ORGANIC PRODUCTION MANAGEMENT IN THE FRAMEWORK OF SUSTAINABLE DEVELOPMENT: SYSTEMIC AND STRATEGIC DIMENSIONS

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At the beginning of the 21st century, the agricultural sector emerges as one of the key components of the global system, upon which socio-economic stability, food security, and the ecological balance of the planet directly depend. Global challenges – climate change, soil degradation, depletion of water resources, population growth, and geopolitical instability – significantly complicate the ability of global agriculture to ensure food provision for all. Under these conditions, food security policy acquires not only economic and social significance but also a strategic dimension, influencing national security, international cooperation, and sustainable development.

The complexity of modern transformations requires a deeper analysis of the interconnections between global processes in the agricultural sector and the mechanisms for shaping effective food security policy. Understanding these relationships forms the basis for developing effective tools for adapting agricultural systems to new realities – ranging from technological innovations and changes in the structure of agricultural production to the formation of institutional coherence among national, regional, and international policies.

The concept of sustainable development is based on the idea of the systemic integration of economic growth, social equity, and environmental balance as interrelated components of societal progress. Its fundamental principle lies in ensuring the satisfaction of the needs of the present generation without compromising the ability of future generations to meet their own needs.

In response to contemporary global challenges, a new vision of agricultural development is being formed, placing the individual, their needs, and their responsibility to future generations at its core. In this context, the sustainable agricultural sector is viewed not merely as an economic system of production but as an integrated model of harmonious interaction between society, nature, and economic activity.

The sustainable agricultural sector is defined as a model of agricultural functioning that combines the efficient use of natural resources, environmentally safe technologies, and socially oriented rural development. Its strategic objective lies not only in ensuring national food security but also in creating decent living conditions for rural populations, preserving the natural environment, and ensuring the long-term sustainability of agricultural production based on the principles of non-exhaustive resource use.

Formation of a sustainable agricultural sector involves the implementation of a set of interrelated directions:

- rational use of natural resources – preservation, restoration, and enhancement of soil fertility, as well as optimization of water and energy use;
- technological modernization – introduction of innovative, resource-efficient, and environmentally oriented production technologies;
- social orientation of development – stimulation of employment, improvement of labor quality, and ensuring sustainable development of rural areas;
- institutional coherence – integration of agricultural policy with environmental, social, and regional state policies.

A sustainable agricultural sector serves as a key element in the implementation of national and global development strategies, particularly in the context of achieving the United Nations Sustainable Development Goals (SDGs), where agricultural production is considered a fundamental factor in ensuring food security and environmental stability.

It is important to emphasize that organic production represents an applied form of implementing sustainable development principles in the agricultural sector and reflects the transition toward an environmentally oriented model of farming. It is based on the rejection of synthetic agrochemicals, pesticides, growth regulators, genetically modified organisms, and other artificial inputs, instead focusing on the use of renewable resources, natural biological processes, and closed-loop production systems.

Such an approach contributes to the restoration of natural soil fertility, conservation of biodiversity, improvement of water quality, and the formation of an environmentally responsible model of food consumption.

Intensive technologies of agricultural production used today have a negative impact not only on the environment, but and deplete natural resources (soil, water, rocks and varieties of plants, reduce biodiversity, etc.). In turn, organic farming methodsimprove the condition of soils and increase their fertility without the use synthetic chemical poisons. Weed and pest control is made without the use of chemicals, at the same time, land and water resources are preserved from contamination with toxic chemical compounds. Mandatory application of crop rotation, use of seeds and breeds of animals adapted to local conditions ensures biodiversity and promotes restoration and strengthening of the ecological balance (Nehrei, M., Taranenko, A., & Kostenko, I., 2022).

For effective implementation and development organic agriculture requires the development and mastering of modern organic technologies, in the absence of which, manufacturers may face risks and financial problems.

«Organic agriculture, the most prominent alternative farming system in the market place, offers consumers a different option that reflects well the inherent complexity of achieving sustainable agriculture. However, because conventional agriculture is heavily subsidized and market prices do not yet reflect externalities, organic products remain relatively less affordable to consumers» (Eyhorn et al. 2019).

As a first step, we will consider eco-production in the livestock sector. Of course, we will talk about the production of organic milk. It is worth noting that according to the basic principles of organic agriculture maintenance technology cattle (cattle) during production of organic livestock products should be based on the following basic principles:

- housing system - stable and pasture in summer and stall-walking in winter, the stall system is not allowed;

- method of keeping - untethered, in small technological groups, cows - in sections with boxes for rest; young - in sections with boxes or without boxes; tethering of livestock is not allowed.

Natural balance in crop production during organic farming reduces the spread of pests and diseases, reducesnegative influence of natural factors of soil degradation. Compliance with the principles in combination with crop rotation can minimize possible reduction of soil fertility even under conditions of intensification agriculture and stabilize agroecosystems (Hlovyn N., & Pavliv O., 2024). Priorities at work agricultural formations to improve productivity should be considered first of all, to increase the use of organic elements at fertilizers of agricultural crops, which form the first one component. As a result, (Semenda, 2018) agricultural producers will be able to to achieve significantly better indicators of the yield of agricultural crops under the condition of reducing the anthropogenic load on the environment. This will contribute to the environmentalization of agriculture production and creation of opportunities for the development of environmentally safe areas of management.

Organic agriculture offers an alternative food system that can increase agricultural productivity, overcome food shortages even in the poorest regions of the world, and ensure social justice and environmental the poorest regions of the world, ensure social justice and preserve the environment (Самойлик Ю. 2020).

According to the UN Food and Agriculture Organisation (FAO), with organic farming growing by 56% in agricultural production by 56% in developing countries, by 2030 it will be possible to fully meet the demand for food in these countries and overcome the effects of climate change (FAO 2019). According to the study, inefficient agricultural practices in developing countries account for 90% of nitrous oxide and 30% of carbon emissions, which is one of the factors contributing to climate change.

Therefore, organic agriculture should provide a fundamentally new vector for the development of the agricultural sector of Ukraine's economy, exceeding the performance of conventional agricultural production in terms of yield, diversification, economic efficiency and employment of the rural population. The Federation of Organic Movement of Ukraine emphasises that these advantages make organic production particularly attractive for small farmers, who otherwise may be at risk of food and financial crisis.

Today, the organic farming in Ukraine should play a fundamentally new role in economic development, reduce poverty and increase self-employment of the rural population, increase economic growth and help Ukrainian farmers enter foreign markets. According to research, the global organic market is showing an upward trend. Currently, the global organic market is worth USD 62.9 billion. Today, the development of organic farming for Ukraine should play a fundamentally new role in the development of the economy, ensure the reduction of poverty and increase the self-employment of the rural population, increase the rate of economic growth and access to foreign markets of Ukrainian farmers. According to research, the market for organic products in the world shows growing trends. Currently, the size of the global organic market is 62.9 billion dollars. In the USA, according to forecasts, in 2020 it can reach 200–250 billion dollars. USA. The annual

growth of the organic market in European countries is approx 10%. In Ukraine, the main areas of organic agricultural land are used for cultivation cereals (wheat, barley, corn) - 197 thousand ha. Oil crops (sunflower and rapeseed) are allocated 67 thousand ha. Areas for the cultivation of organic vegetables exceed 8 thousand hectares, and for organic potatoes 1200 hectares. According to the areas allocated for the cultivation of organic grain. Cherevko (2018) has argued that oil and vegetable crops, as well as organic potatoes, Ukraine is among the TOP-10 producers in the world. In particular, our country ranks seventh in the area of grain crops, fifth in the area of oil crops, ninth in the area of potatoes, tenth in the ranking of producers of vegetable crops.

Figure 1. *Organic map of Ukraine*
Source: (Agricultural policy monitoring and evaluation – OECD, 2024)

Based on the military actions in Ukraine, and the fact that it is impossible today to clearly determine the area of agricultural land used for organic production, it can be noted that as of December 31, 2021, the occupied area of agricultural land intended for the production of organic products and the transition period was 422,299 hectares, namely 1% of the total area of agricultural lands of Ukraine (picture 1). Thus, the area of agricultural land for the production of organic products was 370,110 hectares, and the area of agricultural land in the transition period was 52,189 hectares. At the same time, the total number of operators in this field as of the researched period was 528, among which 418 were agricultural producers (Негода і Гузь 2023). In recent years, the domestic consumer market has expanded the range of organic products at the expense of large supermarket chains. The main types of products consumed are milk and dairy products, vegetables, fruits and mushrooms, cereals and cereal products, flour, seeds, juices, drinks, pasta, canned goods, eggs, meat products, bakery products, honey, chocolate and tea. According to the National Economic Strategy for the period until 2030, areas with organic status in Ukraine should be at least 3% of the total area of agricultural land, i.e. 1.26 million hectares (Городняк і Петровський 2023).

The clear leader among trading partners for Ukrainian organic products in 2022 is the Netherlands. 101,000 tons of organic products were shipped to the country, which is almost 45% of organic exports of Ukraine. Among the leading countries are Germany (33.1 thousand tons, i.e. 15% of total exports), Austria (27.3 thousand tons, i.e. 12%), Switzerland (17.7 thousand tons, i.e. 8%) and Poland (13.4 thousand tons, i.e. 6%). Among the types of product nomenclature, almost 40% of the total export of organic products was corn (89.6 thousand tons). The leaders of organic export products in 2022 included soybeans (33.7 thousand tons, i.e. 15%), wheat and spelled (24.2 thousand tons, i.e. 11%), sunflower cake (13.2 thousand tons, i.e. 6%) and

sunflower seeds (13 thousand tons, i.e. 6%), sunflower oil (8 thousand tons, i.e. 3.5%). Regarding the transportation of organic products, the majority of such products were exported by road transport (58.6%). 26.8% was exported by sea and river transport, and 14.6% by railway (Міністерство аграрної політики та продовольства України 2024).

The analysis of the legislative and regulatory base of products was carried out of organic origin made it possible to identify three main groups of normative documents (Khimicheva H., & Sokotun Z., 2023).

1. Intergovernmental framework standards: IFOAM Basic Standards IBS); a joint program of the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) regarding food standards products (Commission "Codex Alimentarius" - "Codex Alimentarius. Organic food products");

2. Basic standards and EU Resolutions and Regulations: Council Resolution (EU) no 834/2007; Commission Regulation (EU) No. 889/2008; Commission Regulation (EU) No. 1235/2008, Commission Regulation (EC) No. 1254/2008; Commission Regulation (EC) No. 537/2009; Regulations of the Commission (EC) No. 710/2009; Commission Regulation (EU) No. 271/; American National Organic program - NOP (National Organic Program) of the US Department of Agriculture (United States Department of Agriculture – USDA); JAS (Japanese Agricultural Standard) – The Japanese standard for the quality of agricultural products, which includes "special standard" regarding the production and processing of organic products.

3. Private standards of organic production: Demeter, Naturland, Bioland, Ecoland, Biokreis, Ecovin (Germany); Soil Association (Great Britain); Bio Suisse (Switzerland), Bio Austria, Austria Bio Garantie (Austria), KRAV (Sweden), BIOLan (Ukraine) and others (Recchia et al. 2024).

Let's look at the current policy of the incentive mechanism for organic farming. According to the Law of Ukraine (On Basic Principles and Requirements for Organic Production, Circulation and Labelling of Organic Products), «which defines the basic principles and requirements for organic production, circulation and labeling of organic products, the principles of legal regulation of organic production, circulation of organic products and functioning of the organic market products, the legal bases of the activities of the central executive authorities, the subjects of the organic products market, and the directions of the state policy in the specified areas.

Basic principles and directions of state policy in the field of organic production, circulation and labeling of organic products.

The directions of state policy in the field of organic production, circulation and labeling of organic products are:

- ✓ introduction of innovations, energy- and resource-saving technologies;
- ✓ development of competition and improvement of competitiveness of Ukrainian manufacturers in domestic and foreign markets;
- ✓ increasing the volume of exports of organic agricultural products;
- ✓ development of the internal market of organic products;
- ✓ ensuring genetic safety, biological diversity and rational use of natural resources and their reproduction;
- ✓ control over compliance with legislation in the field of organic production, circulation and labeling of organic products;
- ✓ humane treatment of animals by providing living conditions for animals that correspond to their biological, species and individual characteristics;
- ✓ ensuring environmental safety during organic production;
- ✓ creation of a unified system of certification of organic production and/or circulation and state control of organic production, circulation and labeling of organic products;
- ✓ promotion of organic products;
- ✓ scientific support for organic production;
- ✓ establishment of liability for violations of legislation in the field of organic production, circulation and labeling of organic products.

State regulation in the field of organic production, circulation and labeling of organic products is carried out by:

- definition of the general principles of organic production, circulation and labeling of organic products;
- establishment of appropriate legal regulation;

- improvement of state policy in the field of organic production, circulation and labeling of organic products;
- implementation of state control (supervision) in the field of organic production, circulation and labeling of organic products;
- coordination of training and retraining of organic production specialists;
- promoting the development of organic production;
- promoting the development of the internal market of organic products and meeting the needs of consumers in the range of organic products».

In order to increase the level of development of the production of organic products, the Ministry of Agrarian Policy of Ukraine actively participates in the following international projects (Hlovyn N., & Pavliv O., 2024): the Swiss-Ukrainian program "Development of trade with higher added value in the organic and dairy sectors of Ukraine" (QFTP), the project "German-Ukrainian cooperation in the field of Organic Agriculture" (COA), the program "Organic Trade for Development in Eastern Europe" (OT4D), the EU project "Institutional and Political Reform of Small-Scale Agriculture in Ukraine" (IPRSA), the USAID Program for Agrarian and Rural Development (AGRO). Participation in such programs gives Ukraine the opportunity to receive professional support in the development of a legislative and regulatory framework, implementation of laws in the field of organic production, distribution and labeling of organic products, and also provides support in the implementation of various activities related to organic production (Durán-Lara, Valderrama, i Marican 2020).

(Krajewski et al. 2024) emphasize in their work «The need to develop and implement programs to support and finance organic production caused by a group of economic, social and environmental factors reasons. Depending on the geographical coverage of such initiatives have an international, regional, national and local character. The most influential international organization, responsible for the popularization of organic production in the world, there is an International Federation of the Organic Agricultural Movement, whose programs establish general areas the development of the organic sector, in particular the development of innovations, strengthening cooperation, fair trade, etc. At the regional level, there are EU supranational programs that include methods of financial support and stimulation of organic agriculture. In particular, it is "Joint Agrarian policy for 2014–2020." and «The Vision of the European Movement until 2030».

Thus, in view of the above, it is advisable to single out the dominant factors of the formation of the organic sector by 2030 in Ukraine:

Ecological: (Peigné et al. 2016)*:*

- climatic changes (increasing temperature, strengthening of extreme climatic conditions, scarcity of water resources in some regions);
- ecosystem services (degradation, erosion, decrease in soil fertility, loss of pollinators);
- energy resources (weight from the import of energy carriers, production of shelf gas, new source of energy - nuclear fusion reactor);
- land resources (biodiesel production, land acquisition).

Technological:

- biotechnology, nanotechnology and synthetic biology (Niyommaneerat, Suwanteep, i Chavalparit 2023);
- sensor technologies in agriculture, drones and agricultural works;
- digitization and development of information and communication technologies;
- alternative protein food (insects and algae).

Economic:

- corporate consolidation of companies, emergence of new leaders from developing countries;
- vertical and urban farming;
- an economy based on reputation.

Social:

- the aging of the nation, the dominance of individual farms;
- joint consumption (Nekhai V., 2022).

The "Organic Roadmap to Sustainable" was developed by the international European organic movement Food and Farming Systems in Europe), which includes three programs:

1. "Organic on every table":recognition of the advantages of organic production as legislators, and consumers; active promotion of organic farming; ensuring a high level of availability of organic products; more than half are involved in organic farming

European farms.

2. «Improve - Inspire – Deliver» (Improve - Inspire - Deliver): an organic system is sustainable, constantly improving its activities and inspiring change; knowledge, educationand training help establish a link between society and agriculture; organic food provides proper and sustainable nutrition.

3. «Fair play - Fair reward» (Fair play -Fair pay): fair distribution of power and value in the entire distribution system; new models of business and communications, contributeestablishment of trusting relations between participants; support organic farming and fair pricing.

To create a formation and development system in our country the market of organic agricultural products needs a systematic one an approach supported by all manufacturers and suppliers, local and central authorities, as well as the higher legislative branch of government (Parizad i Bera 2023). Necessary to consider the issue of improving the state policy of stimulation and by developing the production of organic agricultural productscreation of a system of state incentives, regulation and control,because without state support for organic production practically impossible.It is important for the successful functioning of the market of organic products not only to produce quality products, but also to carry out a set of activities for its effective implementation. When choosing sales channels for organic products Ukraine can turn to European experience. The main European ones sales channels for organic products are the retail network (70%);direct sales from businesses and sales through markets that provide approximately 15% of sales; sales through specialized stores: bakeries, butchers benches, restaurants and other catering establishments - up to 15%.

According to our beliefs, right now Ukraine, possessing a significant agricultural potential, can become one of the effective competitors in the foreign market. First, the appearance on the domestic market of large specialized enterprises is able to ensure the development of organic production. Secondly, some scientists emphasize that the reduction in the use of chemicals in previous years will allow Ukrainian farmers to shorten the period of transition to organic production from 5-7 years (as in the vast majority of European countries) to 3 years. Thirdly, the main competitive advantage in both domestic and foreign markets is the reduction of production costs. This is possible due to the use of resource-saving technologies and an increase in the quality of products. This will allow the majority of Ukrainian manufacturers to ensure the high competitiveness of their products. This will not only lead to import substitution of food products, but also improve the quality of the natural environment and the quality of life of the population. A significant impetus to the development of the domestic market of organic products should be the formation of a culture of consumption of organic products among ordinary consumers.

In the context of the transformation of Ukraine’s agricultural sector and the gradual development of the organic products market, the study of international experience in effective organic production management is gaining particular relevance. Despite its considerable potential, the Ukrainian organic sector faces a number of institutional, economic, and infrastructural constraints that require systematic improvement.

In this regard, it is appropriate to turn to the practices of European Union countries, particularly Germany, which is one of the leaders in the development of organic production and the formation of effective policy in this field. Germany’s experience is characterized by a high level of regulatory support, a well-developed certification system, active state support.

The analysis of the German model makes it possible not only to identify the key success factors of the organic sector but also to determine the prospects for adapting effective management instruments within the Ukrainian economy, taking into account its specific features and the challenges of contemporary development.

Both at the EU level and in Germany, the three main objectives of the food strategy are enshrined in law:

- protection of health (only safe food products may be sold);
- protection of consumers from fraud;
- proper public information.

The implementation of Germany's food security strategy has a strong legal framework (German food legislation includes more than 200 regulations, laws and decisions). Germany's strategic priorities on this issue in the pan-European space are to promote the development and implementation of the Common Agricultural Policy of the EU countries, one of the key goals of which is to ensure food security. It can be concluded that in the EU, supranational mechanisms for strategic food security are combined with 334 state regulation by member states and the EU as a whole. Key elements of the mechanism of strategic regulation of food markets in the EU: - introduction of uniform prices across the EU by the EU authorities to stimulate the development of the agricultural sector and optimal location of production; - setting purchase prices at a level lower than in the domestic market to encourage producers to sell food on the market rather than to the state. In the EU

countries (Quiroga et al., 2017), the policy of strategic food security is based on stimulating the development of domestic agriculture with high production costs for food compared to the world market.

The legislative framework of these countries takes into account the import and export capabilities of commodity producers, although the specifics of the mechanism for strategic support for agriculture in each EU country depend significantly on its production and foreign economic conditions (Halkos & Gkampoura, 2021).

According to experts, global organic production has been growing steadily in recent years. The volume of organic sales in 2020 reached USD 60 billion per year. Consumption of organic products per capita, for example, in Switzerland in 2011 was 153 euros. At the same time, out of 96% of revenues from sales of organic products (Székács et al., 2020), 50% were generated in North America and 46% in Europe (Zhang et al., 2022). The United States accounts for 44% of the retail turnover of organic products, the EU countries - 41% (including Germany - 14%, France - 14%). Germany - 14%, France - 8%, the UK - 4%, Italy - 3%), Canada - 4%, Switzerland - 3%, Japan - 2% (European Commission, 2024).

The goals of organic agriculture are: to achieve a closed production process within the enterprise as far as possible. The main principles of organic farming are: rejection of methods of plant protection with the help of chemical or synthetic preparations; rejection of the use of easily soluble mineral fertilisers, removal of organically bound nitrogen, cultivation of ligominoes; stabilisation of humus content; strict adherence to the principles of crop rotation with a variety of crops and predecessors; rejection of the use of chemical and synthetic plant growth regulators; limited livestock breeding, if possible, rejection of the purchase of fodder from third parties.

Typical arguments for organic farming are: protection of soil resources: activation of humus formation processes, increase of biomass (Otari et al., 2024), stimulation of soil biota activity, reduction of soil erosion; protection of water resources, i.e. reduction of nitrate penetration into ground and surface waters; protection of the diversity of non-farm animal and plant species; protection of farm animals (Recchia et al., 2024). According to EU regulations, a very limited number of additional and auxiliary preparations and substances, which are listed in the so-called Positivlisten, are authorised for use in organic production. For example, out of a list of 320 auxiliary agents allowed for use in Germany, only 50 are authorised for bioproduction.

The key provisions of the Act are: mandatory declaration and registration of a company as a bio-enterprise; transfer of control tasks into the hands of private local associations (currently there are 20 such organisations in Germany); penalties for companies - a monetary fine of up to 30,000 euros and a one-year ban on production. According to statistical data, at the end of 2011 in Germany 22506 enterprises were engaged in ecological production on a total area of 1015626 hectares. This represents 7.5 % of the companies and 5.9 %of the area. The size of an average bio-enterprise is about 45 hectares. Almost all organic and bioproduction enterprises operate within associations or societies. In addition to the large, well-known and oldest Bioland and Demeter, many smaller associations have emerged in recent years - Naturland, Biokreis, ECO-VIN-Bundesverband Ökologischer Weinbau, Gäa, Ecoland, Biopark (Brendler, 2020). The laws adopted by the associations of German bioproducers are stricter in some points than the EU laws for organic farming. For example, according to EU laws, a company can partially, not in all of its units, switch to organic production. German law does not allow German companies to make such a partial conversion.

The state support is provided if the company fully switches to bioproduction. In 2022/2023, the Thünen-Institut conducted a comparative analysis of the profitability of organic and conventional enterprises. The study examined 421 bio-based enterprises and 2,246 similarly situated traditional enterprises. It was found that bio-enterprises made an average profit of 30537 euros, while traditional enterprises made 27694 euros, i.e. 2800 euros or 10 %more. The production of environmentally friendly (Misso et al., 2013) products practically does not harm the environment, conserves water, soil and other resources, and makes a significant contribution to solving climate problems. However, the transition to organic farming is a very difficult process. After 12 months, plant-based products can only be marketed as intermediates, but not yet as organic products. Only two years after the transition, products can be marketed as bio or eco. In addition, companies that have chosen this path must still be able to market their products. These are a few arguments in favour of why such enterprises receive special state subsidies. Enterprises are usually financed in a 60:40 ratio (Hackfort, 2023) for example, if a company is located near Kemnica, which is a Saxon state, 60 % of the subsidy is financed by the state and 40 % from the Saxon budget.

Currently, there are 36,535 organic producers in Germany, accounting for 14.3% of all agricultural producers. They cultivate an area of about 1.94 million hectares, which is almost 12% of all agricultural land. At the same time, the increase in organic areas in 2023 was almost 80.4 thousand hectares (+4.3%).

Almost 2/3 of the total area under organic production in Germany is also certified according to private association standards (e.g. Biokreis, Bioland, Demeter, Naturland), which are usually more stringent. The role of the trade associations is very important in increasing sales of organic food, thanks to the close cooperation of these associations with discounters.

For example, thanks to the cooperation between Naturland and ALDI, the latter plans to increase the share of organic products in the chain to 25% by the end of 2024, compared to 15% last year. Lidl and Kaufland have previously announced strategies to expand their organic product range in cooperation with other associations. In 2023, sales in both discounters and speciality organic stores increased, after having lost significantly in 2022. Overall, from 2019 to 2023, sales of organic products in all outlets increased by 31% (Agricultural Policy Monitoring and Evaluation - OECD, 2024).

Consumption of packaged bakery and confectionery products, frozen foods, as well as spreads, delicatessen and chilled delicatessen products was the highest. Consumption of dairy products, which has been growing rapidly for many years, increased by only 15% in 2023. Consumption of organic fresh produce, cheeses and sausages grew by only 6 and 5% respectively.

At the end of 2023, Germany adopted a national strategy to achieve 30% organic agriculture and organic food production by 2030, which should be accompanied by a national campaign to promote organic food. Therefore, we can expect further growth in both production and consumption of organic products.

In the context of the global challenges of food security, health and climate change, the Greenhouses policy to Reduce CO2 on Roofs in Bürstadt, Germany, is an interesting case study.

In our opinion, the policy of organic farming is close to perfect. The main advantage of German farmers is their responsibility to the consumer and their honesty before the law. It is the mentality and attitude of the population that can set a good example of sustainable agriculture and a responsible attitude to global challenges for the whole society. The essence of organic product management lies in the comprehensive regulation of processes related to production, processing, certification, logistics, and marketing of products in accordance with established environmental standards and principles of organic farming. Such an approach involves the integration of environmental, economic, and social dimensions into a unified system of managerial decision-making, ensuring a balance between production efficiency and environmental sustainability. A distinctive feature of organic product management is the high level of regulation and the necessity to comply with both international and national standards covering all stages of the product life cycle. In this context, the certification system plays a crucial role as a mechanism for verifying compliance with organic production requirements and facilitating access to domestic and international markets. At the same time, quality management of organic products requires the implementation of traceability, transparency, and control principles, which help minimize the risks of fraud and enhance consumer trust.

An important direction of management is the development of efficient value chains that encompass all stages–from raw material production to final consumption. Within these chains, a significant role is played by innovative approaches to production organization, process digitalization, logistics optimization, and the development of local markets. This contributes to improving the efficiency of the organic sector and its adaptability to changes in the external environment. At the same time, organic product management is accompanied by a number of challenges, among which high certification costs, limited access to financial resources, the complexity of compliance with standards, and the insufficient development of organic market infrastructure are particularly significant. An additional factor is the need to foster a culture of organic consumption, which requires active informational and educational policies. The management scheme of organic products (Fig. 2) illustrates a systemic model of organic production management within the framework of sustainable development as an integrated, multi-level structure. At the top of the model, the key target benchmarks are defined–economic efficiency, environmental safety, and social responsibility–which shape the strategic directions of the organic sector's functioning.

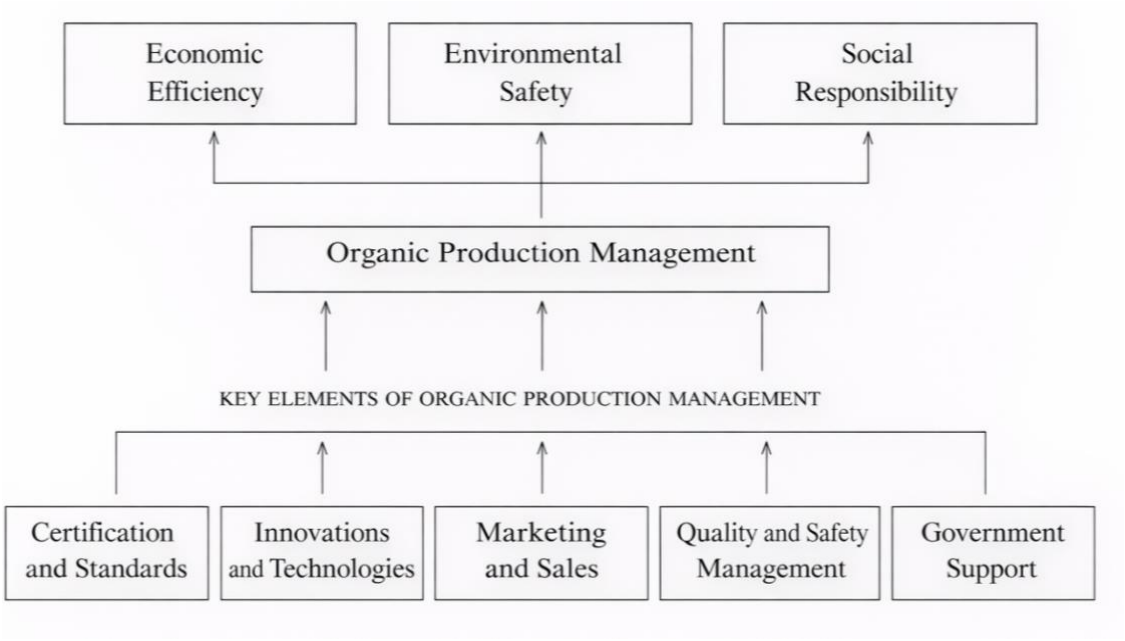

Figure 2. *Key Elements of Organic Product Management*
Source: Based on the author's own research

The central element is organic production management as the core of the system, ensuring the coordination of all processes and the achievement of defined objectives. The lower level of the model is represented by a set of key management tools, including certification and standards, innovation and technologies, marketing and distribution, quality and safety management, as well as state support.

The key elements of organic product management form an integrated system that ensures the efficiency, quality, and sustainability of the organic sector. These include:

- certification and standards, which ensure compliance with international and national requirements and serve as a tool for building consumer trust;
- innovation and technologies, aimed at implementing resource-efficient and environmentally safe solutions in production processes;
- marketing and sales, which facilitate demand formation, market development, and the promotion of organic products;
- quality and safety management, which ensures control at all stages of production and minimizes the risks of fraud;
- government support, which creates a favorable institutional environment through financial, regulatory, and informational mechanisms.

Organic production, within the contemporary scientific paradigm, is regarded not merely as an alternative model of agricultural practice but as a significant instrument for the implementation of social responsibility toward society. Its essence lies in ensuring a balance between economic efficiency, environmental sustainability, and social equity, which fully aligns with the concept of sustainable development.

From the perspective of social responsibility, organic production is oriented toward meeting societal needs through the provision of safe and high-quality products, the protection of public health, the minimization of environmental impacts, and the rational use of natural resources. The rejection of synthetic agrochemicals, adherence to biodiversity principles, maintenance of soil fertility, and preservation of ecological balance demonstrate the orientation of the organic sector toward long-term societal values rather than short-term profit maximization.

In addition to its environmental dimension, organic production generates significant socio-economic benefits by contributing to rural development, creating employment opportunities, increasing the level of employment, and supporting small and medium-sized producers. Thus, it serves as a factor of social stability and inclusive development.

In this context, organic production can be interpreted as a manifestation of responsible management that integrates the principles of corporate social responsibility into business practices. It shapes a new ethic of interaction among producers, consumers, and society, grounded in transparency, trust, and responsibility toward future generations.

Collectively, these elements ensure the integrated management of organic production and contribute to the achievement of economic, environmental, and social goals of sustainable development. Thus, the scheme demonstrates the interconnection between the strategic goals of sustainable development and the functional mechanisms for their implementation, emphasizing the comprehensive nature of organic production management.

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