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TRADE AND ECONOMIC COOPERATION BETWEEN THE PEOPLE'S REPUBLIC OF CHINA AND THE EAEU COUNTRIES IN THE FRAMEWORK OF RESOLVING THE PROBLEM OF FOOD SECURITY

Dissertation

for a Master's degree

in specialty 7-06-0311-01 – Economics

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СОДЕРЖАНИЕ

INTRODUCTION

Food security is an important component of national security and is directly related to the stability of the country's life and the harmonious development of society. This problem is given serious attention by leaders of countries and regions, scientists, politicians, research teams, and other economic and social actors.

However, the problems of ensuring food security, taking into account modern international problems and interactions between countries, have not been sufficiently studied. These problems are relevant for different countries of the world.

Today, the process of globalization is increasingly spreading to the sphere of food security. World experience shows that at present, the problem of adequate provision of food products to different segments of the population cannot be considered only in a narrow national context. The participation of each specific country in solving global problems of food security is becoming an urgent task at the level of national programs.

Being one of the most densely populated countries in the world, the People's Republic of China faces numerous problems in the field of food security. With the rapid development of the economy and the acceleration of urbanization, people's demand for food continues to rise, while limited arable land, the impact of climate change and the uncertainty of the international market have put unprecedented pressure on China's food production and supply system.

In recent years, changes in the domestic and overseas situations and the impact of the new crown epidemic have made the issue of food security increasingly urgent. The country is striving to improve its food self-sufficiency level, but at the same time is exploring the possibility of building a more stable and efficient food supply system. This series of challenges and opportunities has pushed policy reform and scientific and technological innovation as key ways to achieve food security.

To address the issue of food security, the Chinese government has put forward a series of strategic directions, such as “ protecting arable land, increasing food production, strengthening scientific and technological support and improving policy

protection". At the same time, deepening the structural reform of the agricultural supply, promoting the modernization of agriculture, improving the quality and efficiency of food production are also important means of achieving food security for all.

Food security as a key component of food policy and a political priority of the EAEU is also important because it affects domestic food production and how the EAEU interacts with the international agri-food market. Today, the food and agricultural policy of the EAEU is aimed at reducing dependence on food imports and, consequently, the vulnerability of food supply, as well as developing the export potential of the states of the region.

The experience of developing a national model of food security in the EAEU countries, as well as the development of a unified policy for the integration association, is of great interest due to the special position of these states on the geopolitical map of the world. Having experienced a radical breakdown of established political and economic institutions in recent decades, the countries have begun to move forward towards defining the boundaries of their independence, including in the area of food supply.

When writing the dissertation, methods were used based on scientific approaches of foreign and domestic researchers to the problems of food security of countries and regions of the world. In the course of studying the research topic and writing the work, scientific literature of domestic and foreign authors, materials of periodicals, materials of foreign organizations, reports of international organizations, statistical reports of the EAEU countries and China were used.

GENERAL CHARACTERISTICS OF THE WORK

The purpose and objectives of the study

The purpose of the dissertation is to develop promising areas of trade and economic cooperation between the People's Republic of China and the EAEU countries in the context of solving the problem of food security in modern economic conditions.

To achieve the goal of the study, the following

tasks were set and solved:

–to consider the theoretical aspects of the country's food security, the effects and risks of its decline;

–to study the world experience of forming food security of countries;

–to study the state policy of China in the field of ensuring food security;

–to assess the export opportunities in the food sector of the EAEU countries;

–to identify and justify promising areas of food exports to the PRC by the EAEU countries, as well as the implementation of joint investment projects in the field of agriculture.

The object of the study is trade and economic cooperation between the People's Republic of China and the EAEU countries in the field of ensuring food security.

The subject of the study is the substantiation of the main directions of ensuring food security based on the development of mutually beneficial cooperation between the People's Republic of China and the EAEU countries, the development of the export potential of states, and the improvement of investment activities.

Provisions submitted for defense

1. The essence and content of the category "food security" are defined, distinctive characteristics and criteria for assessing the level of food security are identified.

2. An assessment of the position of the People's Republic of China in the field of food security is carried out, the evolution of changes in the nutritional structure of the population of the PRC is considered,

3. Factors complicating the solution of the food problem in the country, the dependence of the domestic food market of China on imports of food products, and strategic directions for ensuring food security in China are identified.

4. The reduction of food security risks in each of the EAEU member states

has been revealed, which is primarily facilitated by mutual provision of various types of food products, prospects for the sustainable development of agriculture, ensuring the growth of physical availability of food products in the Union countries, self-sufficiency in basic agricultural products have been established

5. The potential for cooperation between the countries of the Eurasian region in the field of agriculture and its importance for solving the food problem in China have been established, as well as the main areas of development of agricultural exports from the EAEU countries to China: commodity structure, volumes, dynamics and prospects for expanding volumes and improving the quality of products.

Personal contribution of the applicant

The dissertation is an independently completed scientific study: the provisions submitted for defense have been developed by the author independently, have practical significance, the topic of the dissertation corresponds to the specialty 7-06-0311-01 "Economics".

Dissertation approval and information on the use of its results

The main provisions, conclusions and results of the dissertation were presented at the 75th scientific and technical conference of pupils, students and master's students, April 22-27, 2024 - Minsk: Belarusian State Technological University. Based on the materials of the dissertation research, an article was published on the topic

"The problem of food security and the main directions of its solution in the People's Republic of China".

Structure and volume of the dissertation

The dissertation consists of an introduction, a general description of the work, three chapters, a conclusion, a list of references. Chapter 1 studies theoretical approaches to the study of the problem of food security, considers the concept of "food security" and its distinctive features, defines the stages of formation of modern approaches to this global problem, and formulates the risks and threats of violating the country's food security. Chapter 2 considers methodological approaches to assessing the food security of states and regions of the world, and provides an overview of the criteria for measuring the level of food security and self-sufficiency of the country in food. The third chapter includes a study of the state policy of China and the countries of the Eurasian region in the field of development of food security, substantiation of the main directions of trade and

economic cooperation of the EAEU countries and China in the field of agriculture and ensuring food security of states. The work is presented on 98 pages. The volume occupied by 8 figures, 24 tables and a list of used literature, including 38 sources, is 18 pages.

CHAPTER 1 FOOD SECURITY OF THE COUNTRY: EVOLUTION OF CONTENT AND WAYS OF ENSURING IT

1.1 The nature and content of the category "food security"

The problem of food security is one of many, but its importance cannot be underestimated. It affects the interests of each country, various political and social groups, becoming increasingly urgent and relevant due to the deepening international division of labor, the process of globalization, and the implementation of geopolitical risks.

The problem of ensuring sufficient food has threatened the national security of countries throughout history. Initially, this problem was considered, first of all, as a problem of hunger and malnutrition, faced humanity throughout history, despite the development of the economy, achievements in many scientific fields. After the formation of the UN, its solution became one of the most important tasks for the world community. However, at different periods of the development of the world economy, the main measures to solve the problem of hunger changed. A person is food insecure if he or she does not have regular access to sufficient, safe and nutritious food for normal growth, development and an active and healthy life. This may be due to unavailability of food and/or lack of resources to obtain it. Food insecurity can have varying degrees of severity. FAO measures food insecurity using the Food Insecurity Experience Scale (FIES). Food secure people have adequate access to both quantity and quality of food. They are mildly food insecure when they face uncertainty about their ability to obtain adequate nutrition. People who are moderately food insecure are forced to reduce the quality and/or quantity of food they eat. People who are severely food insecure typically run out of food and, in the worst case, go a day (or several days) without eating. [1]

The foundation of the world food security system was the creation in 1945 of the Food and Agricultural Organization (FAO) under the auspices of the UN. 44 countries took part in the creation of a specialized international institution in the field of nutrition, food and agriculture, which approved the Charter and laid the foundation for a new milestone in the formation of world food security. It should

be noted that this event occurred against the backdrop of the post-war crisis of world payments and the decline in the solvency of the population of the whole world. Immediately after the Second World War, the governments of 44 developed countries for the first time expressed the opinion on the need to achieve "freedom from hunger". The world community considered it most urgent to restore the production of basic types of food (primarily grain) and to provide food containing protein, which is important for maintaining human health. In this regard, all countries focused the main emphasis of their food policies on self-sufficiency in food and the role of FAO in world life was minimal. Only in the 60s of the last century, the population of the planet, having recovered from the shock of the world war, began to actively build a world food security system, the main core of which was the fight against poverty. Thus, food aid to poor countries was considered as a tool for cushioning crisis social phenomena and a driver of economic development. The World Food Programme (WFP), adopted by the UN in 1963, became the foundation for building a new world order in the field of world food security and determined the vector of movement of mankind in the humanitarian sphere for many decades to come. A few years later, under the auspices of the UN in 1967, the Convention on the Provision of International Multilateral Food Aid was adopted, the provisions of which were repeatedly clarified and adjusted in relation to the conditions, forms of providing food support and the obligations of all participants in this global humanitarian process.For example, in the first half of the seventies of the last century, when the whole world was experiencing a crisis shortage of basic foodstuffs, food security came to the forefront as a guarantor of global stability throughout the world. At the same time, the concept of World Food Security was first formulated, characterizing the state of the food market and its ability to protect people from hunger in the size of the entire world economy. To maintain World Food Security, an international system for maintaining food security was actively formed, based on the availability of food at reasonable prices at any time, regardless of weather, political or economic changes. In other words, humanity declared the main goal - the availability of food for any person, regardless of the country he lives in.

FAO began to raise awareness of the extent of hunger in the world. In this political trend, in 1974, under the auspices of the UN, the World Food Conference was convened, the central theme of which was the maintenance of regional, national and international food security. The adopted final declaration of this conference is still one of the basic legal documents on the regulation of the system

of maintaining food security on the basis of international cooperation in the field of food production and their equitable distribution between poor countries and the population of these countries. The world's population is steadily growing and becoming increasingly urbanized. Technologies are constantly developing, and the economy is becoming increasingly global. At the same time, alarming trends in malnutrition are observed throughout the world, including a rapid increase in overweight and obesity, while forms of malnutrition persist. The way we produce, market and consume food is changing dramatically around the world. This dramatically changed world requires new ways of thinking about hunger and food insecurity.

FAO ' s mandate is to eradicate hunger, food insecurity and all forms of malnutrition. Supporting the livelihoods of small-scale food producers, strengthening the resilience of food production systems to shocks and promoting the sustainable use of natural resources are essential to fulfilling the organization's mandate and achieving Sustainable Development Goal 2 (SDG 2): a world without hunger, food insecurity and malnutrition.

FAO ' s long-term Zero Hunger project is implemented through the World Food Program. The implementation of this program is important not only for countries experiencing food shortages, but also for food exporting countries, which, in the context of increasing global competition in international trade, are using new opportunities to export products to developing countries within the framework of this program. According to UN forecasts, the world's population will increase to 9.2 billion people by 2050, which will increase the number of undernourished and starving people in the world by a hundred million people. The highest rates of population growth are predicted in African countries, where the population will double by 2050. The FAO World Food Program is designed to localize hunger among 800 million people, or every 9th inhabitant of our planet. [2, pp. 16–17]

The primary mission of the World Food Programme is to eradicate world hunger. The programme has four strategic objectives: - to maintain food security and restore people's lives after conflicts and natural disasters; - to reduce malnutrition and hunger; - to reduce risks and enable people to meet their food needs; - to save lives and help them survive in emergencies.

In addition, the stress caused by uncertainty about access to food and periods of food insecurity can cause physiological changes that contribute to overweight and obesity. Children who experience hunger, food insecurity and undernutrition

today are at higher risk of becoming overweight, obese and developing chronic diseases such as diabetes later in life. In many countries, undernutrition and obesity coexist; both can be consequences of food insecurity. [1]

The evolution of understanding and solutions to the problem of ensuring food security is presented in Table 1.1.

Table 1.1 – Evolution of the concept of "food security"

Period	Problem	Solutions
1940–1950.	Food shortages due to war and population growth	Development of new lands, introduction of "green" revolution technologies, assistance from donor countries
1960s	Food aid does not promote self-development	Formation of the World Food Programme to assist in economic and social development
1970s.	Drought and global food crisis, rising food prices	Guaranteeing access to physical food supplies, monitoring food availability
1980s	The problem of economic access to food and malnutrition of children	Taking measures to eliminate poverty and enhance the role of women in the economic development of society
1990s	The problem of hunger and malnutrition remains relevant for a number of countries	Implementation of policies to eradicate hunger and malnutrition in the world
2000s	Expanding the problem through social access and achieving sustainable development goals	Taking measures to promote healthy and balanced nutrition and the concept of sustainable development principles

In the 1950s and 1960s, global food policy was aimed at increasing the yield of staple crops, primarily wheat and rice, and improving methods of production, preservation and marketing of food by applying new scientific knowledge. During this period, the "green revolution" took place.

"Green Revolution" is a set of changes in agriculture to solve the food problem in developing countries, including the widespread use of scientific and technological advances to breed high-yielding varieties of grain crops, the widespread use of fertilizers and pesticides, and the construction of irrigation systems. [3, pp. 5-12]

On the initiative of the UN, the "Rome Declaration on World Food Security" was proposed and adopted in 1996. The document provided a clear definition of food security, which is defined as a situation in which all people, at all times and in all places, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. [4]

The modern understanding of the term food security was determined as a result of international discussions at the World Summit on Food Security in 2009.

Food security is a state characterized by, at all times, physical, social and economic access for all people to sufficient, safe and nutritious food to meet their dietary needs and eating habits and to maintain an active and healthy life.

FAO experts believe that the planet can feed twice as many people as currently live on earth. However, due to differences in the levels of economic development between industrialized and developing countries, and especially the poorest of them, the gap in the population's security is only getting worse. The food problem has actually acquired a global character, and in order to avoid the danger of it developing into a deep global crisis and destabilization of the situation in a number of regions of the world, it is necessary to take adequate measures. The aggravation of the food problem in the world in the first decade of the 21st century, characterized by an increase in the number of hungry people and a sharp increase in prices, occurred under the influence of such groups of factors as natural and climatic; financial and speculative; market (changes in demand and consumption); demographic.

Natural and climatic disasters include those that have affected a significant part of agricultural regions (droughts, floods, hurricanes, and other abnormal phenomena).

Demographic factors have a significant impact on the global food market. Rapid population growth in third world countries is exacerbating the already complex problems of food supply. According to the UN demographic forecast, by 2050 the world's population will be more than 9.3 billion people. Of these, 5.1 billion will live in Asia; 2.2 billion in Africa; 0.7 billion in Europe, and 1.9 billion people in North and South America and Oceania. In this regard, most countries in the world are intensifying their search for optimal solutions to the food problem, forcing them to increase agricultural production, which could lead to complete depletion of the land. Speculation on commodity and stock exchanges has a negative impact on the food market situation. The availability of food reserves is not critical, but because they are not supplied to the market, prices are rising at an unprecedented rate. Sales markets have long been exploited by so-called resellers, and the real producer has practically no opportunity to independently sell his goods. Monopolization of the market is becoming a characteristic feature. Large monopoly concerns in the USA and the EU do not allow smaller national enterprises to develop. Agri-food concerns, growing a large volume of monocultures and setting dumping prices for most third world enterprises, are ousting already weak competitors from the market, which contributes to monopolistic price increases. Other factors that have exacerbated the global food crisis are the increased demand for food from countries with high rates of economic and income growth (China, India), the depletion of resources used in agricultural production, the increased demand for plant materials for the production of biofuels in the context of high oil prices, etc.

All factors that complicate the functioning of the world market, to one degree or another, affect the formation of resources, determining the sustainability of their deficit, which ultimately leads to an aggravation of the food situation and an increase in prices. The food problem is especially difficult to solve in countries dependent on imports. For the poorest and most densely populated countries of the third world, this is a direct threat of mass hunger, disease, social and political instability. For countries that have natural resources, but have not ensured their own food independence, threats in the food sector are also real.

All the protests began because of food shortages. FAO identifies several ways to solve the food problem. The optimistic scenario shows that if countries implement all recommendations to overcome the crisis, the current world food production is expected to double by 2050.

By the middle of the century, according to innovative (optimistic) forecasts,

about 90% of the world's population can be provided with food at a level exceeding 3,000 kcal per day per capita. China and India will make the greatest contribution to this process.

However, there are still a large number of countries where the problem of providing the population with a normal level of nutrition will persist. Among them are 32 countries (including poor countries in Africa), which are characterized by a high level of hunger (consuming less than 2,200 kcal), high population growth rates, low economic growth rates and limited agricultural resources.

Considering the complexity and multifaceted nature of the problem from the standpoint of hierarchy, the basic interpretations of the economic category of food security, criteria, indicators, and mechanisms for ensuring it at each level are diverse, constituting the content of a special encyclopedic reference book, individual concepts from which are given in Table 1.2.

Table 1.2. – Glossary of terms related to food security

Definition	The essence of the definition
Food security	The ability of a territory, provided with appropriate resources, potential and guarantees, regardless of external and internal conditions, to satisfy the population’s need for food products in the volumes, quality and assortment necessary and sufficient for the physical and social development of the individual, ensuring health and expanded reproduction of the population and the economic opportunity to acquire it
Food independence	Maximum autonomy and economic viability of the national food system, its adaptability to the global market situation, subject to rational use of production potential and active foreign economic activity

Continuation of table 1.2.

Definition	The essence of the definition
Physical availability of food	The ability of the food system to produce, import, store and distribute food products to the end consumer in quantities sufficient to meet rational needs
Economic accessibility of food products	Equality of all social groups in the availability of consumption, sufficient in quantitative terms, balanced in the range of food products, meeting accepted standards of nutrition and quality
Sustainable development	Balanced development of national and regional food systems in the mode of expanded reproduction in all its aspects: production, social, environmental
Security threat	The actual and potential manifestation of destructive trends in the sphere of food supply at the international, national, regional and family levels, which leads to a decrease in the physical and economic availability of food to the population, to a deterioration in quality and environmental safety
Security mechanism	A system of organizational, economic and legal measures aimed at maintaining the balance and sustainable development of food markets, as well as the timely identification and prevention of threats
Security Monitoring	A system of indicators and their threshold values that allow for the timely identification and assessment of destructive factors and potential threats in the context of interaction with the natural environment, biosystems, and risk system
Safety criterion	Quantitative and qualitative threshold value of the indicator, by which the degree of achievement of food security and independence is assessed

– Achieving food security comes down to two directions of solving the problem: the first is maintaining a stable supply of products at the established level sufficient for healthy nutrition; the second is eliminating dependence on imports and increasing the competitiveness of domestic products. The tasks of achieving security are the potential physical availability of high-quality food products to the population and the economic possibility of purchasing them.

– The main elements of the food security system are the following:

– - a model of national food security, as well as its structural blocks, main parameters and directions;

– - criteria and indicators of food independence, their ranges, control limits and assessment methods;

– - methods for identifying and assessing internal and external threats to the national food market, tools for preventing them;

– - a food security forecast taking into account the influence of the main socio-economic factors and the system of internal and external threats;

– - mechanisms for optimizing food supply; – organizational and legal measures, mechanisms and levers for achieving food independence, forms of saturation of the domestic food market with high-quality and safe food products.

– At each of the seven levels of the hierarchy – from global to family – the problem has its own characteristics and a subject responsible for its solution, acting in accordance with the goals, objectives and functions.

– At the national level, the essence of the main characteristics of food security is as follows:

– – potential physical availability of food products;

– – the ability of the food system to produce, import, ensure storage and promotion to the end consumer of food products in the volumes necessary to meet the rational (scientifically based) needs of all social groups of the population;

– – quality of nutrition – consumption of high-quality products and in quantities sufficient for rational nutrition in terms of energy value and balanced in terms of life-supporting elements;

– – the economic possibility of purchasing food;

– equality of all social groups in access to sufficient, quantitatively balanced food products that meet accepted standards of nutrition and quality; - food independence;– maximum autonomy and economic viability of the national food system, its adaptability to the international market situation, subject to rational use of production potential and active foreign economic activity. The country's food supply is ensured mainly by

its own production, as well as the availability of strategic reserves of energy, arable land, mineral fertilizers, food, sufficient to prevent or eliminate the consequences of a crisis;

– reliable access to food – the ability of the system to minimize the impact of unfavorable natural, climatic and socio-economic conditions on the food supply of

the population;

– sustainable development – balanced development of national and regional food systems in the expanded reproduction mode in all its aspects: production, social, environmental.

Achieving security in the food sector requires considering it as an integrated system, the ultimate goal of which is the development and implementation of socio-political, economic, scientific, technical, organizational measures to achieve physical and economic availability of vital food products for the population of the country, identifying and preventing internal and external threats.

The purpose of the food security system is associated with solving a number of problems that can be grouped into three areas:

- food - involves determining the physiological and solvent boundaries of supply and demand for food products sold on the domestic and foreign markets;

- agro-industrial - consists in the most complete use of the potential of the agricultural sector to produce the required amount of food in the required assortment;

- foreign trade - reflects the relationship between the world and domestic food markets.

The effectiveness of the food system in different historical periods is assessed differently. In modern conditions, the vector of its target function is focused on the rational use of production potential, sustainable development, quality of life and food security.

From the standpoint of national food security, the most acceptable criteria for assessing the state of the system are:

– the ability of the food system to develop sustainably, ensuring autonomy and balance in supply and demand of the domestic market, regardless of unfavorable changes in the world market situation and the impact of potential threats;

– increasing the level of food supply, improving the structure and quality parameters of the system with a focus on healthy nutrition as the most important factor in the quality of life;

– physical availability of food to all categories of households in the quantity and quality necessary for a healthy life, regardless of changes in the world market situation;

– economic availability of food to the population in the quantity and quality necessary for a healthy life;

– the level and quality of nutrition of the population that meet national characteristics (traditions) and modern trends. [5]

The FAO Food Security Concept includes the following key provisions:

– food security does not mean self-sufficiency in food;

– a country should strive to produce sufficient food for its own needs if there are comparative advantages;

– a country should be able to import the necessary amount of food and meet the food needs of its citizens;

– governments of countries, within the framework of food security, should ensure the physical and economic availability of safe food. [6]

1.1 Criteria for assessing the level of food security

Currently, four dimensions of food security in society are distinguished: availability, accessibility, utilization, stability. In addition, the understanding of food security is always associated with adequate nutrition (Fig. 1.1).

Figure 1.1. – Four dimensions of food security (from the perspective of food security of society) [3, p. 10]

Accordingly, the conceptual basis of food security is formed under the influence of four types of factors: physical, economic, social and temporal determinants (Table 1.3).

Table 1.3. – Evolution of conceptual ideas about the state of food security

Aspects (dimensions) of food security	Introduction to Basic Concepts of Food Security (FAO, 2008)	Report "Creating a global vision for food security and nutrition for the period up to 2030"
1	2	3
Physical accessibility	Food must be available through production, use of stocks or importation.	Availability of food that is free from harmful substances and acceptable for a particular culture, of sufficient quality and in sufficient quantity to meet the nutritional needs of people, provided through domestic production or imported
Economic accessibility	Food must be affordable taking into account the purchasing power of the population's income.	Households have the financial means to purchase nutritious food in quantities that do not compromise other basic needs, and adequate food is available to all, including vulnerable individuals and groups
Usage	Food products must be properly processed and stored, be of good quality and safe for health; nutrition must be balanced	Availability of adequate nutrition, clean water, sanitation and medical care to achieve a state of nutritional well-being in which all physiological needs are met
Stability (reliability)	Food availability should not be reduced by adverse weather conditions, political instability or economic shocks.	Ability to maintain food security in the face of sudden shocks (such as economic and health problems, conflicts or climate crisis) or cyclical events (such as seasonality in food supply)

Continuation of table 1.3

1	2	3
Subjectivity	–	The ability of individuals or groups to decide for themselves what food to consume and produce, how it is produced, processed and distributed in food systems, and their ability to participate in the processes that determine food system policies and their overall regulation. Safeguarding agency requires socio-political systems that create favourable conditions for the functioning of governance structures that ensure the achievement of food security for all
Sustainability	–	The use of methods in food systems that promote long-term restoration of natural, social and economic systems and ensure that the food needs of present generations are met without compromising those of future generations

The physical determinant is "availability", which means the presence of a sufficient quantity of food products of appropriate quality, including through own production, supplies from domestic producers and imported purchases, food aid and food reserves.

The economic determinant is "accessibility", that is, the presence of a sufficient amount of funds to obtain the necessary food and adequate nutrition, which depends on the resources of each individual (household), their income, knowledge, and the level of food prices.

The economic determinant is "accessibility", that is, the presence of a sufficient amount of funds to obtain the necessary food and adequate nutrition, which depends on the resources of each individual (household), their income, knowledge, and the level of food prices.

The social determinant is “use”, which implies the satisfaction of all physiological needs of the body through a balanced diet, rational use of food products, understanding the rules of health care, food preparation and storage processes, exclusion from the diet of foods that are harmful to health, food culture, commitment to healthy eating.

The time determinant is “stability”, which means sustainable food supply and the absence of risks of loss of access to food in the foreseeable future. There is no doubt about the relationship between food security and adequate nutrition. However, it is often argued that food security reflects the economic aspect of the problem, and adequate nutrition reflects the biological aspect. The symbiosis of these two components provides an integrated approach to solving food security problems. [7, 8]

A balanced diet is a healthy diet that includes safe, varied, balanced and nutritious foods. It involves eliminating not only malnutrition and micronutrient deficiencies, but also overeating, which causes excess body weight and obesity. The composition of a healthy diet is individual and depends on individual characteristics (e.g. age, gender, lifestyle, level of physical activity), geographic, demographic and cultural trends and characteristics, food preferences, availability of foods of local, regional or international origin and established food traditions. Good nutrition begins early in life: breastfeeding promotes healthy growth and improves cognitive development, and has a positive effect on long-term health. [3, pp. 11–12]

A study of the opinions of scientists and specialists, as well as existing practice, has shown that the following principles can be taken as a basis. The administrative authorities of the country or region must resolve issues of guaranteed provision of food products to the population permanently residing in a given territory. This is due to the fact that population migration depends on many factors: the socio-economic and political situation, tourism development, etc. The additional need for food that arises can be covered by the reserve created in the region and by importing products. It is also advisable for the authorities to undertake obligations to provide the population with only the basic vital food products, which include products that provide a person with proteins, fats, carbohydrates and some of the most important macro- and microelements, minerals: meat, fish, dairy products; cereals, potatoes, vegetable oil (sunflower, linseed); salt and sugar. Other food products that are not considered essential can be purchased by a person based on his personal preferences.

Taking into account the specified principles and levels of food security, we can formulate more complete definitions:

1. Food security of a person, family, household is uninterrupted (at any time of the day) physical, social and economic availability for each person of natural (natural origin, without genetic modification), safe basic food products, the quantitative and qualitative composition of which corresponds to medical standards,

ensuring a healthy, active, full life.Physical availability should be understood as the actual availability of food products of the appropriate assortment; social availability - availability from the point of view of the system of relationships in society; economic availability - the necessary solvency of a person, taking into account the prices of food products and income.

2. Food security of a country, region, municipal district, settlement is the uninterrupted provision, through its own production and created reserves, of physical, social and economic accessibility for all segments of the population of the country, region, municipality, of natural, safe basic food products, the quantitative and qualitative composition of which corresponds to medical standards, allowing each person to lead a healthy, active, full life.

3. Food security of an international, interstate association is the uninterrupted provision, through its own production, created reserves and interstate free movement of raw materials and food, of physical, social and economic accessibility for the population of the countries included in the association, of natural, safe basic food products, the quantitative and qualitative composition of which corresponds to medical standards, allowing each person to lead a healthy, active and full life. For this purpose, interstate organizational structures (councils, committees, etc.), institutions and mechanisms are created within the framework of associations, providing for coordination, logistics and other components of joint activities to provide the population of these countries with basic food products.

4. Food security of the world community is the conditions collectively created by the relevant organizational structures (international, national, sectoral and inter-sectoral, public, production and economic and other organizations, heads of state and government, etc.) for the formation and maintenance of a favorable socio-political environment, the development of production and economic and scientific and technical spheres of activity, ensuring uninterrupted physical, social and economic accessibility to all segments of the population of natural, safe basic food products, the quantitative and qualitative composition of which corresponds to medical standards, allowing each person to lead a healthy, active, full life. [9, p. 593]

In addition to the concept of "food security", the term "food independence" is used. A number of scientists identify these concepts; others believe that "food security" is a broader concept than "food independence". However, it is necessary to take into account the fundamental differences between these concepts, since independently emerging and existing objects and systems can interact with each other, but the very fact of their existence is independent of the existence of other similar objects. Hence, food independence should imply the possibility of autonomously providing the population with at least 100% of its own basic food products. If self-sufficiency in providing food to the population of a country (region,

etc.) is violated, then dependence on food supplies from outside arises, which is permissible within certain limits (no more than 15-20% of the need) for food security. [10, p. 5] Another term is close to, but not identical to the concept of "food security", this is nutrition security. Food security, as emphasized by the World Summit on Food Security (2009) and the Committee on World Food Security (2012), is based on four pillars: availability, access, utilization and stability; while nutrition security has three pillars: access to food, health care and diet, health and sanitation. The key terminology related to food security and nutrition security is set out in more detail by the Committee on World Food Security in a specially adopted document. [11, p. 138] In 2022, between 691 and 783 million people faced the problem of hunger. FAO uses a number of indicators to monitor hunger and food insecurity in the world and all aspects of these complex problems.

Two of these indicators – the prevalence of undernourishment (PoU) and the prevalence of moderate or severe food insecurity in the population based on the Food Insecurity Experience Scale (FIES) – are used to track the world's progress towards SDG 2.

The PoU and the prevalence of food insecurity based on the FIES provide information from different perspectives, and are based on very different methodologies and data sources.

The prevalence of undernourishment (PoU), FAO ' s traditional hunger monitoring indicator at the global and regional levels, is based on country data on food stocks, food consumption and energy requirements. Historically, the number of hungry people in the world (between 720 and 828 million) has been derived using this approach. Estimates using this indicator cannot be disaggregated to the extent necessary to identify specific vulnerable groups within countries, limiting the ability to monitor the ambitious goal of ending hunger in an agenda that aims to leave no one behind. The prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES), is an estimate of the percentage of a country's population that has difficulty accessing enough safe and nutritious food for normal growth and development and for an active and healthy life. Data are based on direct surveys of people about their experiences of limited access to food. The FIES provides estimates of food insecurity at the individual or household level, as well as by severity. These estimates are comparable across countries and population groups within countries. Going beyond national trends, this methodology helps to establish the "who" and the "where" of food insecurity by answering the question: among which groups of the population is food insecure the most and where are they?

When tracking progress towards SDG 2, this FAO indicator measures the proportion of the population that is moderately or severely food insecure. People

experiencing moderate food insecurity have reduced the quantity and/or quality of their food and are unsure of their ability to obtain food due to a lack of cash or other resources.

Moderate food insecurity can increase the risk of a number of forms of malnutrition, such as stunting in children, micronutrient deficiencies or obesity in adults.

People facing acute food insecurity have run out of food or, in the most extreme cases, have not eaten for several days. We call this group of people “hungry”. The number of people suffering from acute food insecurity as measured by the FIES is in addition to the number of hungry people as measured by the PoU. Data on the prevalence of undernourishment and moderate and severe food insecurity at global, regional and country levels are published annually in the flagship report The State of Food Security and Nutrition in the World and disseminated through the FAOSTAT database and the UN Global Data Platform for SDG Indicators. This ensures that the situation of chronic food insecurity in all countries is regularly monitored. The Global Report on Food Crises has a different purpose: it covers the situation of acute food insecurity in a limited number of countries and territories facing a food crisis, assessed using analytical tools such as the Integrated Food Security Phase Classification/Harmonized System. [1]

The most important indicator of a country's food security and the quality of life of the population is the population's food supply. This indicator is assessed by experts from FAO and the World Health Organization based on national and international statistics on per capita calorie consumption per day. In addition, the dietary structure is taken into account - the ratio of animal and plant calories in the diet. The minimum nutritional standard is considered to be 2,400 kcal/day. According to expert recommendations, people who consume less than 80% of the minimum standards are considered to be starving. At this level of consumption, human growth stops and a serious threat to their health is created. People who are undernourished are those who receive less than 90% of the minimum standard, which is not enough for full-fledged work. It is difficult to accurately characterize the global food system, since the calculations depend on the choice of criteria, which are often very arbitrary. It is almost impossible to establish an “average” nutritional standard on a global scale, since zones and regions, due to objective reasons, differ greatly in energy expenditure to maintain human life. The FAO methods adopt a standard of 2400 kcal per day, but many consider it to be underestimated, especially for determining food security or independence, and increase it to $2700-2800$, and sometimes even to 3000 kcal. In a number of countries, the achieved level is significantly higher than these indicators, and when developing FAO forecasts for the long term for economically developed countries,

per capita provision is assumed at 3500 kcal per day. The Republic of Belarus also adheres to this level.

A diet that causes physical degradation of the body is less than 1000 kcal per day. According to estimates, it is consumed by 500-800 million people. Chronic malnutrition (1000-1800 kcal per day) affects 1.5 billion people. According to FAO estimates, the number of chronically malnourished people in the world remains unacceptably high (since 2012 - over a billion people). This is due to a sharp jump in prices, the peak of which occurred in July 2008 [5, pp. 8-9]

In recent years, the International Fund for Agricultural Development (IFAD) and the World Food Programme have proposed a set of food security indicators, in which each dimension of food security is described by a number of indicators. Scientists are making efforts to combine all the indicators into indices to simplify calculations. For a more detailed study of the issue of food security indicators, let us consider some of them.

Dietary diversity and frequency of food intake – this category of indicators usually reflects the number of different types of foods or food groups that people consume and the frequency of their consumption. The result is a score showing the diversity of diets. The food consumption scale (FCS) and the household dietary diversity scale (HDDS) are two common indicators measuring dietary diversity. The principle of assessment is that the number of different food groups consumed by the study group during a certain reference period is measured - 24 hours/48 hours/7 days. [12, p. 229]

The level of food independence for specific types of products can be calculated using the following formula:

$$PF = (OP : OL) \cdot 100,$$

where OP is the volume of production taking into account changes in reserves during the year; OL is the volume of personal and industrial consumption.

In this case, the change in reserves is calculated using the balance method.

It is advisable to calculate the general level of food independence (GLFS) using the formula:

$$GLFS = [1 – (I – (I – E) : RNP] \cdot 100,$$

where I is the cost of imports; E is the cost of exports;

RNP is the population’s expenditure on food. [13, pp. 19–23]

FAO has developed a system of indicators that are used to assess the state of food security in four areas:

1) availability of products (indicators of production volumes, yield/productivity, level of reserves, losses, etc. are considered);

2) food availability (analysis of the economic feasibility of purchasing the required volumes of food using existing incomes, food transportation (assessment of the share of paved roads in the total length of roads, density of railway tracks, etc.);

3) food supply stability (assessment of food sufficiency in different periods; changes in food prices, etc. Natural disasters and social unrest are monitored);

4) food consumption (assessed from the standpoint of compliance of actual consumption with nutritional value standards: calories, protein, microelements, etc.). [6, p. 212]

1.1 Ensuring food security is the most important global problem of the world community

Globalization dictates new rules of the game in the international arena, when intercountry competition is receiving a new round of its development.

The expansion of transnational corporations and the country's ability to counteract it with the market power of the economy predetermine the outcome of this struggle. Support for business and the incubation of its competitive advantages are becoming, in the context of the global world order, not just a new state policy, but a struggle for its survival. Therefore, in our opinion, the problem of effective public administration comes to the forefront in overcoming the crisis. Competition from the commodity segment has moved to competition between management systems, both from business structures and states.

For the state to become the leader and locomotive of innovative economic development is not a political slogan, but a necessity. The alliance of the state and business in the innovation sphere in the modern world is demonstrably effective when the state takes on the construction of infrastructural elements of the economic and risk management system. Business in the innovation sector always plays "second fiddle" after the state,picking up the most developed and effective developments for their further financing and adaptation in the market space. Only the creation of an effective set of government regulation instruments can change the role of the state in the economic development of the country. Thus, in the context of globalization, the economic nature of the state is changing – from a regulator to a navigator, leader, senior business partner, directly interested in the development of high-margin export-oriented sectors of the national economy. In essence, this is the state's managerial response to the challenges of globalization and the intensification of intercountry competition.

– A special place in this competition belongs to the agricultural market, as a catalyst for the level of independence of the state in terms of its food security. Food security is an economic category officially accepted in international practice, which is used to characterize the state of the food market of a country or group of countries, as well as the world market, which ensures guaranteed access of all

social groups of the population to vital food products at any time and in quantities sufficient to achieve medical consumption standards. Almost a billion people on the planet receive an amount of food that is insufficient to ensure a healthy lifestyle. First of all, these are residents of the countries of South and Southeast Asia and tropical Africa. The problem of food shortages has undergone significant changes in the post-war years in the direction of increasing consumption and localization of poverty, but, nevertheless, demonstrates significant asymmetry across regions and countries of the world. Thus, according to this factor in the modern world, four groups of countries can be distinguished:

–– firstly, these are the leaders in food security – the countries of Western and Northern Europe, Japan, Australia, North America, which demonstrate overproduction of food products and are export donors of the world, maintaining the world food balance. In recent years, Russia has joined this elite club for some food items, including grain and sunflower oil;

–– secondly, the WHO considers most countries in the regions of Latin America, Central Asia, southern Europe, ASEAN to be close to the norm of food consumption;

thirdly, the UN WHO defines the countries of the former Soviet Union, Eastern European countries, Indonesia, India and Egypt as “acceptable” in terms of deviations in terms of food supply;

– fourthly, this is a large group of developing countries that make up a significant part of the world's population and experience all the hardships of the struggle for physical survival;

The basis of economic success is the quality of human capital, which forms a new management paradigm based on communications and a continuous educational process. It is innovative management that is capable of synthesizing effective management decisions that act proactively.

Modern economic theories are actively revising the seemingly unshakable foundations of economic competition in the context of globalization. Science is becoming pragmatic and records the existing realities without “fetishizing” the market, as a recognized economic dogma of centuries. Civilization is facing the challenges of a new global economic system that is being formed according to the rapidly changing laws of the information world, without relying on any theories or experience of millennia. [14, p. 34–38]

According to the United Nations, more than 780 million people in the world suffer from hunger, almost a third of the food produced in the world is lost or wasted, and almost 3 billion people cannot afford a healthy diet. The report “The State of Food Security and Nutrition in the World in 2023”, previously released

jointly by several UN agencies, showed that by 2030, about 600 million people in the world are expected to experience chronic malnutrition. [15, p. 12]

UN Secretary-General A. Guterres said at a conference that the global food system has “collapsed”, and vulnerable groups are paying for it, so it is necessary to make changes in the ways of food production and consumption. A. Guterres identified three key areas for action:

- massive investment in sustainable food systems, calling on governments to respond to the UN package of measures to stimulate the achievement of the Sustainable Development Goals by investing at least US$500 billion per year in long-term financial support to all countries in need;

- cooperation between governments and businesses to ensure open food markets and remove trade barriers and export restrictions; and third, reducing the carbon footprint of the food system;

- reducing the carbon footprint of the food system. [14, p. 41-42] Although food security issues are of great concern to many governments and international organizations, the issue of food security cannot be resolved by one or more countries and regional organizations working alone, and a global response is needed for the future.

First, increasing the global capitalization of arable land. Increased investment in the world's arable land is needed.

The data show that some of the world's major food producing countries still have great potential to increase production: for example, in Ukraine, known as the "breadbasket", grain yields are less than half those of the United States. In Russia, grain yields are also lower on much of its arable land, and in Brazil, more than 400 million hectares of arable land remain to be developed. Second, create a fair and reasonable order for international agricultural trade. Developed and developing countries should make relative concessions based on a reconciliation of the interests of all parties. In particular, the Cairns Group of agricultural exporters, represented by the United States, should sharply reduce agricultural export subsidies; the group of agricultural producers, represented by the European Union, Japan and South Korea, should significantly reduce tariffs and quotas; and the Group of Twenty (G20) should also lower market access thresholds as much as possible.

Third, establish a coordinated and interconnected international mechanism that will involve various international bodies:

– The United Nations can establish a global food bank, which will act as a “world food bank” and establish “special lending rights” to help cope with the food crisis, and can also provide food on concessional terms to countries

experiencing short-term food shortages;

– The World Trade Organization (WTO) has the authority to lift restrictive food trade regulations in the countries concerned. Even if some countries need to establish new restrictive regulations, they must notify the WTO in advance for consultation;

– The OECD is responsible for developing global guidelines and safeguards on biofuels, analyzing and assessing the long-term impacts of biomass development in the countries concerned, and formulating appropriate policies to guide them;

The International Monetary Fund and the World Bank are responsible for assessing the fiscal policies of the respective countries in response to the food security crisis, strengthening the analysis and supervision of food products and futures on the international market, and creating a mechanism for correcting errors and strict rules for punishing food speculation. [16, pp. 852–856] The global food problem includes the formation and distribution of resources taking into account the factors that determine the development of man and the biosphere in unity. Difficulties in the development of the food system with varying degrees of manifestation are characteristic of the entire world community, but their solution is determined by the level of economic development of countries. Providing food becomes one of the conditions for maintaining economic stability, social sustainability, and sovereignty of states. If there is not enough food for a third of the population, the country is declared starving and applies for international assistance. In the last century, up to twenty countries required food aid annually, currently there are more than forty such countries, and every second of them has been in a food crisis for more than ten years in a row. [5, p. 11]

Food security is an officially accepted economic category in international practice, which is used to characterize the state of the food market of a country or group of countries, as well as the world market, which ensures guaranteed access of all social groups of the population to vital food products at any time and in quantities sufficient to achieve medical consumption standards. Civilization is facing the challenges of a new global economic system, which is being formed according to the rapidly changing laws of the information world, without relying on any theories or experience of millennia.

Globalization, despite the seemingly obvious advantages in the effective management of the global process of food security, is not able to solve the problem of today's global trends. Global food security is maintained by 35 international organizations that are trying to solve not only the above-mentioned problems, but also the problems of production efficiency, the balance of exports and imports, and the organization of food aid to the poor. Crises in the field of food security have constantly modernized and improved the sphere of global cooperation in this area

and have been a kind of regulator of world processes in the food market. In accordance with its Charter, FAO builds its work on cooperation with a wide range of international non-governmental organizations interested in the stable development of the food market. Such cooperation synthesizes many professional platforms for a constant exchange of opinions with a wide range of interested subjects of the food market and, relying on their expert opinion, to develop effective management decisions adequate to the market environment. For example, FAO's cooperation with the International Cooperative Alliance is indicative. The main goal of this organization is to consolidate and support the corporate movement in all countries, to integrate the inter-country corporate movement based on the construction of an effective model for the development of the agricultural market. The Alliance has great authority in the world, as it was founded in London back in 1895 and has currently united 248 cooperative federations from 92 countries, representing more than 700 million people actively participating in the modern cooperative agricultural movement.

The scale of this public organization allowed it to receive consultative status in the field of cooperative movement at the UN, since the cooperative community makes a significant contribution to food security not only in developed but also in developing countries. FAO has also established cooperation with the International Association of Agricultural Economists (IAAE), which exchanges knowledge in the field of agricultural economics, introduces advanced financial technologies in the agro-industrial complex, and develops integration ties between countries. The International Association of Agricultural Economists (IAAE) is a public organization that carries out important developments in the field of global and regional agricultural policy, taking into account the rapidly developing global processes that affect it. IAAE gives a special place to the financial sphere, where the modeling of financial strategies and mechanisms for investing and supporting agriculture is considered within the framework of the global strategy for the modernization of the world agricultural market. Thus, FAO, responding to the rapid dynamics of changes in the world market, is creating a global discussion platform where FAO ' s international partners meet to discuss challenges to the planet's food security and new approaches to combating hunger in poor countries. This platform consists of thematic groups located in 55 countries. Active participants in the work of the global discussion platform are the World Health Organization (WHO), the International Labour Organization (ILO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and numerous specialized FAO partner organizations – the World Grains Council,International Sugar Organization, International Coffee Organization, International Olive Oil, Tea Committees, etc.

Of interest is the experience of cooperation between FAO and WHO through the Codex Alimentarius Commission, which is currently a recognized international authoritative center for indirect influence on world food security through the development and coordination of a set of more than 300 international standards, technical regulations, and recommendations for producers, trade, and the population in the field of healthy nutrition. In simple terms, this organization's mission is based on the goal of protecting the world food market from the threat of dangerous actions aimed at deteriorating the quality of food products. Along with voluntary standards, which all FAO participants are forced to apply, the Codex Alimentarius Commission is engaged in the global dissemination of the most up-to-date scientific information on food products and the impact of technological and other factors on their quality on the world food market. Thus, the quality system promoted by this project covers the entire technological chain of food products from the production of raw materials, production of the finished product, its storage, transportation, and sale to the end consumer. The International Fund for Agricultural Development (IFAD) plays an active role in the work of the FAO discussion platform on the problems of world food security. As a strategic partner of FAO and having the status of a specialized agency of the UN, IFAD specializes in attracting additional financial resources to help poor countries in modernizing their agricultural sector and, accordingly, helping the population to provide food and ensure food security. It is noteworthy that IFAD was created by decision of the World Food Conference in 1974 and in its activities jointly with the World Development Bank and financial and credit institutions of the UN finances projects in developing countries, providing benefits, loans, grants for the development of agriculture. The sources of financial income for the implementation of these programs, along with voluntary donations and special contributions from UN states and international business, are IFAD's own investment income and funds received from the repayment of previously issued loans. The Fund is managed and the effective use of funds is monitored by the Board of Governors, which consists of representatives of IFAD's founding states and meets annually to approve the Fund's development plans. FAO's long-term activities as the UN Center for World Food Security, its constant modernization and ability to consolidate interested partners around itself have earned this organization authority throughout the world. The following decades only exacerbate the problems of fighting hunger in poor countries, and FAO's new course on developing the agricultural market in these countries is bearing fruit. Aggravating factors are humanitarian disasters arising from military actions unleashed by humanity. In this regard, a separate block of ensuring global food security is the political climate on the planet and the readiness of humanity to maintain global security.

On the political landscape of the planet, food security carries different

motives for its maintenance. For politicians in poor developing countries, food security is the fight against hunger, people's discontent and, ultimately, the preservation of power and stability in the region, localization of crime, and an increase in the investment and tourist attractiveness of the country. For developed countries with an overabundance of food, food security is ensuring sustainable income in rural areas for producers, guaranteeing the population the quality of life and its duration, improving the quality of human capital for the development of the country's economy. Today, healthy nutrition is the main factor in human health and, as a consequence, the duration and quality of life, which is the foundation of the attractiveness of life in the country, and, as a consequence, the migration of highly qualified personnel into it. The quality of life gives rise to low social tension among the population, a decrease in crime and other antisocial phenomena. Political associations play an active role in solving the problems of maintaining world food security. An important step in the fight against poverty can be called the G8 summit held in Camp David in 2012 under the US chairmanship, at which a historic decision was made to create a New Alliance in the field of maintaining food security and adequate nutrition. The participants of the Alliance agreed to create a special program aimed at localizing hunger among the poor population of Africa and developing agriculture in the territories of the continent's problem countries. For these purposes, $3 billion was allocated from 2012 to 2022.

Thus, the G8 came out with a single coordinated position with the Governments of the African continent. It should be noted that this consolidation of efforts took place both at the interstate level and with the involvement of funds from 45 international companies and businessmen of the African continent. The peculiarity of this international public-private partnership is the model when private business voluntarily assumed obligations to implement targeted investments in the amount of more than 3 billion US dollars, which, under the strict control of African governments and businessmen, were directed to all technological areas of agribusiness, including seed production, the introduction of innovative methods of land cultivation with the use of fertilizers, irrigation, and soil protection. Today, through the joint efforts of the G8, African governments and businesses, the number of hungry people in 63 developing countries has been halved and their total number is 795 million people. In total, the Program provides for the removal of 50 million inhabitants of the African continent from poverty and hunger. The success of such a practice of fighting hunger is based, in our opinion, on the right approaches to managing this process, which were based on the following guidelines:

– consolidation of financial resources of states and businesses took place for the implementation of a specially developed program consisting of specific projects with indicative transparent performance indicators, which ensured the trust of partners in each other and reduced the risks of corruption losses in the investment process;

– management of projects was taken over by the governments of African countries directly interested in domestic and foreign investments in national agricultural sectors and the fight against hunger;

– the basis of investment policy was the use of modern tools for scaling investments aimed at building innovative agriculture and minimizing the risks of losses of agricultural products due to new technologies for the production of raw materials and their processing and storage;

– the project was launched in the pilot countries of Tanzania, Ghana, Ethiopia, thus the practice of implementing the model in these countries formed a basic implementation model with tools for all other countries participating in the project. [2, pp. 34–39]

To maintain global food security, an international system for maintaining food security was actively formed, based on the availability of food at reasonable prices at any time, regardless of weather, political or economic changes. Humanity declared the main goal - the availability of food for any person, regardless of the country he lives in, regulation of the system for maintaining food security based on international cooperation in the field of food production and their fair distribution between countries.

CHAPTER 2 FOOD PROBLEM IN CHINA AND WAYS TO SOLVE IT

2.1.Demographic and environmental factors complicating the solution of the food problem in China

In the long term, high world food prices will be supported by a combination of the following factors:

1) demographic growth;

2) high prices for energy and its derivatives (including fertilizers produced from natural gas);

3) shortages of skilled labor due to increasing urbanization;

4) an increase in the average diet in terms of energy value in rapidly developing countries;

5) limited opportunities for introducing new agricultural land in many regions of the world;

6) possible adverse effects of climate change on indicators of productive efficiency of the agro-industrial complex, given the slowdown in their growth recorded over the past two decades.

Thus, the world’s population is projected to grow from 7.8 billion in 2021 to about 8.6 billion in 2031. The UN further projects an increase to 9.7 billion in 2050. Two-thirds of this increase is expected to come from sub-Saharan Africa, India, and the Middle East and North Africa. Consequently, these regions will account

for a significant share of the additional food demand, in particular for cereals (two-thirds of the additional demand) and other staples (roots, tubers and pulses). Continued income growth and urbanization in China, India and Southeast Asia will also contribute to rising food demand for a range of commodities. China is expected to account for 41% and 34% of the additional global demand for fish and meat, respectively, while India will account for half of the additional global demand for fresh dairy products.

Climate change and the reduction of land and water resources have a negative impact on the sustainability of agriculture worldwide. The expansion of deserts and rising sea levels can cause a significant reduction in agricultural land. At the same time, in regions with a cold climate, on the contrary, its mitigation is expected, but since real changes are almost impossible to accurately predict, the impact of such changes may be unpredictable. Nevertheless, according to most forecasts, the expected climate changes will have a rather positive impact on the countries of the Eurasian region. [17, p. 22]

The People's Republic of China is a potential superpower, with a strong economy, a powerful army, nuclear potential, and the world's largest population and labor force. However, even such a giant faces a number of problems. As is known, food security requires maintaining growth and stability in agricultural production, while food safety dictates requirements for improving the quality of agricultural products. Thus, the problem of simultaneously increasing the production and quality of agricultural products is becoming more pressing. An increase in farmers' incomes can be associated with an increase in agricultural production, as well as with fluctuations (rise) in prices. Practice shows that a further increase in the input of resource elements to increase the output and quality of agricultural products can harm the environment. A problem arises that requires a scientific solution: finding a balance between saving resources and improving product quality. [18, P. 76–77]

The growth of China's economy against the backdrop of global crises and the significant increase in the country's influence on the global political and economic situation are obvious.

China owes almost all of its economic achievements not only to the special mentality of its citizens, who do not spare their lives for a bowl of corn porridge in the name of the country, but also to a carefully verified and thought-out state urbanization program. However, the significant increase in China's urban population also has a downside. If China was previously a predominantly agrarian country, and most of its residents lived in rural areas, then by 2030 the urbanization rate (the share of the urban population in the total population of the country) is expected to be 65–67%. It should be taken into account that the task is not only to feed its people, but also to not lose food security.

China's security logic is simple: their food supply should not depend on foreign countries. The government uses reserves directly or indirectly under its control to stabilize prices for basic food products and maintain production profitability.

For example, a comparison of average exchange prices of European, Australian and Argentinean exchanges for wheat, corn, soybeans and rapeseed with prices on Chinese exchanges showed that, on average, over 8 years, average exchange prices for these goods are 39% lower than prices on Chinese exchanges, i.e. China clearly supports its producers, allowing them to sell their products at a price more than a third higher than the world average.

Broad support is also provided to the modernization of traditional, labor-intensive and low-productivity methods of farming through subsidy systems, and the import and export of food products is controlled. According to the study, the urban population will grow by 24.5% by 2030 and will amount to 971 million people, which is explained not only by the ongoing processes of urbanization of the country and the high proportion of peasants migrating to cities, but also by the abolition of the "one family – one child" rule. At the same time, according to the analysts of the CPC, from 2016 to 2030 the total population of China will grow by only 5.7% and will amount to 1.455 billion people.

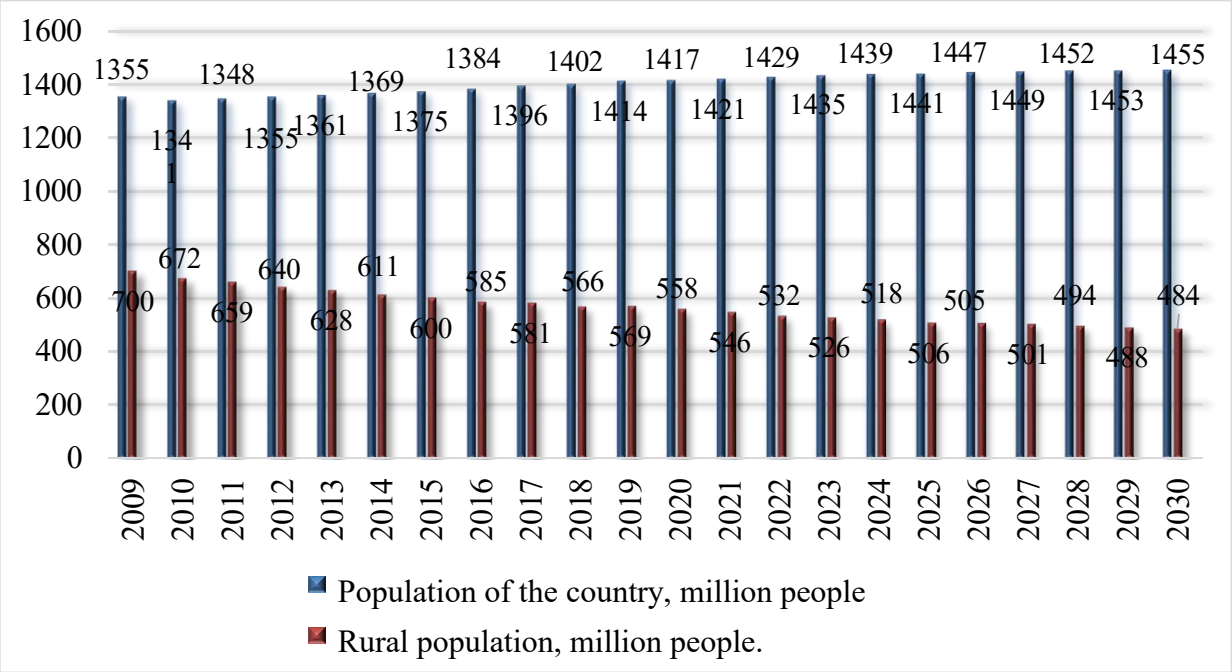
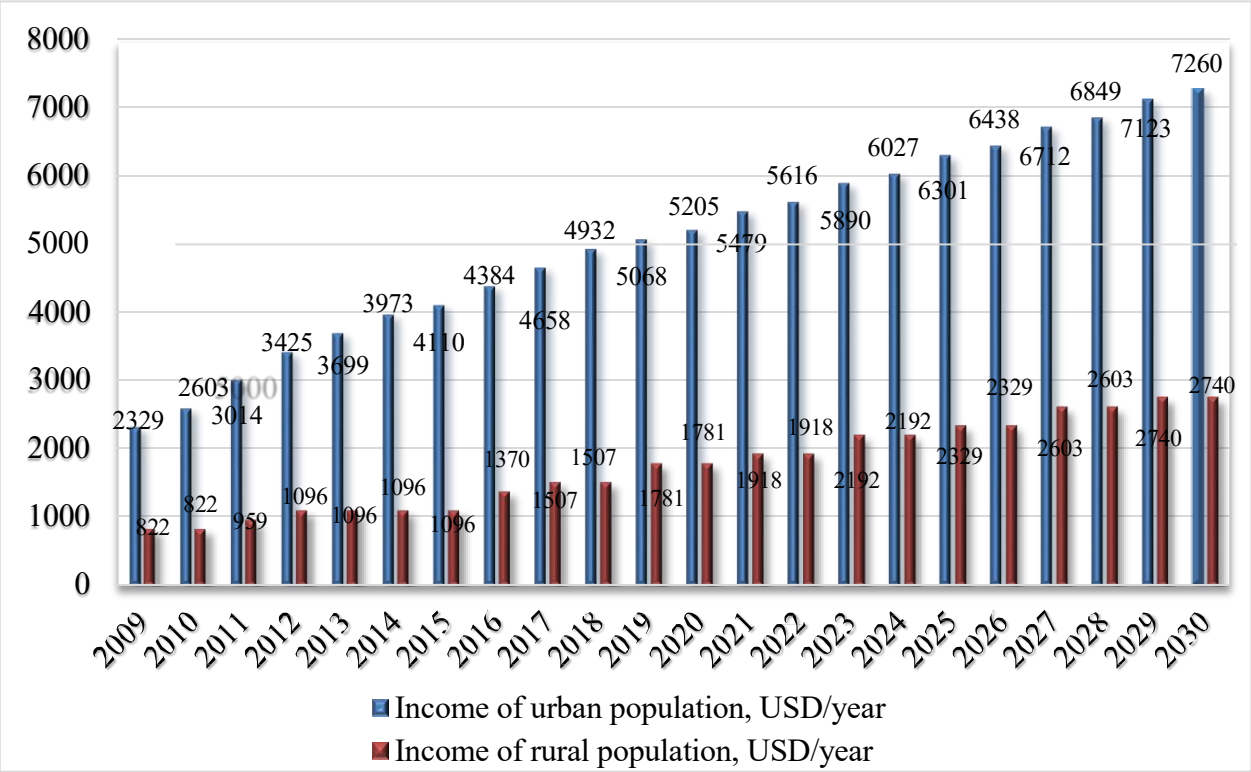


Figure 2.1 – Forecast of changes in China's population, including rural population

According to official Chinese statistics, the income of the country's population has grown by 10-15% annually over the past 5-6 years, with the income of urban residents being 3 times higher than the income of the rural population. Experts at the Center for Political Conjuncture predict that the well-being of the Chinese population as a whole will continue to grow (albeit at a slower pace), but the income of the urban population will increase by more than 70% by 2030 compared to 2019.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Income of urban population, USD/year
Income of rural population, USD/year

Figure 2.2 – Forecast of changes in income of urban and rural population in China

The improvement in living standards leads to a rapid increase in the consumption of "Western" food and meat by the Chinese. Since the end of the 20th century, the area of arable land in China has been steadily decreasing due to the aggravation of environmental problems, the alienation of part of agricultural land for forests, and part for construction and industrial facilities. By now, the area of arable land has approached the government's "red line" of 120 million hectares, which is necessary to maintain the country's food independence. At the same time, in recent years, China has seen an increase in sown areas due to the expansion of the area of fields from which several harvests can be collected per year. But the possibilities of China's agriculture are not unlimited. In the near future, a decrease in agricultural land productivity is expected due to the influence of the following factors:

1. The volumes of fertilizers used in China have reached their limit: their excessive use (60 million tons of mineral fertilizers and 1.3 million tons of pesticides are used in China annually) leads to a deterioration in the environmental situation, a decrease in soil quality, and therefore the Chinese authorities plan to limit the growth in the use of fertilizers and pesticides.

2. China will have to significantly reduce water consumption for irrigation of agricultural fields due to the depletion of water resources: the Chinese government plans to reduce water consumption by 5% by 2030, but scientists say that the depletion of underground sources in some areas of the country will cause a reduction in water consumption for irrigation by 14%.

3. According to the Ministry of Agriculture of the People's Republic of China, more than 40% of China's arable land is subject to degradation: the black soil layer in the northeast of the country has become thin, the soil in the south of the country is excessively oxidized, and the arable soil layer in the north has become thin. Soil degradation is associated with high levels of water and wind erosion (37.2% of the country's total area is subject to erosion), desertification, and soil pollution (according to official data alone, at least 20% of arable land has been contaminated). 4. Climate change can lead to an increase in the frequency and scale of natural disasters (avalanches, droughts, floods, forest fires), a reduction in fresh water reserves, an exacerbation of the situation with insect pests, and a deterioration in soil quality). Today, about a quarter of all arable land suffers from natural disasters, with crops being completely destroyed on 2-4% of land every

year. And by 2030, according to forecasts by Chinese scientists, due to global warming, the yield of many crops may decrease by 5-10%. [19] Although China has made rapid progress in terms of using advanced technologies in the agricultural sector, there are still shortcomings. Due to changes in the domestic economic situation and the complicated international situation, the process of modernizing China's agriculture is also facing serious problems. Thus, experts predict that China's population may exceed 1.5 billion people in 2035, while arable land resources will decrease due to increasing construction, natural disasters and structural changes in agriculture. Thus, China currently faces the following challenges. With the world's largest economy, the fastest growing and most technologically advanced, China faces a number of socio-economic problems typical of underdeveloped countries. Its population is enormous, and its inherent demographic processes give rise to a number of problems. The uneven demographic structure leads to the highest differentiation in the world between urban and rural areas and between regions. The policy of restraining population growth has caused the highest rates of population aging in the world and gender imbalances in the younger age groups. The social system of the society also has an extremely high inertia, which is due to its scale, complexity and social conservatism. It is obvious that it is not possible to cope with these challenges within the framework of the current value orientations of the demographic policy in China; moreover, the current situation can be significantly aggravated.

In this regard, China is faced with the need to change the value orientations of the policy, adapting them to the needs of the population, in particular individual families and individuals. If we talk about specific problems and measures to solve them, the following should be noted. The aging of the population, caused by a decrease in the birth rate, reduces the share of the working-age population. Therefore, we can talk about two policy directions.

Firstly, the implementation of a pro-natalist policy in order to increase the birth rate, since the increase in the share of the elderly population is a direct consequence of the decrease in the birth rate. Although the steps taken by the Chinese government to relax the “one-child policy” are a good start, a number of additional measures are nevertheless required. Specific policy measures may, for example, include tax incentives that encourage the birth of a child in the family and provide favorable conditions for his or her life. Secondly, productivity gains can be achieved not only through a potential increase in the working age, but also through investments in human capital. For example, the aging population increases the need for training and retraining of older Chinese workers.

As the analysis showed, China has a high demographic burden. This is partly due to the relatively early retirement of the elderly population due to their low productivity. Training and retraining of older workers will not only be beneficial

for the workers themselves, but will also increase the quantity and quality of the workforce. Corresponding measures should also be taken to support the rural population, and at all levels: from infrastructure development and investments in medicine and social programs to increasing the availability of education and creating favorable conditions for entering the labor market.

To summarize the study, we can conclude that the “new normal” of the PRC economy is accompanied by new contradictions and new problems that require due attention, and demographic changes play a significant role in their formation, and, consequently, in their solution. The complexity of China's demographic problems, their multifaceted nature and close connection with the socio-economic, political and other spheres, require significant changes in the demographic policy from the country's political leadership. The success of this policy will largely depend on understanding the complexity of these cause-and-effect relationships, as well as on the systematicity and consistency of the measures taken at all levels, the correctness of forecasting their results and, if necessary, their prompt adjustment within the framework of the development scenario, which, as the analysis showed, was previously lacking. In accordance with Chinese historical concepts, people have traditionally been considered China's main resource. That is why Mao Zedong gave the order for maximum birth rate, as a result of which the population increased sharply - from 550 million people in 1949 to 1015.9 million in 1982. In 2004, it reached 1.3 billion, in 2017 - 1.4 billion people. If the country's leadership had not realized that further population growth would lead to a catastrophe due to the growing shortage of resources, then today China would have at least 1.6 billion people. The three-decade "one family - one child" policy has led to one of the lowest birth rates in the world - 1.22 babies per woman. Despite this, due to the declining mortality rate, the population continues to grow, by an average of 7-8 million people per year. Also, in the villages there are almost no one-child families, the family either has a legal right to a second child (if they belong to an ethnic minority or if the first child is a girl) or circumvents the restrictions by hiding the second child or refusing to pay a fine of 5,800 yuan due to lack of funds. Another problem, in addition to the low birth rate, is the rapid aging of the population. The proportion of people under 15 years of age fell from 19.8% to 16.5%, while the proportion of people over 65 years of age increased from 7.9% to 9.1%. The growth in the number of older age groups is almost twice as high as the growth of the population as a whole. This leads to the unpleasant phenomenon that an ever-decreasing number of working-age people must support an ever-increasing number of pensioners. According to forecasts, by 2020 the number of people over 60 years of age will reach 248 million people, and after 2030 it will amount to 27.4% of the population. [20, pp. 34–35]

Demographic trends are very important for economic development. An aging population is considered to reduce a country's growth potential, since the latter depends on the size of the labor force and labor productivity. For this reason, the steady decline in China's population growth rate may indicate that the world's second-largest economy is moving toward an insurmountable "middle-income trap." China is currently facing a unique demographic problem: the country is aging faster than it is getting richer. For comparison, China's per capita GDP is about 17% of that of the United States, while China's population is growing more slowly than that of the United States.

At present, the importance of demographic trends for economic growth cannot be denied. The development of negative demographic processes (aging population and a decrease in the working-age population) has forced China's leadership to change its family planning policy, moving from limiting the birth rate to stimulating it. In the course of analyzing the array of information sources, we identified the largest problems of demographic development - an unsatisfactory level of ecology, uneven development of different regions of the country and an aging population. The extremely rapid development of industry has led to a deterioration of the environment, which has a negative impact on people's lives. Pollution of water, air and soil contributes to the emergence of many dangerous diseases, which are the cause of more than half of all deaths in China. Mineral fertilizers and pesticides can help to increase the yield of food crops, but their excessive use not only increases production costs, but also causes serious environmental problems, such as surface pollution caused by agricultural production, organic pollution and eutrophication of the soil of agricultural lands and water bodies. [21, P. 139-140]

An important problem is also the imbalance in development between different regions. A special difference is noticeable between East and West China. All economic and scientific potential is concentrated on the east coast, while ten western provinces are at the level of absolute poverty. Such differentiation could not but cause a wave of migration, as a result of which, after the easing of the registration process, millions of peasants from the western provinces went in search of a better life to the east.

2.1. Evolution of changes in the structure of nutrition of the population of the PRC and the current state of agriculture in the country

China's comprehensive food production capacity has been steadily increasing, providing abundant food resources for the population's consumption. Compared with more than 30 years ago, China's food production has grown exponentially, making it the world's largest producer of major agricultural

commodities. From 1978 to 2010, the country's total annual grain production increased from 305 million tons to 546 million tons, an increase of 79.0%; The production of vegetables, oilseeds, sugar, fruits, meat, dairy products and aquatic products grew exponentially, reaching 650 million tons, 32.39 million tons, 210 million tons, 79.25 million tons, 37.48 million tons and 53.66 million tons in 2010 respectively, which is a relatively high level of production. In 2010, the production of these types of products increased from 2.4 to 37.6 times compared with 1978, respectively.

Until the early 1990s, most people in the country lived on a vegetable diet. Meat food was a symbol of wealth and abundance. As the overall well-being of the Chinese grew, the amount of meat on their tables became more and more. According to forecasts by the Center for Policy Conjuncture, by 2030, the total demand for meat in China may increase by 86% and reach 162.5 million tons, with pork being consumed the most, up to 90.5 million tons. Over the past 20 years, under the guidance of the document "Guidelines for the Reform and Development of China's Food Structure in the 1990s" and the document "Guidelines for the Development of China's Food and Nutrition (2001-2010)", China has made great strides in the field of food and nutrition, steadily strengthening its food production capacity and rapidly increasing its consumption. Under the guidance of these two programs, China has made great strides in the field of food and nutrition: the country's food production capacity has been steadily strengthened, food consumption has grown rapidly, and the population's awareness of nutrition, its quality and structure has gradually increased (Table 2.1).

Table 2.1 – Consumption of Major Food Items in China

Type of food	Production per capita, kg		
	1990	Tenth Five-Year Plan 2001–2005 (annual average)	Eleventh Five-Year Plan 2006–2010 (annual average)
Corn	209,6	165,8	148,8
Vegetables	116,1	113,4	108,9
Meat	17,2	23,6	26,2
Eggs	5,2	7,1	7,6
Fish and seafood	4,9	7,7	9,0

At the same time, food and nutrition in China are facing new problems, such as significant risks of food consumption, lack of convergence between production and consumption patterns, lack of coordination between consumption and nutrition goals, and discrepancy between nutrition improvement and health needs; new features are emerging in the development of food and nutrition.

The task of improving nutrition remains difficult. The quality of people's

diets has improved significantly, and survey data show that in 2009, the daily energy consumption per capita was 2,220 kcal, protein 71 g, fat 78 g, and the proportion of high-quality protein in the diet reached 40%. However, overall, there is still insufficient intake of calcium, iron, zinc and vitamin A, and there is a contradiction between undernutrition and overnutrition, so the task of improving nutrition remains difficult. By 2010, protein intake in China was only 85.5% of the recommended amount, with high-quality protein intake being 27% below the recommended amount and fat intake being excessive, exceeding the recommended amount by 13.0%. Calcium intake for the entire population was 391 mg, which was only 41% of the recommended intake in the dietary guidelines. The discrepancy between actual intake and nutritional goals is becoming increasingly evident. Over the past 30 years, the food consumption pattern of Chinese people has changed markedly: per capita consumption of cereals has decreased, while consumption of vegetables, fruits, and high-quality protein products such as meat, eggs, and milk has increased significantly. (Table 2.2).

Table 2.2 – Dietary imbalances for major food items in China

Type of food	Per capita consumption, kg per year	Recommendations for a balanced diet consumption levels, kg per year	Dietary imbalance
Cereals and grains	172,10	135	+37,10
Soybeans and Soy Products	5,84	13	–7,16
Edible Oils	15,33	12	+3,33
Vegetables	104,21	140	–35,79
Fruits	25,55	60	–4,45
Livestock and Poultry Meat	29,05	29	+0,05
Poultry Eggs	8,61	16	–7,39
Milk	9,60	45	–35,40
Fish and Seafood	10,99	18	–7,01

However, there is still a large gap between the actual food consumption of the people and the recommended nutritional targets, and the problem of disharmony between the two has become increasingly obvious. Among them, the consumption of legumes and legume products, milk and dairy products, fish and shrimp, and fruits is still far behind the reference consumption of medium-calorie foods recommended by dietary guidelines. The development of food and nutrition is a long-term difficult task on the path to the great rejuvenation of the Chinese nation. Since the reform and opening up of China, great achievements have been made in the field of food and nutrition: a significant increase in food production, an improvement in the level of food processing, a steady increase in the level of consumption, an improvement in the nutritional structure of the population, and significant changes in the nutrition of the population. Clearly define the new characteristics of food and nutrition development, comprehensively integrate China's limited resources, systematically coordinate the

relationship between production, consumption, nutrition and health, reasonably set food and nutrition development targets, and scientifically substantiate the strategic choice for food and nutrition development - this is not only an important theoretical issue in food and nutrition science, but also an important task in China's socio-economic development. [22, P 3-5]

The problem of unhealthy lifestyles and serious lack of physical activity and exercise is becoming increasingly prominent, further aggravating the risk of developing chronic diseases. In the new era, we must inherit the essence of traditional nutrition patterns, learn from the successful experience of foreign countries in improving nutrition, optimize the diet structure, and form a nutrition pattern that emphasizes plant foods supplemented with animal products. Emphasis should be placed on ensuring the consumption of staple grains, increasing the consumption of vegetables and fruits, consuming animal products in moderation, ensuring sufficient energy and protein intake, meeting the needs of vitamins and minerals, and controlling the fat-energy ratio. It is necessary to comprehensively promote a healthy lifestyle.

Analysis of Food and Nutrition Development Objectives

In recent years, when determining China's development objectives in the field of food and nutrition, it is necessary to take into account resource and environmental constraints, scientific and technological conditions, international trade structure and changes in natural disasters when considering supply; when considering consumption, it is necessary to take into account population growth, the rise in the consumption level of the population, the need to improve the dietary structure and changes in the people's food consumption habits; when considering nutrition development objectives, it is necessary to take into account the nutritional needs of the people, the demand for food resources and the need to improve the people's nutrition. In terms of nutrition development goals, it is necessary to take into full consideration the nutritional and health needs of the population, the carrying capacity of food resources, traditional food consumption habits and the heritage of China's excellent food culture. By calculating various scenarios, production targets and consumer demand forecasts for basic food products are proposed.

Objectives for the Development of Food Production. It is necessary to maintain an annual growth rate of food production of more than 0.48%, which is relatively low in the history of food production in China. This growth rate is 5.91 percentage points lower than the average annual growth rate of 6.39% during 1949–58, 3.16 percentage points lower than the average annual growth rate of 3.64% during 1962–98, and 3.07 percentage points lower than the average annual growth rate of 3.55% during 2003–09. The oilseed production target for 2022 is 37 million tons. According to this target, China's total oilseed production increased at an average annual rate of 1.46% from 2009 to 2022. This growth rate is lower than the average annual growth rate of 3.59% in China's total oilseed production from

1990 to 2009. As a global importer of vegetable oils, China aims to further develop its oilseed production capacity and improve self-sufficiency. In 2022, the per capita consumption of edible vegetable oil was more than 12 kg, and a certain amount of oilseed imports still needs to be maintained. [22, P.9-12]

According to the target, the average annual growth rate of total vegetable production from 2009 to 2022 is 0.87%, which is clearly lower than the average annual growth rate of 7.20% from 1995 to 2009. In addition, according to the research results, China still has room for growth in terms of vegetable acreage and yield potential. Therefore, this target is relatively easy to achieve, and further development will focus on adjusting the variety structure, reasonably organizing vegetable production, and preventing excessive regional and seasonal fluctuations in vegetable production. The per capita vegetable production rate in China is 469 kg in 2022, and the per capita vegetable consumption requirement is 140 kg, in line with reasonable dietary needs. [22, P.9-12]

China's total fruit production grows at an average annual rate of 2.58% from 2009 to 2022, much lower than the average annual growth rate of 11.17% during the period 1990-2009. China's fruit and forestry production still has many low-yield forests and low-yield varieties, so the potential for increasing fruit yield and expanding planting area has not yet been exhausted. The future development of fruit production aims to adjust the structure and improve the quality. [22, P.9-12]

In 2022, according to the target, China's total meat production should increase at an annual rate of 1.07% from 2009 to 2022, lower than the annual growth rate of 5.62% in China's total meat production during the period 1990-2009. In addition, in recent years, the main way of raising livestock and poultry in China has shifted from free breeding to large-scale farms, while the fattening cycle has been significantly shortened and the level of disease prevention and control has been improved, which has strengthened the production potential of the livestock industry. Future meat production and development goals will require appropriate control over the scale of meat livestock development and adjustment of the breed structure. According to the traditional dietary habits of the Chinese population and the requirements of a reasonable nutritional structure, the annual per capita meat consumption in 2022 is 30 kg. [22, P.9-12]

The target for egg production in 2022 is 31 million tons. According to this target, from 2009 to 2022, China's total egg production will grow by an average annual growth rate of 1.12%, lower than the average annual growth rate of 7.12% during the period 1990-2009. The per capita egg demand will be 16 kg. [22, pp. 9-12] The milk production target by 2022 is 65 million tons. According to this target, the average annual growth rate of China's total milk production from 2009 to 2022 should be more than 5.1%, which is still low compared with the average annual growth rate of 12.13% during the period 1990-2009. Compared with many

countries in the world, Chinese people's milk consumption is still at a relatively low level, and the development of dairy production will continue to receive attention and support from all sides. Milk consumption target: In 2009, China's per capita milk production was 28.0 kg, and per capita milk consumption was 19.3 kg. In 2020, per capita milk consumption was 36 kg, significantly higher than the previous milk consumption level, which will greatly improve the consumption level of high-quality protein by Chinese people. [22, P.9-12]

The production target of aquatic products in 2022 is 55 million tons. According to this target, the average annual growth rate of China's aquatic product output from 2009 to 2022 was 0.66%, much lower than the average annual growth rate of 8.21% from 2000 to 2009. China's vast marine and inland waters are suitable for aquaculture, so the main goal of fishery production is to adjust the structure and improve the quality. In 2022, the demand for aquatic products was 18 kg, so there will be a large increase in the consumption of aquatic products in residents' diets. [22, P.9-12] One of the main goals is to improve the nutrition of the population. Chinese residents need to get enough energy and protein, and maintain the necessary intake of vitamins and minerals. The daily energy intake per capita should be at least 2,300 kcal, 75% of which should come from plant foods, with the ratio of energy from cereals to total energy being at least 50%. The average protein intake should be 78–80 g. Fat intake should be controlled, with the proportion of energy from fat being no more than 30%. Micronutrient intake, such as vitamins and minerals, should basically meet the population’s health needs. [22, P.9–12]

In order to ensure China’s sustainable economic growth in the coming years, agriculture and the food industry are assigned a key role, especially with the recognition that nutrition has a direct impact on the health of the population, which in turn determines the success of economic transformation.

Over the past 20 years, the first-class arable land has decreased by 3.24%, while the second- and third-class arable land and land suitable for forest and pasture have increased by 2.91%, 7.81% and 14.10% respectively. The trend of severe reduction of high-quality arable land over a long period of time is inevitable. Due to the influence of the monsoon climate, the spatial distribution of China's water resources is extremely uneven, the northern region is poor in water resources, according to statistics, the total water resources of the northern region account for 16.5% of the country's total water resources. The serious shortage of water resources in the northern production areas, coupled with the relative lagging behind in the construction of rural reservoirs, irrigation and other basic auxiliary facilities, will greatly hinder the improvement of China's comprehensive output capacity. The data on agricultural production conditions in all categories of farms in China are shown in Table 2.1.

Table 2.3 – Agricultural production conditions in China

Indicators	2000	2015	2022
Total capacity of agricultural machinery, 10,000 kW	52573,6	111728,1	110597,2
Large and medium tractors, 10,000 units	97,5	607,3	525,4
Small tractors, 10,000 units	1264,4	1703	1618,7
Auxiliary agricultural implements for tractors, 10,000 units	140	962	526
iArea of irrigated arable land, thousand hectares	53820	65873	70359
Use of fertilizers in agriculture, million tons	4146,4	6022,6	5079,2
Electricity consumption in rural areas, billion kWh	2421,3	9026,9	6618,6

Over the past 60 years, China's population has grown linearly, increasing its consumption of natural resources, and the rapid development of the economy has led to a continuous increase in arable land. At present, the average arable land area per capita is only 40% of the world average. In recent years, the state has been implementing a strict land policy, but it is still difficult to completely curb the phenomenon of arable land encroachment, and illegal land use is still quite serious. With the acceleration of industrialization and urbanization, arable land will continue to decline. [23] It is noted that the level of agricultural modernization in China continued to improve in 2024. The comprehensive mechanization rate of crop cultivation, harvesting and planting is expected to exceed 75%.

The sown area of major agricultural crops is shown in Table 2.2.

Table 2.4 – Cultivation areas under major agricultural crops in China, thousand hectares

Indicators	2000	2015	2022
Total area under agricultural crops	156300	166829	169991
Cereals and legumes	108463	118963	118332
Cereals	85264	103225	99269
Rice	29962	30784	29450
Wheat	26653	24567	23518
Corn	23056	44968	43070
Beans	12660	8433	11878
Potatoes	10538	7305	7185
Oil crops	15400	13314	13141
Cotton	4041	3775	3000
Hemp	262	54	58
Sugar cane	1514	1573	1453
Tobacco	1437	1254	1044
Vegetables	15237	19613	22434
Area of tea plantations	1089	2641	3393
Area of orchards	8932	11212	13010

Compiled based on data from [24]

It is obvious that the largest sown area is for various grain crops.

The statistics of the National Bureau of Food Statistics include three main categories of grain crops (rice, wheat, corn, sorghum, etc.), potatoes (including sweet potatoes), and legumes (including soybeans, beans, peas, green beans, etc.). Among them, rice, wheat, and corn are the three main grain crops. China is the world's leading wheat producer, accounting for about 17% of the world's production. [25]

In 2024, stable supplies of cotton, sugar, and rubber were maintained.

Table 2.5 – Production of major agricultural crops in China, million tons

Indicators	2018	2019	2020	2021	2022
Agricultural production:					
Cereals and legumes	65789,2	66384,3	66949,2	68284,7	68652,8
Grain	61003,6	61369,7	61674,3	63275,7	63324,3
Rice	21212,9	20961,4	21186	21284,2	20849,5
Corn	13144	13359,6	13425,4	13694,4	13772,3
Beans	25717,4	26077,9	26066,5	27255,1	27720,3
Soybeans	1920,3	2131,9	2287,5	1965,5	2351
Potatoes	1596,7	1809,2	1960,2	1639,5	2028,3
Oilseeds	2865,4	2882,7	2987,4	3043,5	2977,4
Peanuts	3433,4	3493	3586,4	3613,2	3654,2
Rapeseed	1733,2	1752	1799,3	1830,8	1832,9
Sesame	1328,1	1348,5	1404,9	1471,4	1553,1
Cotton	43,1	46,7	45,7	45,5	43,5
Hemp	610,3	588,9	591	573,1	598
Sugarcane	20,3	23,4	24,9	21,1	22,8
Sugarbeet	10809,7	10938,8	10812,1	10666,4	10338,1
Tobacco	1127,7	1227,3	1198,4	785,1	893,3
Silkworm cocoon	224,1	215,3	213,4	212,8	218,8
Mulberry cocoon	83,1	83,3	78,8	78,2	80,7
Tea	76,4	77,2	73,5	72,7	74,8
Fruits	261,0	277,7	293,2	316,4	334,2
Grain	25688,4	27400,8	28692,4	29970,2	31296,2

Compiled based on data from [24]

For the first time in 2024, grain production exceeded 700 million tons, an increase of 11.09 million tons compared to 2023. At the same time, soybean production reached 2065 million tons, which further increased the level of self-sufficiency in edible vegetable oils.

In the White Paper on Food Security, which was adopted in China in 2019, food security is defined as basic self-sufficiency in grain and absolute food security. In 2022, the authorities paid farmers 40 billion yuan in subsidies to keep them from giving up growing rice, wheat and other less profitable crops.

Currently, China meets 95% of its own grain needs. China has built new modern grain storage facilities and renovated old ones, which further increases the storage capacity. In the medium and long term, per capita grain consumption and demand will slightly decline as a result of socio-economic development; the consumption of grain as livestock feed and grain used for industrial purposes will continue to increase. The overall grain consumption will increase and tend to improve its quality. [25] China is the world's largest producer and exporter of fruits. The growth since 2011 has been around 30-35%, which is quite an impressive

figure. In addition, according to statistics, the main types of fruits that were grown in China in 2021 are apples (45.97 million tons), citrus fruits (55.96 million tons), pears (18.88 million tons), grapes (15 million tons) and bananas (11.72 million tons). Fruit production is currently about 50 million tons higher than four years ago, while the population has remained virtually unchanged.

China is also the world's largest producer and consumer of vegetables, accounting for about half of global production. The main ones include cabbage, carrots, cauliflower and broccoli, chili peppers, cucumbers, eggplants, garlic, asparagus, onions, tomatoes, spinach, potatoes and sweet potatoes. Vegetable production in China is widespread, with cultivation taking place in various regions of the country.

Other important crops include tobacco, peanuts, rapeseed, soybeans and sugar beets. According to the Chinese Ministry of Commerce, up to 25% of fruits and vegetables do not reach the end consumer - they rot in warehouses or during transportation to the point of sale. The government has a lot of work to do in this area, since in developed countries this figure is about 5%.

Systematic work aimed at increasing the productivity of agricultural crops in China is of great importance for achieving the set goals. According to data from 1980 to 2022, the total grain yield of the main regions of China does not show a tendency for significant growth. Stabilization of yield per unit area mainly depends on the development of new productive forces, the use of new varieties and hybrids of plants, mineral and organic fertilizers, modern machinery, equipment, as well as the introduction of innovative technologies, including digital technologies in agriculture. (Table 2.6)

Table 2.6 – Productivity of the main agricultural crops in China, c/ha

Agricultural Crops	2018	2019	2020	2021	2022
Grains and Legumes	56,21	57,20	57,34	58,05	58,02
Grains	61,20	62,72	62,96	63,16	63,79
Cotton	18,19	17,64	18,65	18,93	19,93
Peanuts	37,52	37,81	38,03	38,10	39,13
Rapeseed	20,27	20,48	20,77	21,04	21,41
Sesame	16,45	16,51	15,64	15,96	16,20
Jute	50,08	47,41	36,36	35,53	33,96
Sugar Cane	768,91	786,55	798,90	810,47	801,92
Sugar Beet	521,74	560,57	563,07	556,39	548,55
Tobacco	21,03	20,79	20,91	20,86	20,79

Compiled based on data from [24]

Animal husbandry in China is an important sector of the country's economy, providing food and livelihoods for millions of people. The industry has seen significant growth in recent years, driven by rising demand for meat and other animal products as China's population has become wealthier. The strong growth in demand for meat products can also be attributed to the rapid urbanization of the population over the past 10 years. As a result, the Chinese diet has changed from carbohydrate-rich foods to foods high in protein and calories, leading to an increase in demand for animal products. (Table 2.7)

Table 2.7 – Population of the main animal species in China, 10,000 heads

Indicators	2018	2019	2020	2021	2022
Cattle	8915,3	9138,3	9562,1	9817,2	10215,9
Horses	347,3	367,1	367,2	372,5	366,7
Donkeys	253,3	260,1	232,4	196,7	173,5
Mules	75,8	71,4	62,3	54,2	48,8
Camels	33,8	40,5	41,1	46,2	54,1
Meat pigs	69382,4	54419,2	52704,1	67128	69994,8
Sheep	29713,5	30072,1	30654,8	31969,3	32627,3
Goats	13574,7	13723,2	13345,2	13331,6	13224,2

Compiled based on data from [24]

China is currently the second largest meat market in the world by revenue, behind only the United States. Although China's per capita meat consumption still lags behind many developed countries, it has seen astronomical growth in consumption in the past few decades. In 1975, China consumed only 7 million tons of meat. This figure has grown more than 10 times, making it the largest meat consumer in the world. Pork dominates China's meat market. China is the world's largest producer, consumer, and importer of pork. Pork has been the main source of meat in China by far. For a decade, China ranked first in the world in per capita pork consumption. In 2021, China consumed about 23.7 kg of pork per capita, ranking third among all OECD countries, and in 2022, pork accounted for more than 50% of domestic meat consumption. In 2024, pork, beef, lamb and poultry production reached 96.63 million tons, an increase of 0.2% year-on-year. (Table 2.8)

Table 2.8 – Production of the main types of livestock and fish products in China

Indicators	2018	2019	2020	2021	2022
Meat production, 10,000 tons	8624	7758	7748	8990	9328
Pork, beef and lamb, 10,000 tons	6522	5410	5278	6507	6784
Pork, 10,000 tons	5403	4255	4113	5295	5541
Beef, 10,000 tons	644	667	672	697	718
Lamb, 10,000 tons	475	487	492	514	524
Milk, 10,000 tons	3176	3297	3529	3778	4026
Sheep wool, tons	356608	341120	333625	356217	356194
Goat coarse wool, tons	26965	24875	24034	23332	24837
Cashmere, tons	15438	14964	15244	15102	14649
Poultry eggs, tons	3128	3309	3467	3408	3456
Fish products, tons	6457	6480	6549	6690	6865
Marine products, tons	3301	3282	3314	3387	3459
Freshwater products, tons	3156	3197	3234	3303	3406

Compiled based on data from [24]

State-owned farms play an important role in China's agricultural economy. They generally adopt advanced production technology and equipment, and practice the integrated development of agriculture, forestry, animal husbandry, by-products and fishery. The main task of state-owned farms is to ensure the production of

commercial food and other agricultural by-products, and at the same time play a role in the process of agricultural specialization, commercialization and modernization.

The development of farms plays a great role at the present stage, and according to statistics, the number of farms maintains an upward trend in 2018-2022. The development and distribution of farms in China has obvious regional characteristics, which are significantly affected by the geographical environment and resource distribution.

Table 2.9 presents information on the number of farms and their endowment with basic resources.

Table 2.9 – Number of farms and their provision with basic resources

Indicators	2018	2019	2020	2021	2022
Number of farms, thousand units	1759	1834	1803	1799	1787
Number of employees, 10,000 people	192,1	214,7	247,1	232,3	228,5
Area of cultivated land, thousand hectares	6419,7	6480,8	6516,6	6606	7038,9
Total capacity of agricultural machinery, billion W	306,2	311,9	320,9	330,8	343
Ownership of agricultural machinery:					
Large and medium agricultural tractors, 10,000 units	22,9	22,8	23,1	23,8	24,5
Small and walking tractors, 10,000 units	37,3	29,1	28,2	28,1	26,9
Agricultural irrigation and drainage power machines, 10,000 units	33,3	39,2	30	29,2	29,7
Combines, 10,000 units	6,4	6,5	6,8	7,1	7,5
Agricultural vehicles, 10,000 units	7,6	7,7	7,7	7,8	7,9
Total amount of fertilizers for agricultural use, million tons	273,0	252,3	242,8	238,0	242,0

Compiled on the basis of data [24]

The total value of agricultural products, sown areas and production of the main types of crop products are presented in Table 2.10.

Table 2.10 – Cultivated areas and production of crop products in farms

Indicators	2018	2019	2020	2021	2022
1	2	3	4	5	6
Total value of agricultural products, billion yuan	3823,1	3862,1	4230,3	4634,8	4804,5
Total area under agricultural crops, thousand hectares	6851,2	6789,1	6850,8	6995,9	7161,4

Cereals and leguminous crops, thousand hectares	4827	4794,8	4807,8	4990,4	5108,4
Grain, thousand hectares	4022,4	3766,1	3748,1	4092,5	3926,7
Cotton, thousand hectares	1021,8	1006,6	1016,2	1014,8	1032,3
Oilseeds, thousand hectares	306,2	309,7	306,8	276,5	298,6
Sugar beet, thousand hectares	93,6	97,3	95	81,7	81,5

Continuation of the table 2.10

1	2	3	4	5	6
Hemp, thousand hectares	5,7	7	7,9	6	5,7
Tea plantations, thousand hectares	27,3	31,9	29,8	30,3	30,8
Mulberry plantations, thousand hectares	0,9	1,3	0,8	1,6	1,5
Fruit orchards, thousand hectares	411,3	404,2	403,3	394,5	342,3
Rubber plantations, thousand hectares	439,1	425,4	407,3	401,4	397,9
Production of main types of agricultural products, 10,000 tons:					
Cereals and legumes	3652,8	3441,1	3562,7	3876	3848,6
Cereals	3359,4	3154,2	3241,9	3585,8	3483,9
Cotton	284,8	244,7	261,8	263,3	270,7
Oilseeds	79,7	75,7	73,5	68,7	75,3
Sugar cane	755,8	746,5	712,5	613,2	598,5
Hemp	8,2	10,2	3,2	2,2	2,5
Tea	5,6	5,3	4,3	4,4	4,5
Fruits	745,3	784,2	817	831,2	825,7
Dried gum	29,3	28,5	25,6	27,3	28,6

Compiled on the basis of data [24]

The production of the main types of livestock products in farms in China is presented in Table 2.11.

Table 2.11 – Production of livestock and fishery products in farms

Indicators	2018	2019	2020	2021	2022
Cattle population at the end of the year, 10,000 heads	280,2	299,0	309,8	345,0	387,3
Pig population, 10,000 heads	1173,1	728,4	881,7	995,9	1111,8
Sheep population, 10,000 heads	1236,5	1118,5	1083	1084,7	1117,1
Livestock production, million tons:					
Beef and lamb	163,0	139,0	129,0	159,6	183,4
Pork	126,2	102,1	92,5	119,6	142,2
Milk	389,8	418,2	435,2	467	570,2
Poultry eggs	45,4	48,1	48,8	47,7	45,9
Wool	3,2	3,2	3,1	3,1	2,2
Total fish products, tons	162,8	161,4	176,7	177,1	180

Based on data from [24]

The development and distribution of farms in China has obvious regional characteristics, which are significantly influenced by the geographical environment and resource distribution.

To improve the efficiency of food production, it is necessary to take a series of measures, including strengthening the construction of farmland infrastructure, improving the level of agricultural science and technology, optimizing land use policies, and promoting agricultural modernization. These measures will help increase productivity per unit of land, ensure national food security, and promote sustainable agricultural development. [26]

In 2019, the Chinese government paid US$196 billion in subsidies to agricultural producers. The main areas of support are compensation for producers' costs of energy, fertilizers, setting guaranteed prices for food, and exemption from certain types of taxes. Thus, the People's Republic of China is one of the largest countries in the world with a population of more than 1.4 billion people. Ensuring food security in China is one of the main tasks of the government, given the size of the country and its rapid development. In recent years, China has faced a number of complex challenges in the field of food security, including climate change, decreasing land area suitable for agricultural needs, environmental pollution and threats posed by the Covid-19 pandemic. In China, food security is established in relevant regulatory legal acts, laws, and documents. The main regulatory provisions include: the Comprehensive Food Safety Law of 2009 [27], the White Paper on Food Safety in China of 2019 [28], as well as the Law on the Quality and Safety of Agricultural Products, the Law on Land Management, and others. Since 1982, the PRC has regularly developed legislative acts devoted to the development of agriculture and ensuring food security, which are called Document No. 1. In February 2024, China outlined the tasks for the comprehensive development of rural areas. The No. 1 Central Document for 2024 outlined the tasks for the comprehensive revitalization of rural areas. The document consists of six parts:

- Ensuring national food security;
- Preventing a return to poverty;
- Developing the processing industry;
- Building infrastructure facilities;
- Strengthening work in rural areas.

It states that in order to advance Chinese-style modernization, it is necessary to continuously strengthen the agricultural base and comprehensively promote rural revitalization. In addition, the authors of the document call for steadily improving the mechanisms for “ green development ” and adhering to the concept of social development. In addition, the role of reform and scientific and technological innovation should be strengthened, and various measures should be introduced to increase rural incomes. [29]

2.3 Dependence of China's domestic food market on food imports

Since 1949, China’s grain production has moved from a pervasive supply deficit to a basic balance between supply and demand. “China is the world’s third-largest country by land area. Since China began opening up and reforming its economy in 1978, GDP growth has averaged nearly 10% per year. China is now the world’s second-largest economy, the largest exporter, and has the largest foreign exchange reserves in the

world. China is the world's largest producer and second-largest importer of agricultural products. Agriculture employs about a third of the country's labor force, but accounts for only 10% of GDP. China is the world's largest producer of rice, cotton, pork, fish, wheat, tea, potatoes, corn, peanuts, millet, barley, apples, cotton, oilseeds, and other products. Livestock, fisheries, and aquaculture are also important components of China's economy. With one-fifth of the world's population, China accounts for a quarter of the world's food production. China has recently experienced good harvests. The Chinese government has formulated a national food security strategy that features self-sufficiency based on domestic grain production, guaranteed food processing capacity, moderate imports, and technical support. Through supply-side structural reform and institutional innovation in agriculture, China has increased grain yields, modernized grain circulation, optimized the food supply structure, and achieved sustainable development in grain production. [25] Over the past few decades, China's agricultural production and food policy have undergone significant changes. While economic development has enabled China to make enormous strides toward feeding its population, serious problems still remain, including unsustainable growth in agricultural output and farmers' incomes, and uneven rural development. Accelerated urbanization will have a serious impact on food consumption and production. According to forecasts, the urbanization rate may increase to 65% by 2025 and to 80% by 2050. Chinese leaders face the dual challenge of maintaining economic growth while feeding a growing urban population in a country with only 0.09 hectares of productive land per capita. At present, it can be safely said that China has reached the highest historical level of food security. The country covers about 95% of its demand for grain, vegetables, and fruits with domestic production, but there is a tendency for increasing dependence on imports of soybeans, oilseeds, etc.

Modernization of consumption has led to a steady increase in the consumption of imported products.

Since the reform and opening up, China's socio-economic development, people's living standards, and quality of life have gradually improved. (Fig. 2.3)

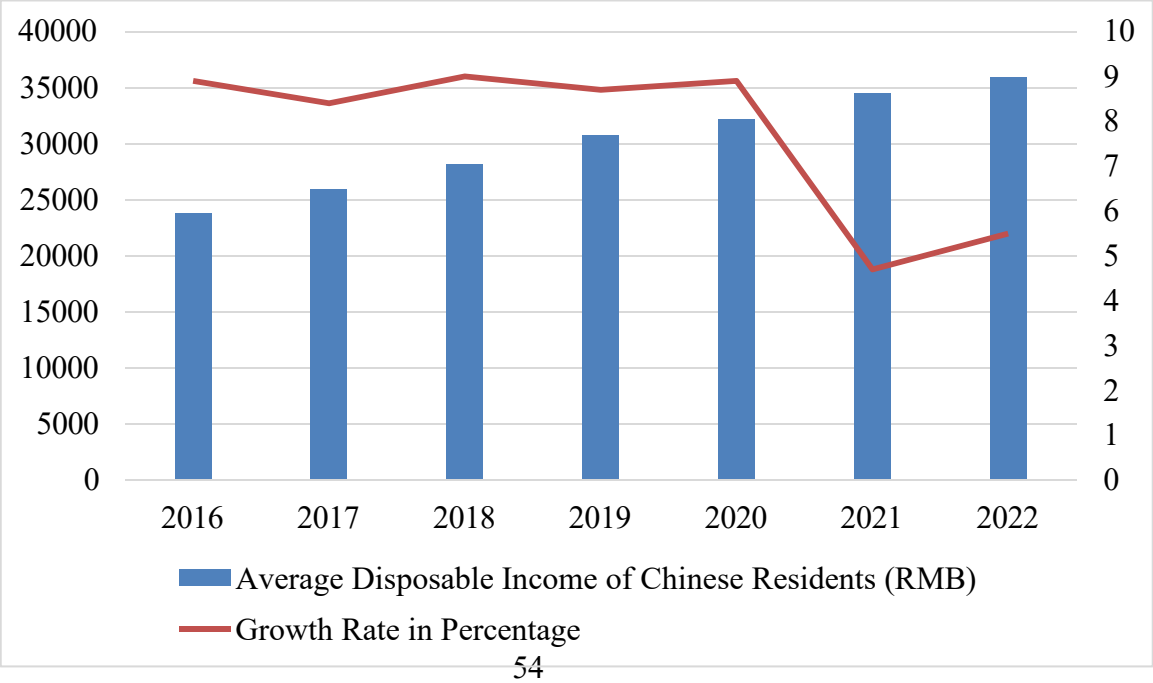

Figure 2.3 – Dynamics and growth of disposable income per capita in China in 2016 – 2022. Calculated based on data[24]

In recent years, China's residents' income has shown steady and rapid growth. In 2019, per capita disposable income was 30,733 yuan, an increase of 8.9% over the previous year, and

the real growth was 5.8% after deducting the price factor. By the end of 2020, China's per capita disposable income reached 32,189 yuan, a nominal growth of 4.7% over the previous year, and a real growth of 2.1% after deducting the price factor.

The growth of China's residents' income has led to the continuous growth of the middle class, the consumption structure is constantly changing, and Chinese residents have moved from standard food requirements to food safety and quality issues. Now, the consumption psychology and consumption habits of Chinese residents have changed, the dietary consumption habits of Chinese residents are gradually shifting to high-end nutrition, health, leisure, international consumption, including imported products. (Fig. 2.4)

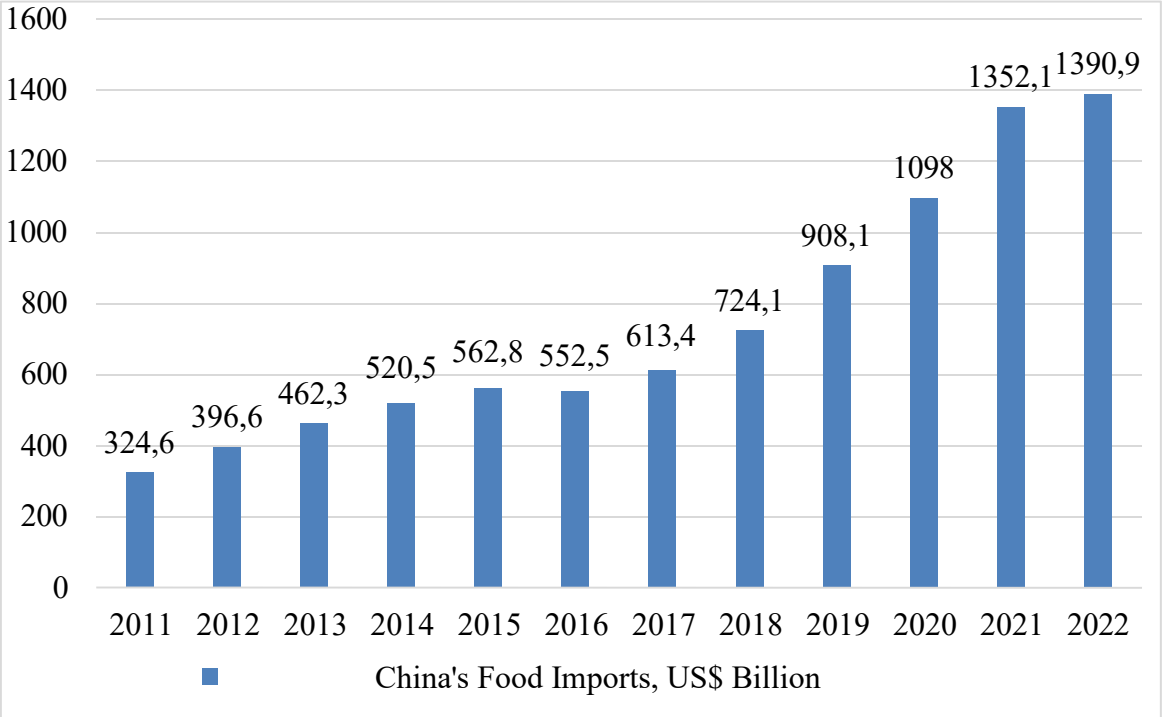

Figure 2.4 – Food imports to China in 2011–2022. Calculated based on [30]

At the same time, China's logistics and the development of the Internet have promoted the popularity of more consumption methods, which has also strengthened the consumption ability of our residents, promoting the steady growth of Chinese imports in terms of consumption. In addition, since China joined the World Trade Organization, China's import tariffs have continued to decline, and in 2019, China's agreement with New Zealand, Peru, South Korea, Australia and other eight countries,

as well as the Asia-Pacific Trade Agreement countries, further reduced the tax rate, which includes taxes on almost all imported food, which has further reduced the price of imported food in China, so that more and more ordinary people have the opportunity to consume imported food. The scale of China's imported food continued to grow steadily from 2009 to 2019, and as of 2019, the scale of China's imported food market reached US$90.81 billion, an increase of 23.4% year on year, with a net increase of US$17.24 billion compared with 2018.

At present, the consumption of imported food by ordinary Chinese residents has not only remained in the early stage of luxury goods that can only be enjoyed occasionally, but has gradually entered into the daily life of residents. For ordinary Chinese residents, imported food is no longer unattainable, but has been accepted by more and more consumers.

In 2019, more than 50% of Chinese residents consumed imported food, accounting for more than 10% of household food consumption, an increase of about 5% compared with the previous year.

The number of countries (regions) of origin of imported food has also increased significantly: from 1997 to 2023, the number of countries (regions) of origin of China's imported food increased from 108 to 170, covering 73.9% of the world's countries and regions. Among them, the main countries (regions) of origin of imported food in 2019 were the United States, Australia, New Zealand, Indonesia, France, Thailand, Canada, Vietnam and Malaysia. The total amount of food imported from these top ten countries accounted for more than 60%. One of the highlights is that in order to meet people's livelihood needs, imported food accounts for a large part in 2023, meat, grain and oil and other livelihood-related food products accounted for more than half of the total imported food. Second, to meet people's growing need for a better life, the growth rate of the product is encouraging, becoming a new growth point of imported food. In 2023, fruit imports increased by 15.2% compared with the previous year, sugar, cocoa and chocolate imports increased by 6.3% compared with the previous year. In the first half of 2024, coffee imports increased by 57.8% compared with the previous year, dry, nuts imports increased by 37.3% compared with the previous year. In 2023, China's total food imports amounted to 140.18 billion US dollars, down 1.1% from 2014, up nearly 86.58 billion US dollars from 2014, with the rising consumption level of the population and the high level of opening up to the outside world continuing to promote the growth of food imports, with a general upward trend in the past ten years, the ten-year compound growth rate reached 11.3%. In the past ten years, China's food imports mainly support the categories of meat, grain, aquatic products, fruits, dairy products, vegetable oils on the basis of six product categories.

The total import volume of the above six categories of products in 2014 accounted

for 75.1% of China's total food import volume in 2023, and the above six kinds of food imports accounted for 78.6% of China's total food import volume. With the continuous improvement of people's living standards, the food consumption structure continues to optimize the growth of imported food categories also show different trends, in addition to various foods, meat and products, grains and products, fruits and products in 2014-2023 10-year average annual compound growth rate of more than 15%. Under the new situation and new challenges associated with the continuation of regional conflicts in the world and the emergence of international outbreaks of animal and plant diseases, China's food imports still maintain two main characteristics - diversification and concentration of food import sources. Diversity is reflected in the number of food import sources in China, which basically maintains an increasing trend and will reach 174 in 2023. Concentration is reflected in China's food imports, with the top ten food import sources accounting for the share of total food imports (CR10) maintained at around 60%, slightly increasing to 64.5% in 2023.

According to the General Administration of Customs (GAC) of the People's Republic of China, China's import volume of major agricultural crops - grains, legumes and root crops - was 157.52 million tons in 2024, down 2.3% from 2023.

In the China Food Import Report 2023, it is noted that

China has become the world's largest food importing country with a total import value of US$139.62 billion last year, an annual growth rate of 3.1%. The top two supplier countries by import value are the United States and Brazil, which respectively account for 12.1% and 9.2% of China's total global food imports, followed by New Zealand with 7.8%.

It is reported that China's food import value has been rising consistently in recent years, with statistics from China Customs showing that the average annual growth rate reached 12.3% from 2013 to 2023.

The six main categories of imported food and agricultural products are: meat; grain; seafood; fruits; dairy products; vegetable oils.

These products account for almost 80% of the total value of food imports into the country. (Table 2.12)

Table 2.12 – Imports of Major Agricultural Products to China in 2023

Product groups	Import, billion US dollars	Доля в мировом импорте, %

Meat and edible meat by-products	26,0	18,4
Wheat	4,3	7,7
Soybeans	59,0	66,0
Milk and dairy products	102,3	20,0

Of particular importance in imports in 2023 are goods worth more than $ 10 billion - these are meat and products, grain and products, aquatic products, fruits and products, dairy products and vegetable oils, of which meat and products are imported for $ 27.43 billion, which is 12.9% less than last year and amounts to 19.6%; grain and products are imported for $ 22.31 billion, which is 12.89% more than last year and amounts to 15.9%. Imports of aquatic products amounted to $ 19.40 billion, an increase of 0.02%, which is 13.8%; imports of fruits and products from them amounted to $ 17.40 billion, an increase of 15.3%, which is 12.4%; Dairy product imports amounted to 12.11 billion US dollars, a year-on-year decrease of 13.0%, accounting for 8.6%; vegetable oil imports amounted to 11.54 billion US dollars, an increase of 6.7%, accounting for 8.2%.

The imported products are relatively concentrated, with the above six product categories accounting for 78.6% of the total food imports. In terms of year-on-year growth rate, the fastest growing among the major products are fruits and produce, exceeding the total food change by 16.4 percentage points, followed by food and produce, exceeding the total food change by 13.9 percentage points. [15]

Imported food refers to non-native brands of food, commonly known as food of other countries and regions,

including food produced in other countries and regions and packaged in the country.

As imported food becomes more and more popular among the Chinese people, after the investigation, domestic importers and distributors compete to import food from foreign manufacturers. With the rapid development of China's economy and the continuous improvement of people's living standards, imported food has gradually become an important part of the table of ordinary Chinese people. In recent years, due to the imported food with high nutritional value, high health level, more and more favored by Chinese people, a large number of importers and distributors in China compete to import food from abroad, imported food through any channel is popular, coupled with the rapid development of China's economy, residents' income and consumption level to improve, imported food has gradually become an important part of ordinary Chinese people's home and necessary food. China's demand for soybeans has increased sharply in recent years, largely because this crop is an important source of livestock feed. At present, the proportion of soybean imports accounts for 75.4% of all imported grains. From 2000 to 2020, China's soybean imports grew from $2.3 billion to nearly $38.1

billion, accounting for 25% of total agricultural imports, ranking first in the world and 15 times ahead of second-place Argentina. In 2020, imports of this crop amounted to 100.3 million tons, and in 2021 - 96.5 million tons. The total dependence on soybean imports is about 85.5%, which threatens the country's food independence. As trade tensions with the United States increase, soybean imports from the States have almost halved from $13.9 billion to $7 billion over the past 5 years. While there are no other suppliers of sufficient soybeans on the world market, this situation threatens China's complete food independence. Another threat to the country is that China imported 164.5 million tons of grain in 2021, an increase of 18.1% year-on-year, accounting for about 24% of the total grain production. This means that the food dependence on grain imports from foreign countries is about 20%. Over the past 20 years since 2004, China has turned from a net exporter to a net importer in agricultural trade. As shown in Figure 2.3, the agricultural trade deficit was US$135.46 billion in 2021.

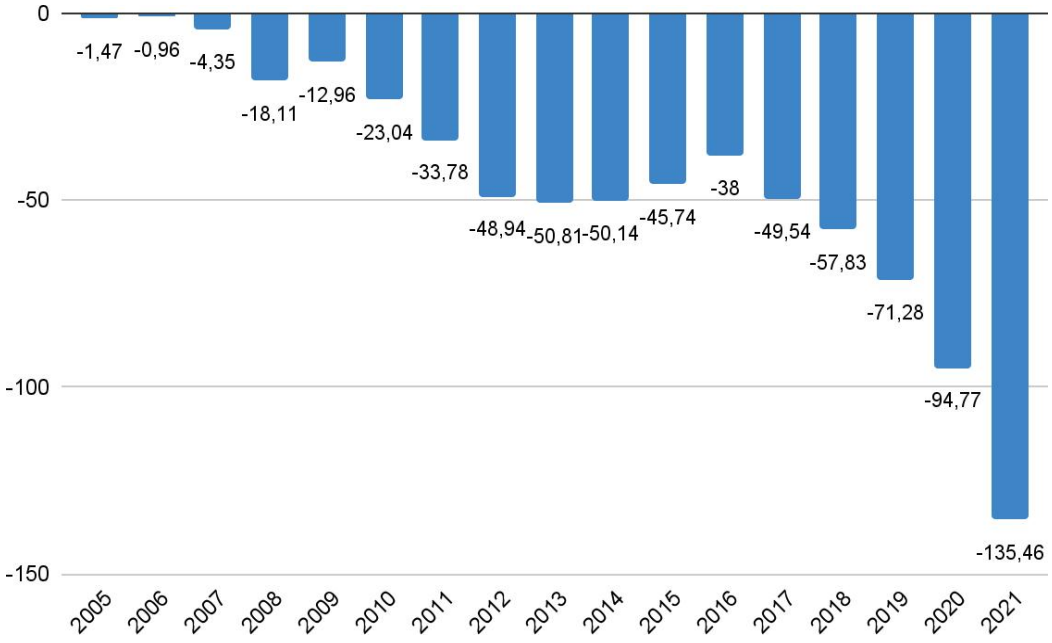

Figure 2.5 – China's Foreign Trade Balance of Agricultural Products in 2005–2021 (in billion US dollars)[31]

The trend of increasing imports began with China's accession to the WTO in 2001 and accelerated in 2009 after the financial crisis. As a result, despite the growth of Chinese food and agricultural raw material exports, China has had a negative foreign trade balance of agricultural products over the past two decades. According to China's customs statistics, China imported US$140.18 billion in food in 2023, down 1.1% from the previous year.

Food and agricultural imports from the BRICS countries (Brazil, Russia, India, China and South Africa) have shown steady growth.

Growing demand in China is primarily for food products imported from countries participating in the Belt and Road initiative. [24] The global economic situation is complex and unstable, and international food trade faces many challenges. As the world's largest importer of agricultural products and the second largest importer of food, China's vast imported food market shows strong resilience and still strong vitality and potential.

CHAPTER 3 POTENTIAL FOR COOPERATION OF THE EAEU COUNTRIES IN AGRICULTURE AND ITS IMPORTANCE FOR SOLVING THE FOOD PROBLEM IN CHINA

3.1. Strategic Directions for Ensuring Food Security in China

The importance of ensuring food security is emphasized in public speeches by China's top leadership and President Xi Jinping, in which food security is considered one of the components of the country's national security.

One of the main goals of the Communist Party of China (CPC) is to ensure food security for the country. The key principle of agricultural policy is the phrase of President Xi Jinping: "The hands of the Chinese people must always firmly hold the bowls of rice born of Chinese soil."

Amid growing concerns about geopolitical risks caused by Russia's invasion of Ukraine and cross-strait tensions between China and Taiwan, the food security crisis in the country is worsening.

The foundations of food security are:

1) stable domestic production of agricultural products;

2) a favorable economic environment for producers;

3) sufficient resource provision for the smooth functioning of the economy;

4) active development of foreign economic activity of countries.

Although the total volume of grain production in China - up to 686.53 million tons in 2022 - could fully feed its population of 1.3 billion people, the country remains the largest food importer in the world. In fact, the self-sufficiency rate of the population in food has decreased from 93.6% in 2000 to 65.8% in 2022. The ruling party views this trend as a food security crisis.

To cope with the crisis, China intends to increase the annual volume of grain production, while 103 million hectares of 120 million hectares of arable land will be allocated for planting. With less than 10% of China’s land area arable, and some of that used for non-farm purposes (warehouses, parking lots, village houses, livestock farms, roads and bike paths, parks and green spaces), some local officials are looking to hilly areas for new opportunities under the banner of a “Planting Rice on the Hill” campaign. One such upland rice project is in Yunnan, where about 30,000 hectares of forest land have been converted into terraced rice fields on the hills. Authorities are also planning to strengthen the seed sector, support rural governance, and provide billions in subsidies to revive the agricultural sector. [33]

China's Foreign Trade in Agricultural Products Since China's accession to the WTO, the country's agricultural trade has entered an unprecedented stage of rapid development. In the twenty years from 2001 to 2020, China's agricultural

trade volume increased from $27.90 billion to $246.83 billion. In 2001, China's agricultural trade accounted for only 3.6% of global agricultural trade; in 2019, this figure had risen to 10.1%3. From 2001 to 2020, the value of China's agricultural exports increased by 3.7 times (from $16.05 billion to $76.03 billion), with an average annual growth rate of 8.5%. The value of China's agricultural imports increased by 13.4 times over the same period (from $11.85 billion to $170.80 billion), with an average annual growth rate of 15.1%. As a result of the significant excess of import growth rates over export growth rates, China quickly turned from a country with a positive balance of agricultural trade at the beginning of its WTO accession to a country with a negative balance of agricultural trade. With the growth of China's foreign trade in food products, the depth of influence of the global economic and trade environment on China's food security has increased significantly. China's food import dependence is calculated using the import dependence ratio, which shows the share of imports in the volume of food supplies to the domestic market. The higher the ratio, the more the country relies on imports to provide its population with food. The calculations show China's high import dependence on oilseeds (over 60%) and their processed products - vegetable oil (over 36%). China's import dependence on fish and fish products is quite high (about 18%), and there is also an increase in import dependence on meat supplies. In recent years, the degree of import concentration on several commodity groups has also increased significantly. According to FAO, soybeans account for over 37% of China's food imports..

Consumption The structure of the diet is directly related to human health. In China, with rapid economic development, the structure of the population's diet is changing quite rapidly. Research results show that food consumption in China has moved from insufficient to excessive consumption. After the 1980s, the problem of insufficient meat consumption gradually disappeared, and the consumption of grains (rice, wheat, corn, barley, oats, etc.) is at an excessive level. With rapid economic and social development, food consumption in China has undergone significant changes. The consumption structure, in which a significant share fell on grain, is gradually moving to a consumption structure based on high-value products such as meat, dairy products, fish and fish products. The population's demand for grains has been declining since 1984, while the demand for meat and dairy products has been growing and is expected to continue to grow for a long time. From 1961 to 2019, China's per capita energy consumption has more than tripled, and by 7-13% over the past 10 years.

At present, China's food consumption problem has gradually shifted from an absolute deficit in the amount of food consumed to a structural imbalance. China has made significant progress in targeted poverty reduction. The per capita disposable income of the rural population increased from 6.1 thousand yuan in

2013 to 12.6 thousand yuan in 2020, with an annual growth rate of 11.6%4, making food more affordable on the market. However, new nutrition and health issues have emerged. Against the backdrop of declining global food security over the past three to four years, China, which remains the world's largest food importer, has made notable progress in improving its food security.

China's food security transformation has significantly improved not only the availability but also the accessibility of food, as well as the sustainability of the Chinese food system. The increase in agricultural production, including grain production, in China indicates a transition from an extensive development model with high resource dependence to a model of sustainable intensification. As a result of rapid economic and social development, the dietary structure has changed, based on high-value products such as meat, dairy products, fish and fishery products. However, there are a number of serious problems in China's food system. China has insufficient self-sufficiency and high import dependence for a number of food products.

The changes in the global economy, the influence of non-market factors such as ideology, geopolitics and challenges to the multilateral trade and investment system may seriously disrupt the global agricultural market and reduce the food security of China, which relies heavily on foreign trade in food products. The transformation of China's food system aims to prevent and address the risks of disruptions to food import supplies, diversify import sources, reduce the cost of agricultural production through scientific and technological progress and increase investment in infrastructure, and shift Chinese agriculture from a strategy of increasing production to improving product quality and safety. The shocks of 2020–2022 have demonstrated the fragility of the global food system, bringing food security issues to the forefront. These food system shocks have included more frequent and severe conflicts, pandemics, extreme weather events and rising costs, which have exacerbated food system problems, weakened resilience and led to decreased food security. Economic and political shocks, coupled with rising poverty and income inequality trends, indicate widespread failures in global and national food systems. With the global food security index declining since 2019, China has shown the opposite trend. China ranked 25th (74.2 points) out of 113 countries in the 2022 Global Food Security Index, the second-best result (+13.7 points) among the countries that have shown the most progress since 2012. [34] Agriculture and food industries are key to China’s sustainable economic growth in the coming years, especially recognizing that nutrition has a direct impact on public health, which in turn determines the success of economic transformation.

The key challenges to China ’ s food security include land scarcity and degradation, water scarcity and pollution, climate change and natural disasters,

fiscal pressures from increasing agricultural subsidies, the triple burden of malnutrition, food safety issues, and rising food losses and waste. This requires institutional and technical innovations to modernize agriculture, improve productivity, and increase the efficiency of water, land, and energy use. All of this requires a transformation of China's food security strategy.

Ensuring food security has been a key priority for the Chinese government in recent decades. China ' s food security strategy aims to increase domestic agricultural production and diversify imports.

China's food system has a significant impact on global food security, as the country is the largest producer, importer, and exporter of many food products. More importantly, by engaging in global cooperation, initiatives and activities, China is becoming a key and increasingly influential player in managing global food security.

Learning from China's long-term food security experiences and lessons can help transform the national food systems of other countries.

China has made remarkable progress in food security in recent years. Overall agricultural production has been growing over the past three decades.

Grain self-sufficiency is a key goal of the Chinese government ' s food security strategy and a priority. Indeed, "food security" (粮食安全) is translated from Chinese as "grain safety". As a result of the government's policy, fiscal measures and improvement of production models, China's own grain production has increased. China has achieved self-sufficiency in grain in a relatively short period of time, with the gross harvest in 2020 being 2.2 times that of 1978.

Per capita grain production in 2020 was about 436 kg, much higher than the world average of 400 kg.

The major grain-producing areas account for about 75% of the national grain production and about 80% of commercial grain, and the status of their grain production directly affects China's overall grain production potential, playing a decisive role in ensuring national food security. [35, P 465–468]

The two key grain crops that ensure grain security are soybeans and corn. However, most of China's soybean consumption is for animal (pig) feed. Meanwhile, soybean oil is the main vegetable oil in China, accounting for about 40% of the country's total oil consumption.

While China is the world ' s fourth-largest soybean producer with current production estimated at 16.4 million tonnes, the country is also the world's largest soybean importer, relying on imports for more than 80% of its domestic consumption. In 2021, soybean imports, primarily from the United States, Brazil and Argentina, jumped 13.3% year-on-year to 100.3 million tonnes.

China's dependence on soybean imports is seen as a "weak link," especially in the

recent Trump-era trade war. As a result, China's top leaders plan to reduce their reliance on soybean imports by increasing domestic production. The 14th Five-Year Plan sets targets to produce about 23 million tonnes of soybeans by 2025, up 40% from the current level, and to diversify its import sources. China's domestic corn production also falls short of its high needs. Corn imports in 2021 totaled 28.35 million tonnes, up 152% from the 2020 record of 11.3 million tonnes. The United States, Argentina, Brazil, and Ukraine are the largest corn exporters to China. China is seeking to diversify its corn supply sources. In 2011–12, for example, Almost 100% of corn imports came from the United States; by 2019, Ukraine had become the largest supplier of corn to China, accounting for more than 80% of China's corn imports.

The reduction in corn imports from the United States is undoubtedly related to the deterioration of US-China relations and the US trade war against China. The reorientation of part of the trade flows to Ukraine, for which China has become the main trading partner since 2020, after the start of the military conflict in Ukraine, puts China's food security at risk. To assess the level of self-sufficiency in the main groups of food products, we calculated the self-sufficiency coefficient. The food self-sufficiency coefficient is defined as the ratio of domestic supply to the total supply of agri-food products on the national market.

Based on the results, it can be concluded that China's self-sufficiency in major food commodity groups does not exceed 70%, with self-sufficiency in cereals and meat increasing in recent years, self-sufficiency in vegetable oil declining markedly, and self-sufficiency in eggs, dairy products, sugar crops, and fruits steadily declining.

Well-functioning international agricultural commodity markets will remain vital for global food security and rural livelihoods.

Expected developments should keep the real international reference price on a slightly declining trend over the next ten years, although environmental, social, geopolitical, and economic factors could significantly change these projections.

The OECD-FAO Agricultural Outlook 2024–33 provides a comprehensive ten-year analysis of the prospects for agricultural and fish markets at the national, regional, and global levels. The Outlook has been developed jointly by the OECD and FAO over 20 years, in collaboration with their members and international commodity organizations. It provides a structured reference for policy planning, particularly in the context of the recent global COVID-19 pandemic, rising geopolitical tensions and the increasing impact of climate change. This 20th joint Agricultural Outlook reflects the evolution of world agriculture over the past two decades and provides projections to 2033.

Emerging economies have increasingly influenced the development of world agriculture and fisheries markets over the past 20 years, a trend that is expected to

continue over the next decade.

Consumption of agricultural commodities has increased, driven mainly by population and income growth in low- and middle-income countries. These countries have also rapidly increased their production, driven by technological and innovative advances and by increasing the use of their natural resources. Subsequent shifts in the locations of agricultural production and consumption have led to changes in international agricultural trade patterns.

The People's Republic of China's role in global food and agricultural consumption is declining, while India and Southeast Asian countries are expected to increase their share of global consumption, driven by growing urban populations and rising wealth.

Baseline projections suggest that the influence of the People's Republic of China, India, and Southeast Asian countries on global agrifood systems will continue to grow over the next decade. However, while China contributed 28% of global consumption growth in the previous decade, its share of additional demand in the next decade is expected to decline to 11%, reflecting stabilizing dietary patterns, slower income growth, and a declining population. In contrast, India and Southeast Asia are expected to account for 31% of global consumption growth by 2033, driven by growing urban populations and rising affluence.

Total utilization of agricultural and fisheries products is projected to grow by 1.0% per year over the next decade, driven mainly by low- and middle-income countries. World food consumption is projected to grow by 1.2% per year, driven by population and income growth. In most regions, growth in the use of crops for feed is expected to exceed growth in direct use for food, driven by a projected shift to higher shares of animal products in diets and a corresponding expansion and intensification of livestock production. Calorie intake is expected to increase by 7% in middle-income countries, driven mainly by increases in the consumption of staple foods, animal products and fats. Calorie intake in low-income countries is projected to grow by 4%, too slow to achieve the Sustainable Development Goal of Zero Hunger by 2030. In middle-income countries, average daily energy consumption per capita is projected to increase by 7% by 2033, driven by increases in the consumption of staple foods, livestock products and fats. In low-income countries, average energy consumption is expected to grow by only 4%, putting the world on track to achieve Sustainable Development Goal (SDG) 2 to end hunger by 2030. Income constraints in these countries also impede a shift to more nutrient-rich and protein-rich diets based on animal products, fish and seafood, vegetables and fruits, resulting in continued heavy reliance on staple foods. Dietary preferences in high-income countries reflect growing concerns about the links between diet, health and sustainability, as evidenced by a modest decline in fat and

sweetener consumption and a shift and stabilisation of protein intake over the coming decade. Agricultural trade continues to grow in line with production and consumption, with about 20% of all calories crossing borders before being consumed. At the same time, the COVID-19 pandemic and geopolitical tensions have highlighted the vulnerabilities of international agricultural trade. While trade as a share of production is expected to stabilize, the volume of goods traded globally is expected to grow further, with trade between net exporting and net importing regions increasing over the next decade. Net imports into Asia and Africa will continue to grow as demand growth is projected to outpace production growth. This highlights the importance of well-functioning markets and the need for resilient trading systems to ensure global access to safe and nutritious food, while supporting agricultural incomes and mitigating the impact of local shocks such as crop failures or extreme weather events.

Supply and demand factors are expected to maintain or slightly lower real international reference prices of major agricultural commodities over the next ten years (assuming no deviations from stable weather patterns, macroeconomic and policy assumptions, and continued technological improvements). However, these lower real international commodity prices may not be reflected in local retail food prices due to domestic inflation and currency devaluations, as well as high domestic logistics and processing costs, which maintain or widen the gap between international commodity prices and retail food prices. Such exacerbating local conditions may create challenges to livelihoods and threaten the food security of vulnerable consumers. The projected evolution of diets remains largely determined by income levels in the coming decade. According to the forecast made in 2022 by the OECD-FAO, by 2031, imports in the world as a whole will increase:

–for wheat – to 217.9 million tons (by 32.6 million tons relative to the average level of 2019–2021, +18%);

–for corn – to 200.8 million tons (by 19.5 million tons, +11%);

–for rice – to 64.5 million tons (by 17.9 million tons, +11%);

–for other grain crops – to 49.0 million tons (by 4.7 million tons, +38%);

–for soybeans – to 178.8 million tons (by 18.3 million tons, +11%);

– for seeds of other oilseeds – up to 25.8 million tons (up 4.5 million tons, +21%);

– for meals, cakes and other high-protein feeds – up to 101.5 million tons (up 10.5 million tons, +11%);

– for vegetable oils – up to 93.5 million tons (up 9.3 million tons, +11%);

– for beef – up to 14.2 million tons in slaughter weight (up 1.71 million tons, +14%);

– for poultry meat – up to 16.1 million tons (up 2.3 million tons, +16%). A reduction in global imports is expected only in the pork segment (up to

10.8 million tons – down 1.2 million tons, or 10%). [36, P 267–269]

In high-income countries, increased concerns about health and the environment are expected to lead to a decline in per capita sugar consumption and sluggish growth in animal protein consumption. In contrast, consumers in middle-income countries are expected to increase food consumption and dietary diversity, with the share of animal products and fats rising over the next decade.

China's policy in the area of agricultural development and food security, not only in the country but also in the world as a whole, is in line with the strategy chosen by the international community.

3.2 State of food security in the EAEU countries

Global food consumption, which is the main use of agricultural commodities, is projected to increase by 1.4% per year over the next decade, driven mainly by population growth. Most of the additional demand for food will continue to come from low- and middle-income countries, while in high-income countries it will be limited by slow population growth and saturation of per capita consumption of several food groups.

The problem of food security of the EAEU is the focus of attention of the member countries. The basic document reflecting its essence is the Concept of Collective Food Security of the EAEU. The joint efforts of the EAEU states in the field of collective food security are aimed, on the one hand, at providing the population of the union with food products of their own production in accordance with the requirements of medical consumption standards, and on the other hand, at creating competitive agricultural production capable of increasing the export potential of the member countries. The driver of new approaches was the single agricultural market of the EAEU, demonstrating accelerated growth in production and exports against the backdrop of a difficult socio-economic situation within the Union - a reduction in investment, a slowdown in GDP growth, and a decrease in household incomes. The introduction of sanctions against Russia by the West led to a food blockade. The allied countries have taken a course on import substitution. Currently, interregional interaction is actively taking place, joint ventures are being created within the Customs Union, and agreements are being concluded between economic entities on cooperation in various fields, including science and the agro-industrial

complex.

Currently, the legal and regulatory framework of the single agricultural market of the EAEU is being actively formed. Uniform regulations for product conformity, food standards, and sanitary and epidemiological control standards for all EAEU states are being developed and approved. All these documents create a single legal framework that ensures the unimpeded movement of food throughout the entire territory of the EAEU, reducing the costs of logistics and product sales.

Currently, it is important for each country to create conditions for independently meeting the needs of the population with food products. (Table 3.1).

Table 3.1 – Level of self-sufficiency of the EAEU countries (%)

Type of product	Republic of Armenia	Republic of Belarus	Republic of Kazakhstan	Kyrgyz Republic	Russian Federation
Corn	20	90	125	62	150
Potato	101	100	104	99	88
Vegetables and melons	102	103	108	96	87
Fruits and berries	103	57	38	111	44
Meat of all kinds	61	134	82	87	101
Dairy products	83	263	93	110	84
Eggs	100	128	100	90	98
Sugar	12	141	8	68	100
Vegetable oils	1	220	91	11	117

The level of self-sufficiency of the Eurasian region as a whole, taking into account not only the EAEU member countries (the Republic of Armenia, the Republic of Belarus, the Republic of Kazakhstan, the Kyrgyz Republic, the Russian Federation), but also the Republic of Uzbekistan and the Republic of Tajikistan, which actively cooperate with them. The level of self-sufficiency for most products in the Eurasian region exceeds 80-95% (the level established to define the concept of "food independence"). The highest level of self-sufficiency is observed for grain and oilseed crops, the lowest - for fruits (Table 3.2). Only a fairly low level of self-sufficiency in the fruit and berry market - 65% - attracts attention. Even taking into account the fact that a significant part of their consumption is provided by imported supplies (tropical species, for the large-scale production of which there are no necessary natural and climatic conditions), in this segment of the food market the share of the countries of the Eurasian region can be sharply increased.

Table 3.2 – Level of self-sufficiency of the Eurasian region (%)

Type of product	Self-sufficiency level, %
Corn	132
Potato	92
Vegetables and melons	103
Fruits and berries	65
Meat of all kinds	100
Dairy products	97
Eggs, pcs.	99
Sugar	84
Vegetable oils	151

At the country level, insufficient levels of self-sufficiency were observed only for the following products:

–for Armenia: grain, all types of meat, sugar, vegetable oils;

–for Belarus: fruits and berries;

–for Kazakhstan: sugar, fruits and berries;

–for Kyrgyzstan: vegetable oils, grain, sugar;

– for Russia: dairy products, fruits and berries, vegetables, potatoes. The high differentiation of self-sufficiency indicators for individual products in the countries of the Eurasian region is quite natural and is due to differences in levels of economic development, natural and climatic conditions, and cultural traditions.

In terms of energy value, average diets in all countries of the Eurasian region, except Kyrgyzstan and Tajikistan, according to FAO data, are generally sufficient: current indicators exceed the level of 2800 kcal/day (corresponding to the upper limit of the state of food well-being, at which the risks of hunger are minimized, but the diet is insufficient) and are comparable with the indicators of developed countries (over 3000 kcal/day). At the same time, in all countries, the diet remains unbalanced in terms of basic nutrients - cheaper plant-based products predominate. For some types of food, per capita consumption remains below the standards adopted in the countries of the Eurasian region. The average per capita consumption of food products in the EAEU countries is presented in Table 3.3.

Table 3.3 – Average per capita food consumption in the EAEU countries in 2019 (kg/year)

Type of product	Republic of Armenia	Republic of Belarus	Republic of Kazakhstan	Kyrgyz Republic	Russian Federation
Corn	164,6	76,0	96,4	146,2	116,0
Potato	64,2	161,0	110,7	116,3	88,8
Vegetables and melons	177,1	151,7	230,6	150,7	107,6
Fruits and berries	94,9	96,2	51,4	32,0	61,7
Meat of all kinds	56,3	97,1	72,7	39,9	75,7
Dairy products	240,4	244,8	232,9	205,7	233,9
Eggs, pcs.	237,4	262,8	256,6	89,7	285,3
Sugar	9,6	17,3	19,1	9,1	14,0
Vegetable oils	25,7	39,7	26,5	23,7	39,0

For comparison, we present data on per capita food consumption in other countries, in particular in the USA and EU countries (Table 3.4).

Table 3.4 – Per capita food consumption in the USA and EU countries in 2019 (kg/year)

Type of product	USA	Finland	France	Germany	Poland
Corn	109,9	119,2	143,9	116,9	149,8
Potato	49,6	58,2	50,5	64,5	99,4
Vegetables and melons	107,5	85,1	96,3	88,5	124,2
Fruits and berries	106,7	73,1	91,2	75,5	61,8
Meat of all kinds	128,4	72,6	80,4	76,4	83,8
Dairy products	280,2	438,4	326,5	291,5	257,3
Eggs, pcs.	245,2	162,8	171,2	179,6	102,7
Sugar	20,0	2,5	17,1	16,7	7,3
Vegetable oils	33,1	29,1	35,6	36,7	43,9

We will also present data on per capita food consumption in other countries, in particular in a number of Asian countries (Table 3.5). Thus, significant differences in the formation of the diet of residents of different countries are obvious, even if the countries are located in the same region. The influence of a large number of diverse natural-climatic, economic and socio-cultural factors is evident here.

Table 3.5 – Per capita food consumption in Asian countries in 2019 (kg/year)

Type of product	China	India	Türkiye	Iran	Saudi Arabia
Corn	201,7	186,4	204,4	199,9	186,9
Potato	43,7	26,2	46,8	31,1	17,0
Vegetables and melons	380,9	89,2	239,0	138,7	70,5
Fruits and berries	102,0	63,6	128,2	144,2	69,7
Meat of all kinds	64,4	5,0	39,2	37,3	52,5
Dairy products	26,2	140,8	237,0	78,1	69,0
Eggs, pcs..	310,0	45,5	143,6	124,3	130,1
Sugar	9,3	9,1	15,5	13,1	18,3
Vegetable oils	7,0	19,6	30,6	27,2	30,3

To a large extent, the development trends of the agri-food market in the Eurasian region are determined by shifts in food production and consumption in Russia. In 2021, Russia accounted for 75.1% of food production in the region in terms of energy value. For comparison: Kazakhstan accounts for 9.5%, Uzbekistan - 6.6%, Belarus - 6.2%. Tajikistan, Kyrgyzstan and Armenia together accounted for only 2.6% of the output. At the same time, Russia accounts for 78% of the production of grain and leguminous crops in the region, 82.1% of oilseeds; 90% of sugar beets; 71% of all types of meat; 71.2% of eggs; 85.3% of vegetable oil; 88.2% of sugar.

In the last decade, the Russian market has been characterized by the following trends: an increase in the production and export of grain and vegetable oils, active import substitution in the meat and sugar markets; a slight decrease in the production and consumption of milk and potatoes, an increase in the consumption of vegetables and eggs (due to the development of domestic production), as well as fruits (due to an increase in import volumes).

3.3 Main directions of development of agricultural exports from the EAEU countries and China: commodity structure, volumes, dynamics and prospects for expanding mutually beneficial cooperation

The most important criteria for the effectiveness of the implemented agro-industrial policy are increasing the competitiveness and export orientation of agricultural production, reducing costs, increasing incomes, profitability of agribusiness, as well as developing the social sphere in rural areas, improving working conditions, which ultimately directly affects the localization of poverty among the rural population. A separate block characterizing the effectiveness of agricultural policy is the growth of trade in the single agricultural market of the EAEU, an increase in the share in the production of environmentally friendly products and ensuring collective food security.

The globalization of the world agricultural market has led to an intensification of intercountry competition. Against this background, the EAEU has significant logistical advantages over other countries due to its proximity to the rapidly developing Asian markets. The population of Southeast Asia is rapidly increasing its income and creating a need for a healthy lifestyle, where nutrition is becoming the core of the struggle for quality of life. The image of the environmental friendliness of EAEU products helps them quickly penetrate the capacious Chinese market, which is ready to consume food adapted to the taste of the Chinese consumer. When implementing the task of systematically promoting food to the markets of Southeast Asia, the problem of optimizing and designing this process arises based on the formation of international strategic alliances with the participation of strategic partnerships of the EAEU on the one hand and the largest national food distributors with their own large retail networks on the other. The creation of such alliances will allow the formation of marketing integration tools capable of introducing greater market power into the process on the part of EAEU producers. To assess the state and prospects of food security and scenario modeling of the production and export potential of the EAEU countries, as well as Uzbekistan and Tajikistan, a traditional balance approach was chosen. With this approach, scenario forecast balances of domestic production of the main types of food and import of agricultural products are prepared. Separately, the dynamics of domestic consumption for food and production purposes is modeled, which ultimately allows us to obtain a scenario estimate of exports by calculating the difference between the corresponding scenario indicators of production, import and consumption. From a methodological point of view, the balance of resources and use of the i-th type of product in the j-th country has the form:

$$Z0_{ij} + Prod_{ij} + Imp_{ij} = Cons_{ij} + O_{ij} + Exp_{ij} + Loss_{ij} + Z1_{ij},$$

where $Prod_{ij}$ is the domestic production of the i-th type of product in the j-th country;

Z0ij – stocks of the i-th type of product at the beginning of the year in the j-th country;

Z1ij – stocks of the i-th type of product at the end of the year in the j-th country;

Impij – import of the i-th type of product into the j-th country;

Expij – export of the i-th type of product from the j-th country;

Consij – personal consumption of the i-th type of product in the j-th country;

Oij – other uses of the i-th type of product in the j-th country (for example, in relation to grain, this is use for feed needs of livestock, seed stock, processing for food and non-food needs);

Lossij – losses of the i-th type of product in the j-th country in the sphere of production, processing and circulation.

At the first stage, based on data from state statistical agencies, the CIS Statistical Committee and FAOSTAT, retrospective national balances of resources and use were formed for the following product groups that are critical for ensuring food security and realizing export potential:

1) grain,

2) potatoes,

3) vegetables and melons,

4) fruits and berries (including grapes),

5) meat and meat products,

6) milk and dairy products,

7) eggs,

8) sugar and

9) vegetable oils.

The choice of these product groups was based on the food consumption standards approved in the analyzed countries, as well as on the availability of comprehensive statistical information on the relevant food products. According to FAO estimates, the selected set of products covers from 92% to 99% of the total energy value of the diet in the countries under consideration. The unaccounted energy value largely related to the category of soft drinks and alcoholic beverages, which can be ignored in the context of food security. %). [36, P. 39] Over the past 20 years, the volume of mutual trade in food products between the EAEU countries, as well as Tajikistan and Uzbekistan, has increased by 8.5 times to $ 15.4 billion in 2021. In the long term, by 2035, the volume of mutual food trade will increase by an additional 1.8 times - to $ 27.1 billion (an increase of $ 12 billion). Expansion of mutual trade will help ensure economic and physical availability of food in the Eurasian region.

The implementation of the production and resource potential of the agro-industrial complex can provide the following positive effects for the Eurasian countries by 2035:

1) Production in agriculture will increase by USD 29 billion (+20%) in the inertial scenario and by USD 59 billion (+40%) in the target scenario compared to the current figure;

2) Gross production in the economy in the inertial and target scenarios will increase by USD 55 billion and by USD 112 billion, respectively, as a result of multiplier effects, taking into account direct and indirect effects on related industries and the economy as a whole;

3) Exports of food products will almost double in value terms, depending on the scenario – from $40 billion (in 2020 prices) in 2021 to $64–74 billion in 2035.

Based on the conducted analysis of the resource potential and retrospective processes of development of agriculture in the Eurasian region, two growth scenarios were formed in the long term up to 2035 – the inertial scenario and the target scenario. The inertial scenario of development of the agro-industrial complex of the Eurasian region was based on the preservation of the influence of various restrictions in the long term up to 2035. The inertia of development of the agricultural sector and restrictions on capital, management resources and qualified personnel, technologies, agricultural machinery, equipment and other resources of investment and current production consumption will continue to restrain the implementation of the production and resource potential of the region. (Table 3.6)

Table 3.6 – Resource potential of net exports of agricultural products from the countries of the Eurasian region in 2035 in accordance with the inertial scenario (million tons)

Type of product	Republic Armenia	Republic of Belarus	Republic Kazakhstan	Kyrgyz Republic	Russian Federation	EAEU
Corn	–0,09	–1,02	6,95	–0,75	61,37	66,46
Vegetables and melons	0,42	–0,14	–0,66	–0,06	–1,22	–1,66
Fruits and berries	0,04	–0,41	–0,65	0,03	–6,71	–7,70
Meat of all kinds	–0,06	0,38	–0,48	–0,07	0,85	0,62
Dairy products	0,00	5,94	0,26	0,25	–4,33	2,12
Eggs, billion pcs.	–0,03	0,94	–0,23	–0,04	–0,74	–0,10
Sugar	–0,05	0,07	–0,42	–0,04	0,47	0,03
Vegetable oils	–0,03	0,92	0,06	–0,06	8,33	9,22

The target scenario used normative logic, according to which higher (compared to the inertial scenario) rates of extensive and intensive growth of domestic agricultural production can be ensured through proactive state policy in relation to stimulating agriculture and developing market infrastructure. (Table 3.7)

Table 3.7 – Resource potential of net exports of agricultural products from the countries of the Eurasian region in 2035 in accordance with the target scenario (million tons)

Type of product	Republic Armenia	Republic of Belarus	Republic Kazakhstan	Kyrgyz Republic	Russian Federation	EAEU
Corn	–0,01	1,07	9,91	–0,38	72,73	83,71
Vegetables and melons	0,39	0,27	0,45	0,07	–1,32	–0,14
Fruits and berries	0,08	–0,44	–0,67	0,03	–4,06	–5,06
Meat of all kinds	–0,01	0,52	–0,36	–0,04	2,47	2,58
Dairy products	0,12	6,61	0,26	0,27	–3,16	4,10
Eggs, billion pcs.	–0,10	0,88	–0,30	–0,05	–0,95	–0,52
Sugar	–0,05	0,36	–0,39	–0,03	0,72	0,61
Vegetable oils	–0,03	0,92	0,32	–0,06	9,84	10,99

The normative logic suggests that the Eurasian countries should place greater emphasis on self-sufficiency in those basic types of food products that are characterized by a high dependence of the domestic market on imports, but which have resources to increase their own production. Import substitution can be achieved both by creating customs-tariff and non-tariff barriers to protect national agricultural producers from competition from foreign suppliers, and by increasing budget expenditures to support national agricultural producers. In the Eurasian countries, there is potential for additional stimulation of the growth of the agricultural sector by pursuing a more active policy aimed at removing current restrictions on demand and the possibility of moving agricultural products in domestic and export directions, as well as mitigating financial, price, spatial and other imbalances in agriculture. (Table 3.8)

The product structure of the resource potential of exports varies significantly for individual countries of the Eurasian region due to the peculiarities of the specialization of agricultural production:

Table 3.8 Export of food products by countries of the Eurasian region (billion dollars)

Country	Export in 2021.	Forecast until 2035	
		inertial	target
Republic of Armenia	0,7	1,3	1,3
Republic of Belarus	6,0	7,4	10,2
Republic of Kazakhstan	3,2	4,6	6,2
Kyrgyz Republic	0,3	0,3	0,4
Russian Federation	28,1	47,5	53,8
Total – EAEU countries	38,3	61,1	71,9
Total – Eurasian region	39,8	63,1	74,2

– in Russia and Kazakhstan, the main contribution is and will be made by the production of grain and oilseeds;

– in Belarus – the production of dairy products, meat and oilseeds;

– in Uzbekistan and Armenia – the production of vegetables, melons and fruits;

– in Kyrgyzstan – the production of dairy products and fruits;

– in Tajikistan – the production of vegetables and melons. Directions for realizing the agro-industrial potential of the EAEU countries:

– development of agrologistics and storage systems, transport logistics in the eastern and southern directions, port infrastructure, etc.

– accelerated development of the scientific and technological base of agriculture (genetics and selection, seed production and breeding, water-saving technologies, etc.), as well as digitalization of the agro-industrial complex;

– import substitution in mechanical engineering (rolling stock, merchant fleet, agricultural machinery and equipment);

- focus on large producers, stimulation of cooperation of small farms at the level of countries and the EAEU as a whole; - elimination of barriers and restrictions between the countries of the Eurasian region; - effective regulation and coordinated investment policy in the water and energy complex of Central Asia; - strengthening of the financial infrastructure for supporting the activities of the agro-industrial complex. [37, pp. 66–75]

The task of the EAEU is to create a competitive management system capable of changing in accordance with the challenges of the time and generating new vectors of accelerated socio-economic development.

Over the past few years, the EAEU countries and China have been developing closer economic, social and political ties. One area where this cooperation has great potential is achieving food security. The countries have large agricultural sectors and face similar challenges related to food production, supply

chain management and sustainability. Both China and the EAEU are large food producers, as well as large consumers of agricultural products. Thus, cooperation between the countries in this area could address the shortcomings of the agricultural sector for each of the countries, as well as further strengthen food security. In the constantly changing political environment and difficult market conditions, close and strong relations between the two countries in the field of agriculture would strengthen the position of the EAEU countries and China in the global order in the long term. For China, cooperation with the EAEU countries is of considerable importance both in the area of providing itself with energy resources and raw materials for further economic development, and, in modern trends, in the area of food security. In recent years, the Chinese side has been actively increasing imports of food products – meat, grain, soybeans and aquaculture. For the EAEU countries, cooperation with China in the agro-industrial complex is of strategic importance. The EAEU countries have a large amount of arable land – exactly what China lacks. Mutual cooperation would solve problems in the area of food security of the countries.

In view of the recent crises in China, namely the Covid-19 epidemic and massive outbreaks of animal diseases, despite the achieved level of agricultural efficiency and the level of self-sufficiency in basic grains, the problem of ensuring food security remains relevant. In this regard, it would be advisable for EAEU farmers to focus on exporting their products to Chinese markets. Such product categories as meat, grains (wheat, soybeans) and dairy products (milk, ice cream) may soon be in huge demand among the urban population, which will only increase over time. The implementation of joint investment projects in agriculture, simplification of product certification procedures and the conclusion of new trade agreements between countries can support the increase in the volume of domestic food exports to China.

Under the 14th Five-Year Plan (2021-2025), the main priority areas include maintaining subsidies for grain producers and raising the minimum purchase prices for wheat and rice. In addition, the plan for modernizing China's agriculture and rural areas from 2021 to 2025 and the No. 1 Central Document of February 22, 2022 set a goal of achieving an annual grain harvest of at least 650 million tons. (Rice. 3.1)

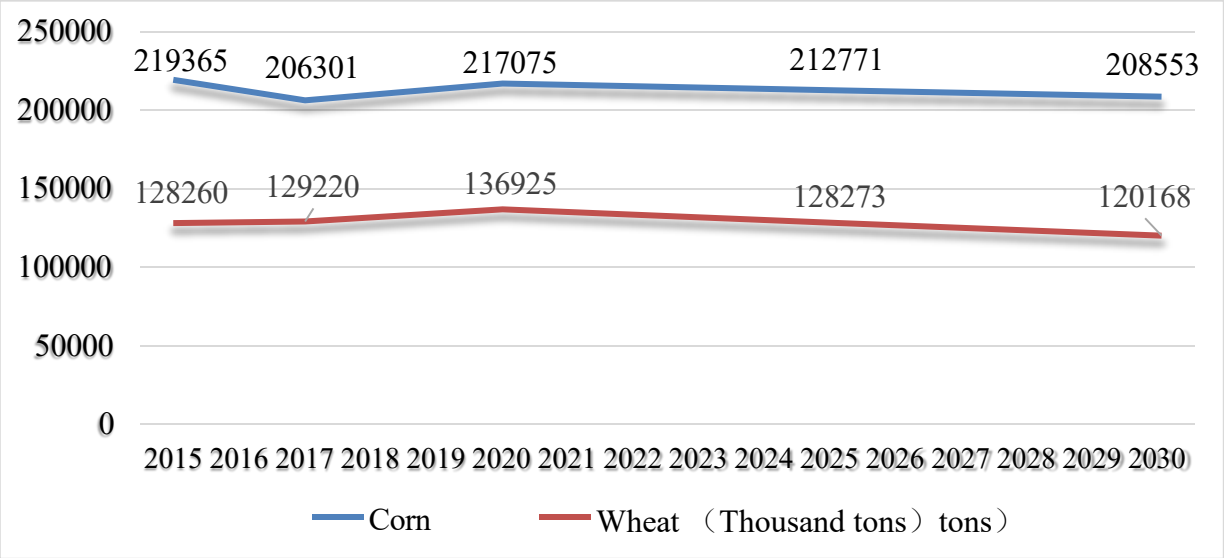

Figure 3.1 – Forecast of production of major grain crops in China up to 2030.

In China, more and more attention is being paid to the diversity of the diet. Therefore, the consumption of various products, including grains and legumes, is expanding. (Fig.3.2)

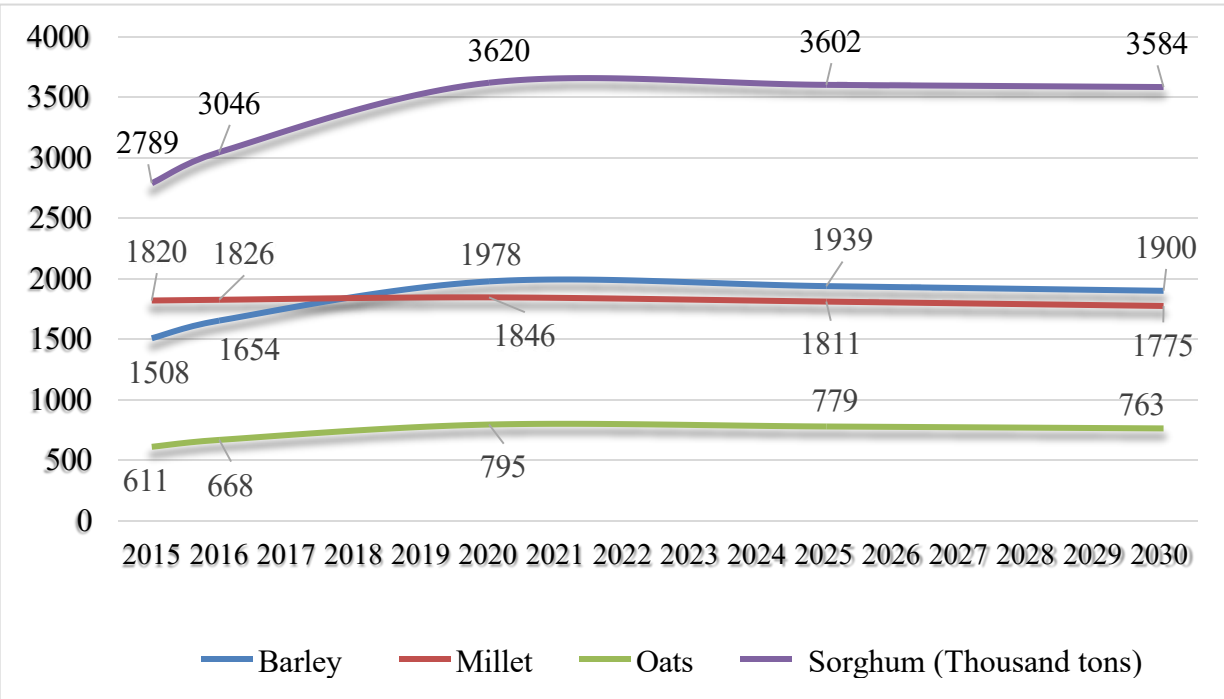

Figure 3.2 – Forecast of production of other grain crops in China up to 2030.

In addition to supporting crop production, the Chinese government pays attention to problems in the livestock sector, having established self-sufficiency indicators set by the State Council for the livestock sector: 95% for pig meat production; 85% for beef and mutton; 70% for milk; 100% for poultry and eggs. To implement this program, China needs to increase its own production of these types of products, as well as to supply food from abroad. China is also the largest importer of all groups of meat and soybeans, as well as a number of other types of products. The share of the Eurasian region countries in total global export volumes has increased in recent years in the markets of wheat (from 14.8% in 2013–2015 to 21.9% in 2019 – 2021), vegetable oils (from 3.1% to 6.1%), oilseeds except soybeans (from 1.0% to 3.0%), poultry meat (from 1.6% to 3.4%) and pork meat (from 1.2% to 2.2%). The expansion of the presence of suppliers from the Eurasian region in the global agri-food market was ensured by the development of export infrastructure and relatively low offer prices (especially during periods of weakening of the national currencies of the Eurasian region countries) with a fairly high quality of the supplied products. The obtained results show that the target scenario requires increasing the share of the Eurasian region countries in the total volume of world exports: for grain - from 11.0% in 2019-2021 to 16.3% in 2035 (including in China's imports - from 1.8% to 19.9%), for all types of meat - from 2.6% to 9.5% (including in China's imports - from 1.5% to 11.6%), for vegetable oils - from 6.1% to 16.1% (including in China's imports - 6.7% to 25%).

Table 3.9 – Physical volumes of agricultural exports from the Eurasian region in 2035 and their growth to the average level of 2019–2021.

Type of product	China		The world as a whole		Share of exports to China, %
	export,million tons	increase, p.p.	export, million tons	increase, p.p.	
Wheat	1,65	+1,60	70,14	+29,5	2,35
Corn	1,52	+1,40	7,64	+4,11	19,90
Other grains	4,47	+4,37	13,96	+7,92	32,02
Soybeans	2,24	+1,46	2,60	+1,51	86,15
Other oilseeds	0,65	+0,61	2,34	+1,19	27,78
Vegetable oils	2,65	+1,89	15,34	+10,20	17,28
Cattle meat	0,34	+0,33	0,98	+0,73	34,69
Pig meat	0,14	+0,14	1,01	+0,74	13,86
Poultry meat	0,16	+0,05	2,01	+1,55	7,96

Financing of China's agricultural sector is of great importance. The total volume of support for the agricultural sector reaches about 289 billion US dollars, which significantly exceeds the volume of financial support for the agricultural sector in the EAEU countries. [37, P. 76–77]

Thanks to surplus production, China is one of the main exporters of fruits and vegetables in the world. According to the statistical yearbook for 2019, China exported vegetables and fruits worth 24 billion US dollars in total. Chinese fruit and vegetable exports are mainly intended for Asia, Europe and North America. The main export destinations for Chinese fruits and vegetables are Vietnam, Japan, South Korea, the USA and Russia. In modern conditions, the potential for cooperation in this area seems extremely attractive for the EAEU countries.

Another area of cooperation can be the first sphere of the agro-industrial complex. Moreover, the agricultural machinery market, its structure, suppliers and volumes have changed dramatically. The development of the economy, including agriculture, will always require the introduction of new technologies, updating and modernization of the existing fleet of agricultural tractors, combines and other agricultural machinery.

Chinese manufacturers are actively entering the agricultural machinery market of the EAEU countries. In China, there are dozens of state and private manufacturers producing various agricultural machinery, from tractors, combines and ending with the entire range of trailed agricultural machinery.

The Russian manufacturer of agricultural machinery is already familiar with tractors of the ZOOMLION, YTO, LOVOL, AGROAPOLLO brands, and in 2024, tractors of the CHANGFA, HANWO, KAT, ENSING, FM WORLD brands were demonstrated.

Tractors are presented in a wide range of traction properties, engine power. Tractors of Chinese brands are practically in the same range with tractors of Belarusian production and will be the most powerful competition to these tractors. It should be noted that the Chinese industry mainly produces tractors with an engine power of up to 230 hp, and only for the Russian consumer have they begun to develop and produce tractors with an engine power of up to 440 hp.

Tractors of these traction classes (power ranges of 350 hp and above) will compete with Russian tractors from the Petersburg Tractor Plant and the Rostselmash plant.

On the other hand, tractors with an engine power of over 450 hp are practically not produced in China. The Minsk Tractor Plant is also capable of filling this niche. The enterprise has developed a new MTZ-4522 tractor - a machine of the eighth traction class with an engine power of 466 hp (analogous to the American Caterpillar C13 ACERT). It is produced in limited quantities for export. Thus, the goal of food policy is to ensure accelerated development of all

spheres of the agro-industrial complex, increase its innovative component, competitiveness, which will ultimately become the basis for collective security, increase the standard of living, income of the population in each of the EAEU states. The implementation of the formulated goal dictates the need to solve the following tasks:

1. Implementation of a balanced economic policy using modern mechanisms and tools that are adequate to the global world order for managing the integration processes of the participating countries and the formation of a single economic landscape.

2. Development and implementation of joint programs in the field of the agro-industrial complex aimed at increasing the profitability of production, including through the innovative component, taking into account the specifics of the national interests of the EAEU member states.

3. Formation of effective logistics for the free movement of goods and services, as well as labor and capital, while ensuring economic security for both the Union as a whole and for each EAEU member state individually.

4. Ensuring effective promotion of export-oriented agricultural products on world markets through the production of innovative products and the synergy of the EAEU.

5. Ensuring a competitive environment and effective forms of support for the agro-industrial complex for activities for accelerated development in the agricultural sector of various forms of ownership.

6. Implementation of comprehensive measures to form and maintain food security of the Union and its partner states.

7. Development of a unified effective foreign economic policy of the EAEU in the sphere of the agro-industrial complex, ensuring priority development of the Union on the basis of mutually beneficial relations with partner states and international organizations, including the WTO.

8. Development of integration in the field of development of agricultural science, including selection and seed production, plant protection, breeding, veterinary medicine, increasing soil fertility, improving land reclamation, introducing progressive innovative technologies, including in the market for the production of environmentally friendly food products and in other areas.

9. Coordination of work on the training and retraining of personnel in managerial and agricultural specialties based on the latest achievements of scientific and technological progress in the agricultural sector.

10. Formation and ensuring the effective operation of a single information system of the EAEU agricultural market, ensuring the transparency of market processes throughout the Union and improving the business climate for all

economic entities operating in it.

11. Coordination of investment policy aimed at the sustainable development of export-oriented priority sectors of the single agricultural market.

12. Support for the development of cooperation between business structures - participants in the EAEU agro-industrial complex market, ensuring increased efficiency of agribusiness and its competitiveness in the world market.

13. Development of industry models of interaction between the EAEU and business structures using the potential of interstate industry unions in the field of agro-industrial complex.

The main directions of development of the EAEU in the field of agricultural policy are:

1. Accelerated development of a single agricultural complex, ensuring its competitiveness in the world market;

2. Development of an effective and competitive social infrastructure of the common agricultural market, capable of ensuring the competitiveness of manufactured products and their export orientation;

3. Continuous modernization of measures of state support and state regulation of the spheres of credit and financial, budgetary, customs, tax, pricing, tariff and insurance policies in the sphere of agro-industrial complex, aimed at the competitiveness of the food segment of the EAEU in the context of globalization;

4. Effective stimulation of supply and demand for agricultural products of the EAEU both from domestic consumption and export;

5. Implementation of modern mechanisms of interstate leasing of agricultural machinery, capable of providing producers with modern means of production aimed at improving product quality and increasing labor productivity;

Development of rural areas, improvement of the quality of life of the population, ensuring improvement of human capital for implementation of programs of development of the single agricultural market;

Ensuring monitoring of formation and development of the single agricultural market of the EAEU, including harmonization of the regulatory framework of the single agricultural market in all areas of its functioning. The EAEU demonstrates the economic benefits of unification for the participating countries.

In the context of global threats, a special place in the development strategy of the Eurasian Economic Union is given to the formation and maintenance of collective food security. Long-term cooperation of the EAEU countries within the CIS has demonstrated the solidarity of partners in the construction of this system. For this purpose, a single legal framework was created, consisting of numerous agreements, a special place in this framework is given to the agreement "On uniform rules of state

support for agriculture", as well as the Concept of the agreed coordinated agro-industrial policy of the member states of the Customs Union and the Single Economic Space. All these important documents became the legal foundation for building collective food security of the EAEU member states. [2, P. 117 – 120]

In addition, the most effective form of combining strategic partnerships of EAEU producers to build an effective export model may be the creation of a single EAEU food marketing platform in the form of an international marketing cooperative with the support of the state. Similar integration structures are widely used in Europe. This marketing integrator in the form of a cooperative is capable of solving the following practical problems:

1. Creation of a managed process for quality control of food exported from the country.

2. Creation of a partnership-based integration of EAEU food producer services for joint innovative 70 product developments for export, taking into account the specifics of individual national markets.

3. Creation of a “store within a store” format on the basis of foreign partner retail chains, where the products of EAEU producers will be placed. This format will allow the creation of permanent marketing centers, prompt marketing measurements of market reactions to products supplied from the EAEU countries, generating a range of products and promoting them through other retail chains. On the other hand, EAEU producers will receive a unique opportunity for deep “ immersion ” in promising markets and become real competitors to current world leaders.

4. Creation of an integrated Internet platform with strategic partners from other countries to promote a range of products to promising markets.

5. For government agencies, the international cooperative becomes a single partner for the development of strategic relations to support exports using all available instruments of state regulation of the EAEU agricultural market.

6. The International Marketing Cooperative of the EAEU can become a system-forming integrator of all innovative companies in the food market of the EAEU, which will significantly strengthen the market power of the food business of the EAEU and the motivation of its participants for accelerated innovative development and intellectual, organizational, managerial consolidation based on the common goal of building an effective export model. 7. Use of exchange platforms and modern means of product promotion. Commodity exchanges operate in both open and closed economies. Some were created on the wave of economic reforms, others - in the course of the political transformation of states and the transition to the market. It would be advisable to carry out systematic work to develop a comprehensive model of a common commodity market for the countries of the Eurasian region based on general principles of operation and regulation in the area of admission of participants, requirements for the organization of trading and exchange assets, ensuring information transparency, guarantees of fulfillment of obligations under transactions, risk management. The required level of unification of the relevant legislation of countries may require a comprehensive study of a large number of issues with the mandatory participation of

regulators, trade organizers, governments of the countries of the Eurasian region and other interested parties. [38, pp. 117 – 120]

The task of the EAEU is to create a competitive management system capable of changing in accordance with the challenges of the time and generating new vectors of accelerated socio-economic development. In the context of globalization, it is necessary to form a management system for the process of maintaining global food security, in which all developed countries of the world, international associations, including BRICS, SCO and others, participate.

CONCLUSION

The dissertation identified and examined the main trends in ensuring food security, developing a theoretical framework that includes precise definitions of the conceptual apparatus (food security and nutritional security; food independence, etc.), the relationship of terms; identifying levels and defining principles for ensuring food security at various levels of governance.

Given the global nature of the modern economy and the importance of the problem, it is advisable to link its solution with issues of international cooperation in the field of providing the population with food. Cooperation between the countries of the region within the framework of international associations will help to counter international challenges and other risks, ensuring the food security of each state.

Against the background of a global decline in food security in recent years, China, remaining the largest food importer in the world, has achieved significant success in improving its food security. China's transformations in the field of food security have significantly improved not only the availability, but also the accessibility of food, as well as the sustainability of the Chinese food system. The increase in agricultural production, including grain production, in China indicates a transition from an extensive development model with high resource dependence to a model of sustainable intensification.

Incomes play an important role in ensuring food security for families and each person, maintaining their ability to work and health; this requires attention at all levels of the management hierarchy.

As a result of rapid economic and social development, the food structure has changed, based on high-value products such as meat, dairy products, fish and fish products. However, there are a number of serious problems in China's food system. China has insufficient self-sufficiency and high import dependence for a number of food products. New problems in the field of nutrition for China have become the overweight of a part of the population and the associated increasing burden on the health care system. In addition, China's food losses exceed similar indicators in developed countries. The changes in the global economy, the influence of such non-market factors as ideology, geopolitics and challenges in the multilateral trade and investment system may seriously disrupt the global agricultural market and reduce the level of food security in China, which largely depends on foreign trade in food products. The transformation of China's food system is aimed at preventing and eliminating the risks of disruption to imported food supplies, diversifying import sources, reducing the cost of agricultural production through scientific and technological progress and increasing investment in infrastructure, and the transition of Chinese agriculture from a strategy of increasing production to improving product quality and safety.

Currently, China ’ s agricultural imports account for one-tenth of global

agricultural trade, and net grain imports are equivalent to one-fifth of total domestic grain production. The indispensability of foreign trade for food security and China's dependence on imported food supplies mean that China's agriculture will face stronger competitive pressures and higher import risks. In this regard, China is changing its approach to foreign trade as trading in surplus production to one based on incorporating foreign trade into national planning for medium- and long-term balance of demand and supply of important agricultural products.

There is potential for additional stimulation of agricultural sector growth in the Eurasian region by pursuing more active policies aimed at removing current constraints on demand and the ability to move agricultural products in domestic and export directions, as well as mitigating financial, price, spatial and other imbalances in agriculture. The expansion of the presence of suppliers from the Eurasian region in the global agri-food market, especially the Chinese one, was ensured by the development of export infrastructure and relatively low offer prices (especially during periods of weakening of the national currencies of the Eurasian region countries) with a sufficiently high quality of the supplied products. Conclusions were made that, in order to ensure food security of the EAEU countries, it is necessary to introduce the latest technologies and move to a digital economy in the agro-industrial complex, develop unified high requirements for product quality within the framework of international organizations, establish export and import quotas, ensuring, as a priority, the food security of their own country and allied countries.

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