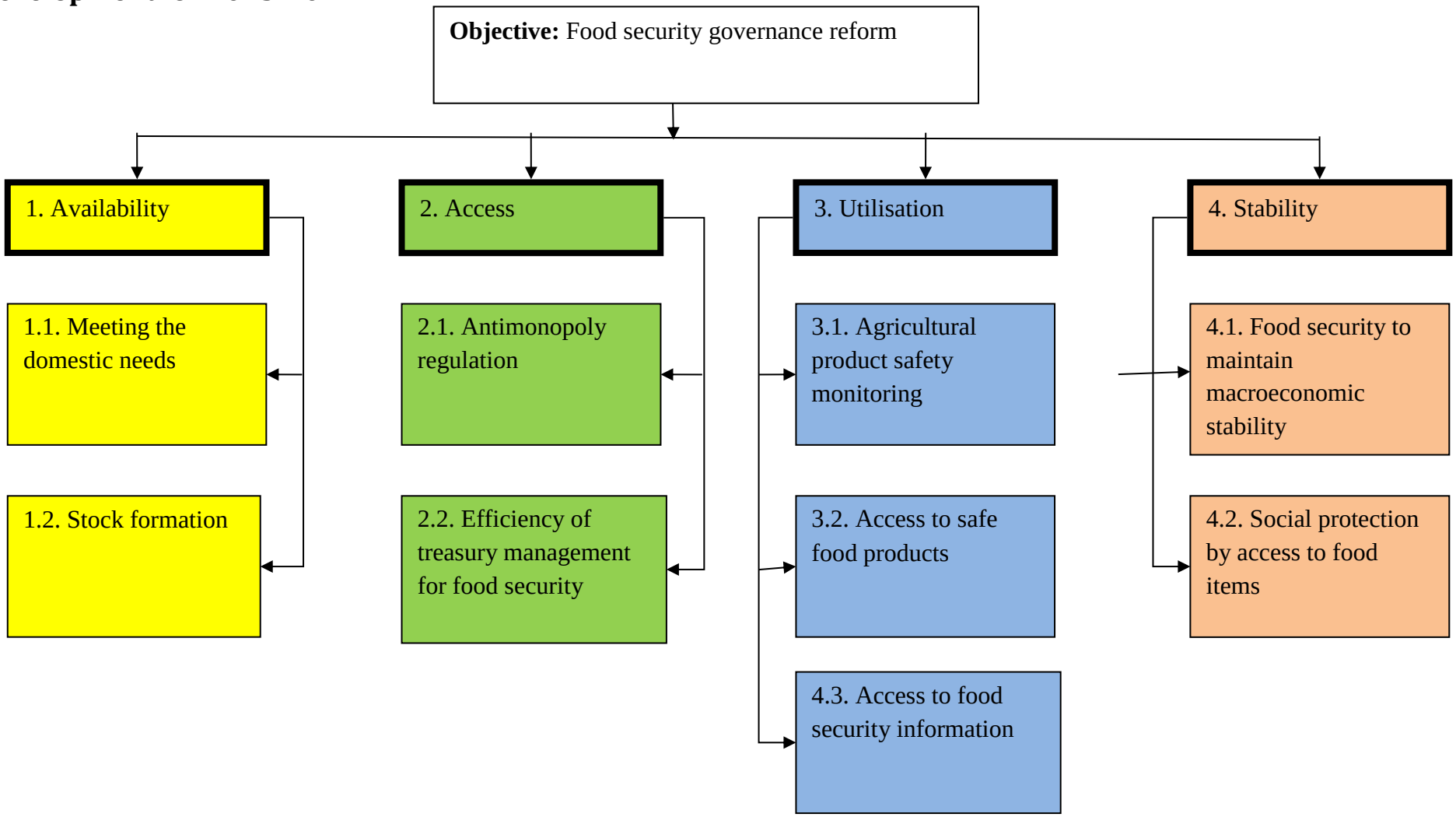
[51]Food Security Monitoring in EAEU: 2014. Eurasian Economic Commission, 2015.

[52] Unification of indicators used for calculations, as well as unified methods of calculation are needed to correctly compare the FS status in various countries.

Melons, watermelons	-47,5	+31,6	-46,3	+23,9
Apples, pears	-59,7	-43,5	+15,7	+8,2
Sausages	-2,7	-24,7	-3,4	-15,7
Vegetable oil	1,6	-14,2	-11,2	-6,1

As seen from table 20, the population of Kyrgyzstan consumes less basic food items (indicators with a negative value) almost in all indicators in absolute terms. The country keeps ahead of Kazakhstan and Russia (indicators with a positive value) in the consumption of certain products such as potato, vegetables, melons and fruits. What stands out is the lag of Kyrgyzstan in the consumption of meat, i.e. the population of the country consumes much less proteins. Also, Kyrgyzstan lags in consumption of all other products compared to Armenia, which lies almost on the same latitude, favourable for the production of warm-season crops – melons, watermelons, grapes.

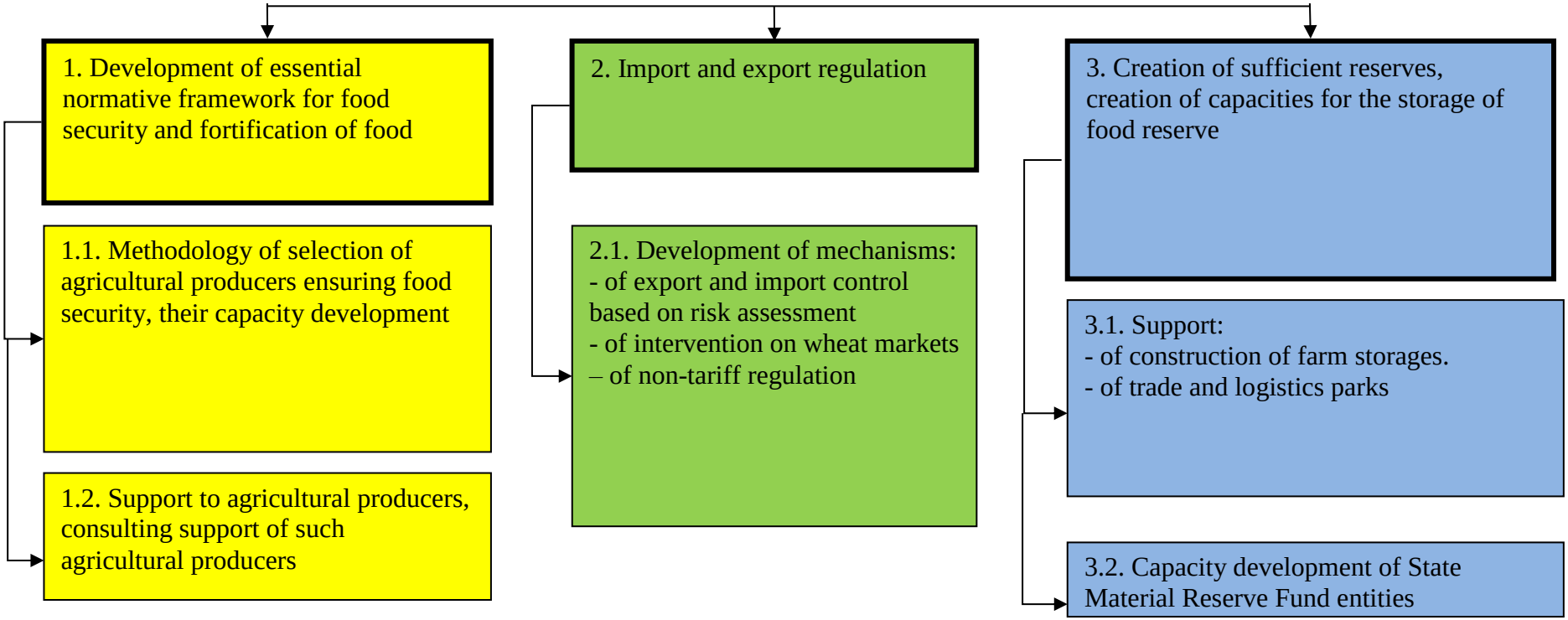
Annex 1. Food Security Objective Tree under the Programme of Transition of the Kyrgyz Republic to Sustainable Development for 2013-2017



Annex 2. Objective tree of the Food Security and Nutrition Programme of the Kyrgyz Republic for 2015-2017

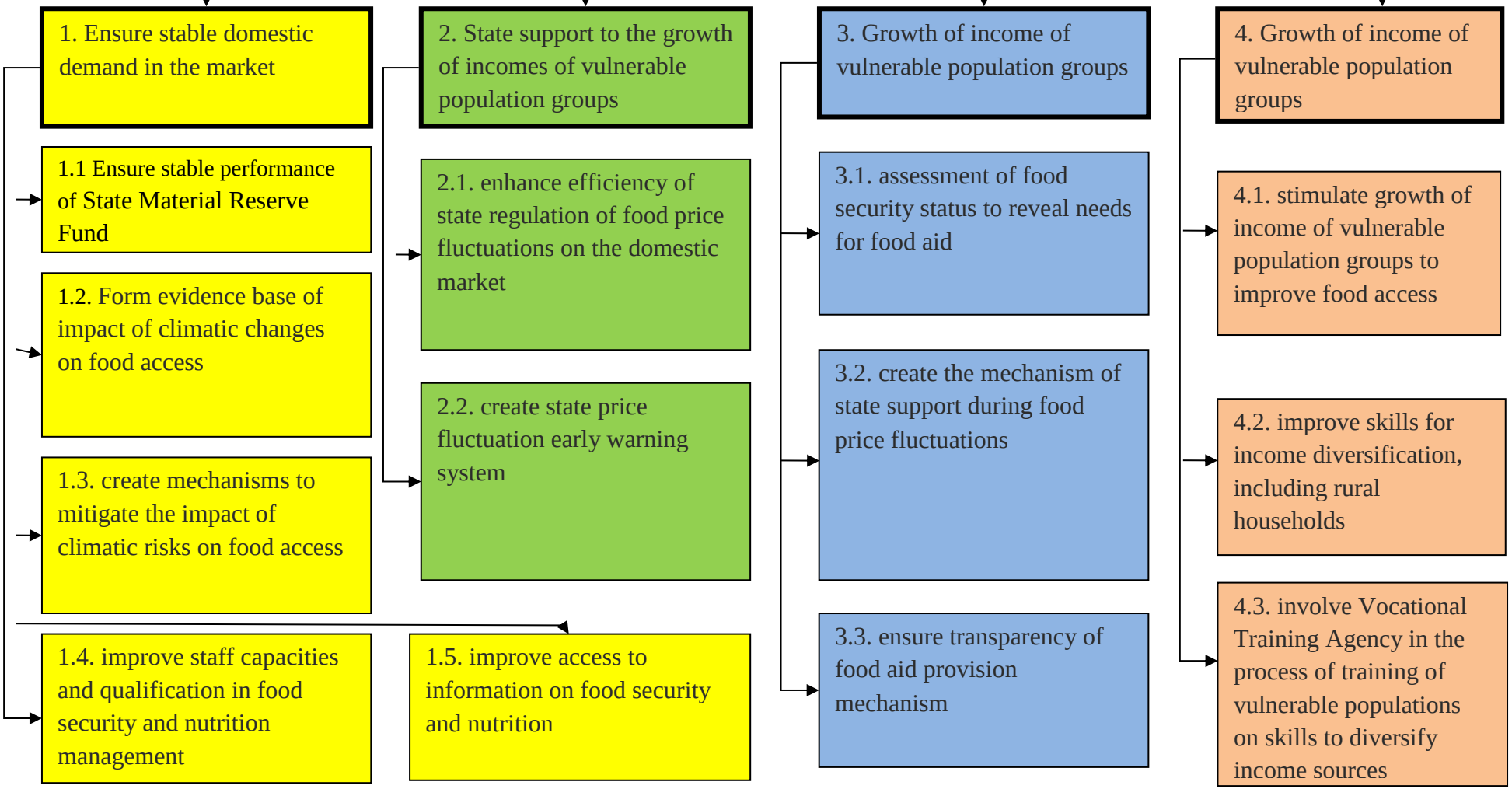
Food availability

Objective: Ensure availability of basic food products in the Kyrgyz Republic according to the specified standards and increase in the sustainable supply of food to the population



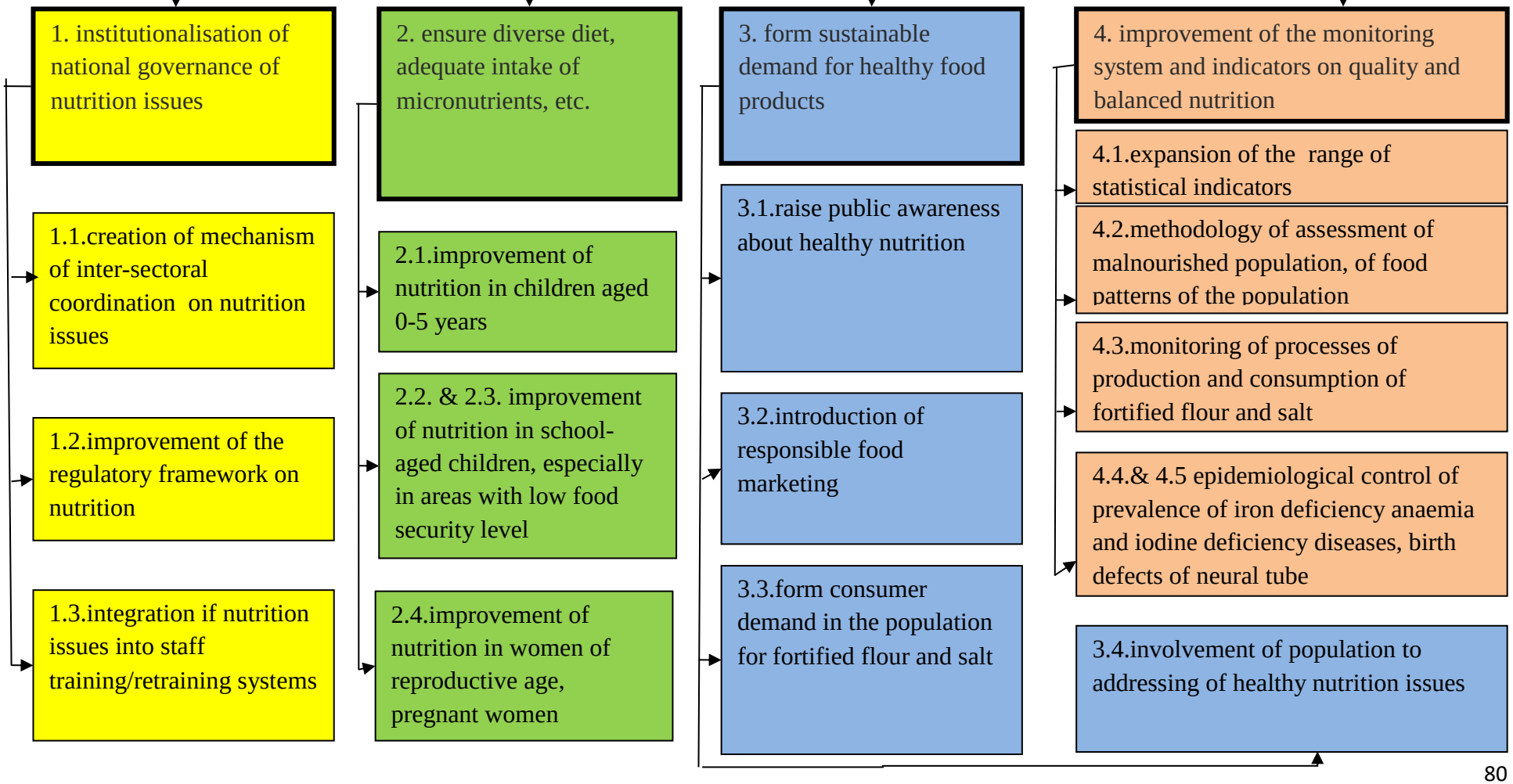
Access

Objective. Ensure stable access to food for vulnerable population groups and protect them from impact of high food prices



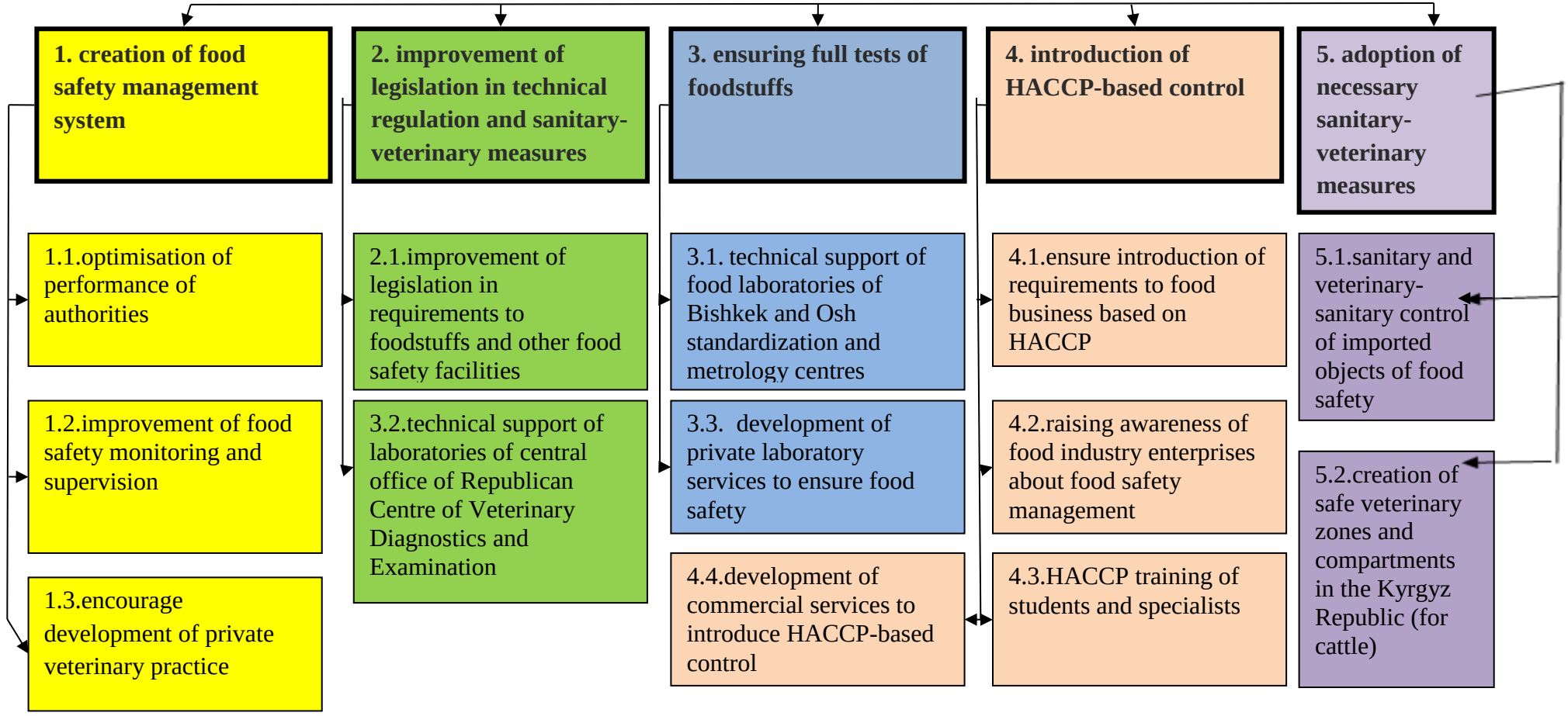
Utilisation

Objective. Ensure favourable environment for every citizen for good nutrition and prevent malnutrition/undernutrition and prevalence of related diseases



Safety

Objective. Achievement and support of the required level of food safety for people's health



Annex 3. Food Security Indicators in the Kyrgyz Republic

Description	Calculation Formula	Threshold Value	Calculating Agency
1) individual daily energy value of the diet			
Calculated as the sum of multiplication of units masses of certain food items consumed by a person during the day and their energy values	P = amount of МіЦі, where: P – energy value of daily diet per capita; i – type of food; Mi – weight of 1 food consumed by a person; Цi – energy value of mass unit of i^{th} food.	Threshold (cut-off) criterion is 2500 kcal daily, with 55 per cent of daily consumption of animal origin ingredients.	Calculated by the Ministry of Health of the Kyrgyz Republic **annually** and submitted to the Ministry of Agriculture, food Industry and Melioration of the Kyrgyz Republic
2) consumption of basic foods products			
Calculated as the ratio between the actual consumption of a certain product and its minimum standard	C = Cф/Cp, where: C – indicator of sufficient consumption of a certain product; Cф – actual consumption of a certain product per person per year; Cp – minimum standard of consumption of a certain product per person per year.	Minimum standards of consumption of food items for demographic groups of the population of the Kyrgyz Republic are approved by the Zhogorku Kenesh of the Kyrgyz Republic.	Calculated by the National Statistical Committee annually and submitted to the Ministry of Agriculture, food Industry and Melioration of the Kyrgyz Republic
3) sufficiency of grain stocks in the state material reserve			
Calculated as the ratio between the volumes of cereal grain in the state food reserve and amount of domestic consumption of bread and wheat products in terms of grain according to minimum standards of consumption	З = H/X * 100%, where: З – indicator of grain stock; H – availability of cereal grain in the state material reserve; X – annual average domestic consumption of bread and wheat products in terms of grain	The threshold (cut-off) criterion for the specified indicator is the 25 per cent level that meets 90 days of consumption by socially vulnerable population groups. According to art. 9 of the law of the Kyrgyz Republic “On food security”, the stock in the state	Calculated by the State Agency for Public Procurement and Mineral Resources under the Government of the Kyrgyz Republic on a **quarterly** base and submitted to the Ministry of Agriculture, food Industry and

	according to minimum standards of consumption in the Kyrgyz Republic.	material reserve covers at least the 90-day need for basic food items of socially vulnerable populations	Melioration of the Kyrgyz Republic;
4) economic access to food			
Calculated as a share of aggregate expenditures on food in the total expenses of households:	Дэ = ВП/ВС, where: Дэ – indicator of economic access to food; ВП – expenditure on food of households per year; ВС – aggregate expenditures of households per year.	The threshold (cut-off) criterion for the specified indicator is at 63.96% level.	Calculated by the Ministry of Economic Development and Trade of the Kyrgyz Republic jointly with the Ministry of Labour and Social Development of the Kyrgyz Republic and National Statistical Committee of the Kyrgyz Republic on an **annual** basis and submitted to the Ministry of Agriculture, food Industry and Melioration of the Kyrgyz Republic
5) differentiation of food expenditures by social groups			
Calculated as the ratio between the food expenditures of 20 per cent of households with highest incomes and the food expenditures of 20 per cent of households with lowest incomes	D = Dmax/Dmin where: D – indicator of differentiation of food expenditure; Dmax – indicator of cost of consumed products by 20 per cent of households with highest incomes; Dmin – indicator of cost of consumed products by 20 per cent of households with lowest incomes.		Calculated by the Ministry of Labour and Social Development of the Kyrgyz Republic jointly with the National Statistical Committee of the Kyrgyz Republic on an **annual** basis and submitted to the Ministry of Agriculture, food Industry and Melioration of the Kyrgyz Republic
6) capacity of the domestic market by main food items			
Calculated in physical terms as the product of consumption of a	Ei = ФiЧ,		Calculated by the Ministry of Agriculture, food Industry and

certain product and the average annual population size:	where: E – capacity of domestic market of i^{th} product; Фi – annual per capita consumption of i^{th} product (according to the National Statistical Committee of the Kyrgyz Republic); Ч – annual average population size.		Melioration of the Kyrgyz Republic jointly with the National Statistical Committee of the Kyrgyz Republic on an **annual** basis;
7) food self-sufficiency by main products			
Calculated as the ratio between the volume of imports of a certain product in physical terms and its domestic market capacity	Пi =Ii/ Ei * 100%, where: Пi – share of food import of i^{th} product; Ii – import of i^{th} product; Ei – capacity of domestic market of i^{th} product.	The threshold (cut-off) criterion for the specified indicator is at 20 per cent level	Calculated by the Ministry of Economic Development and Trade of the Kyrgyz Republic jointly with the Ministry of Agriculture, food Industry and Melioration of the Kyrgyz Republic and State Customs Committee of the Kyrgyz Republic on a **quarterly** basis;
8) balance of required and actual levels of food production			
Calculated as the ratio between the necessary level of production and the actual level of production according to minimum and actual standards of consumption in percentage.	Пi =Ii/ Ei * 100%, where: Пi – factor of necessary and actual levels of production of i^{th} product; Ii – necessary level of production of i^{th} product (at minimum and actual level of consumption); Ei – actual level of production of i^{th} product.	Indirectly, indicator of tactical monitoring: Level of domestic self-sufficiency, including basic food items, should not be below 75-80% of general consumption in the country	Calculated by the Ministry of Agriculture, food Industry and Melioration of the Kyrgyz Republic jointly with the National Statistical Committee of the Kyrgyz Republic on an **annual** basis
9) Capacity of the state budget of the Kyrgyz Republic to finance the purchase and supply of basic foodstuffs for socially vulnerable population groups			

Calculated as the ratio between the actual level of funding and the necessary (planned) level of funding in percentage. The method of calculation of necessary financial reserves for the procurement and delivery of basic food items for socially vulnerable population groups has not been established.		According to the law of the Kyrgyz Republic "On food security of the Kyrgyz Republic", the state budget can fund supplies of basic food items – stocks in the state material reserves to cover at least 90-day need for basic food items of socially vulnerable groups	Calculated by the Ministry of Finance of the Kyrgyz Republic jointly with the State Agency for Public Procurement and Material Reserves under the Government of the Kyrgyz Republic on a **semi-annual** basis and submitted to the Ministry of Agriculture, food Industry and Melioration of the Kyrgyz Republic
10) compliance of quality, caloric content and food safety with regulatory requirements			
Calculation method is not described		According to art. 9 of the law of the Kyrgyz Republic "On food security", quality, calorie content and safety of food items meet the regulatory requirements of the Kyrgyz Republic	Submitted by the entities of the Department of Sanitary-Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic, Department of State Veterinary of the Ministry of Agriculture, food Industry and Melioration of the Kyrgyz Republic, as well as the National Institute of Standards and Metrology of the Kyrgyz Republic.

Appendix 4. Media content analysis

1. Comments to media content analysis

All information taken in the media for analysis is prepared in Russian. Considering that news constitute 86% of all publications, it can be assumed that this topic is not of interest for Kyrgyz-language media.

Most of the publications have a size from 151 to 300, which on average can form 0.5 pages of a standard page of 1800 characters with spaces.

Herewith, the main genre is news. The attention attracts a very insignificant portion of analytics in the contents.

The articles are mostly of a positive nature. Food security topic is presented in the similar proportion as the main topics. Approximately 10% of negative publications indicate existence of problems.

Food security topics are mainly discussed by journalists. The president spoke in 4% of all publications, the executive heads from the prime minister to the deputy minister - in 11% of cases. Attention is drawn to a small percentage of parlamentarians - 3% of all cases.

Finally, the main information in the media comes during press conferences and government sessions. The share of conferences and seminars in providing information for the media is very small.

2. Summary table of media content analysis

Indicators	Quantity	Share among all (%)
1. **Language of the article**		
1. Russian	106	100%
2. Kyrgyz		
2. **Size of article (volume)**		
1. from 1 to 150 words	33	31%
2. from 151 to 300 words	45	42%
3. from 301 to 500 words	18	17%
4. more than 500 words	10	9%
3. Article genre		
1. News	91	86%
2. Interview	2	2%
3. Analytical article	4	4%

Indicators	Quantity	Share among all (%)
4. Descriptive article	2	2%
5. Reportage	7	7%
4. Article characteristics		
1. Positive	96	91%
2. Neutral	10	9%
3. Negative		
5. **Role of the topic**		
1. Main	96	91%
2. Secondary	10	9%
6. Speaker's occupation		
1. President	4	4%
2. Prime-minister	7	7%
3. Vice-prime minister	1	1%
4. Minister / Deputy minister	2	2%
5. Deputies	3	3%
6. Public servant	9	8%
7. Journalist	80	75%
7. Events		
1. Government meetings/ sessions	8	8%
2. Forum/Conferences	4	4%
3. Seminars/round tables	1	1%
4. Press-conference	93	88%

3. Information on collected data

Period of publications of the collected information – February 2016 - February 2017

List of media

Government web-sites	Russian language/Kyrgyz language sites	Analytical sites
Web-site of the President	1. www.24.kg	http://stanradar.com
Web-site of the Government www.gov.kg	2. www.Zanoza.kg	
http://mineconom.gov.kg	3. www.Vb.kg	
	4. http://www.kabar.kg/	
	5. www.aki-press.kg	
	6. http://www.ferganews.com/	
	7. http://www.Sputnik.kg/	
	8. http://www.gezitter.org/	
	9. http://azattyk.org/	
	10. Kabarlar.org	
	11. Knews.org	
	12. Kloop.kg	
	13. Azattyk.org	
	14. Super.kg	

Search was conducted through the following key words: “food security”, “staple foods”, “sufficiency/safety/caloricity of food”, “stability of food production”