

THE WORLD TRENDS OF ORGANIC PRODUCTION AND CONSUMPTION

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Received 29 10 2018; accepted 02 12 2018

What global trends do affect the organic sector in Ukraine and what organic policy tools, according to the international experience, can be implemented for its effective development? The purpose of the article is analyzing organic production and consumption trends, to propose directions and tools for their development in Ukraine. Organic production and market growth rates, relationship between consumption and income are estimated using the international organizations database. The scientific and other sources are analyzed and summarized. Demand is organic production driver and the availability of appropriate land resources and financing enables its expansion. Different measures aimed at the realizing of competitive advantages in the global market and simultaneous growth of domestic market are to be applied for organic sector development in Ukraine: government financial support for transformation, certification, products promotion; information and educational activities; fostering collaboration among supply chain agents; the legislation implementation. This article may be used for research, teaching, and economic policy development.

Keywords: organic agriculture; organic consumption; organic policy; organic production; supply chain.

JEL Codes: O13; Q10; Q18.

1. Introduction

The increase in organic production and consumption is one of the distinct trends in the global economy. The dynamics of the supply of organic products and the demand for it vary considerably in different countries, that is explained by specific economic, social and environmental factors. Positive dynamics, in particular, is the result of implementation of the policy of sustainable development and the principle of ecological imperative at the macrolevel. The changes are caused by demand for organic products, reflect the conjuncture of relevant markets and the competitive advantages of producers.

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The specific combinations of factors determining the dynamics and the structure of organic production also condition the government policy tools for this segment of economy.

The subject of research on organic production covers various aspects: the economic assessment of its scale and the technological processes impact on the state of environment and on the results of economic activity (Fess, 2018; Kuepper, 2010; *The World of Organic...*, 2017; 2018); the analysis of the organic products range diversification and new markets emerging (Hranovska, 2017; *Organic Agriculture...*, 2018); the study of social effects for rural areas (Sanders, 2014); the investigation of the organic production impact on the competitive development of agriculture in Ukraine (Kyrylov, 2015). Researching organic products supply chain, scientists focus on the distribution of added value among actors (Yakymyshyn, 2014; Sanders, 2016), the formation of consumer motivation (Anastasiadis, 2014; Vlahović, 2015), the need in collaboration among supply chain participants, in particular between retailers, suppliers and intermediaries (wholesalers), so that the retailer can create and increase value through a buyer-supplier relationship (Vieira, 2013; Naspetti, 2011). A wide range of mentioned research fields indicates the compound nature of the chosen subject and the multi-vector impact of the organic production on socio-economic development at micro- and macroeconomic level.

The purpose of the article is analyzing the global trends in organic production and consumption, identify the features of its development in different countries in order to substantiate the main directions and tools for the development in this segment of the Ukrainian economy.

The object of research is the development of organic production at the level of the global economy and by country. The subject of research is the economic aspects and factors of the development of organic sector at the level of the countries of the world.

Research methods. The growth rates of land resources and the number of organic operators, of the market capacity and the level of consumption per capita are estimated. Indicators are calculated for the global economy, as well as for individual countries to assess their share, to compare and identify leaders. The coefficient of determination was calculated to find out a statistical relationship between the level of adjusted NNI and organic consumption per capita for 36 countries. On the basis of a set of indicators, countries are divided into three groups to identify the features of organic policy tools.

Research results. Over the past twenty years, the organic products market and the scale of organic production have increased more than fivefold (to US\$89.7 billion and 57.8 million hectares, respectively). Australia, Argentina and China are leaders in production and the market volume leaders are the USA, Germany and France. The organic production is being stimulated by growing demand and the potential of supply is determined by the availability of the appropriate land resources and financing, the demand is stipulated by the level of income and consumers' motivation. According to the results of the regression analysis carried out for 36 countries, the level of

income is of decisive importance in the formation of the organic consumption model (the coefficient of determination is 69%). Switzerland, Denmark and Sweden have top ranking in terms of per capita consumption in 2016 (US\$304.14, US\$251.97 and US\$218.67 respectively). In most countries of Eastern Europe, in the countries of Africa and the East where the consumption is low (less than US\$5) the high growth rate of the organic segment is stimulated mostly by external demand. To enhance organic agribusiness and market, governments use a combination of direct and indirect tools to reduce costs of farming transformation into organic, to cut operational and transaction costs (direct payments and subsidies, refinancing), to raise awareness of producers and consumers about the benefits of organic production and consumption (educational and promotional activities), and to develop cooperation among market operators.

The research results, which reflect the state of the organic sector and factors determining changes have both theoretical and practical value and can be used for further research and educational purpose, as well as for the development of recommendations for organic policy in Ukraine.

2. Results

The concept of organic agriculture has been traced to the beginning of the twentieth century and substantiated by need to address longstanding problems – soil erosion and depletion, loss of the species diversity, deterioration of the quality of food and feed, spread of poverty among rural population (Kuepper, 2010). First, the main purpose of organic production was the introduction and implementation of agricultural environmentally harmonized practices. Now, according to the EU Council, organic production is an integral system of agribusiness management and food production that combines the best environmental practices, high levels of biodiversity, conservation of natural resources, high standards for animal welfare and production methods in accordance with the requirements of certain consumers to products produced using natural substances and processes (Council Regulation..., 2007). At present, not only environmental issues and food safety, but also end-users' preferences and food industry demand (largely unmet) stimulate further development of organic production (Sanders, 2014).

The organic production is being practiced in 178 countries of the world, covering an area of agricultural land of 57.8 million hectares, that is 5.3 times more than in 1999 (Table). Some countries officially started this type of agriculture in 2015 (Brunei Darussalam, Cape Verde, Hong Kong, Kuwait, Monaco, Sierra Leone, Somalia). Regions with the largest volumes of organic land are Oceania (27.3 million hectares, about 50% of the world organic area) and Europe (13.5 million hectares). Australia (27.1 million hectares) and Argentina (3.0 million hectares) are the countries with the largest area occupied by organic production. China (2.3 million hectares) took the third place, shifting the United States from this position, in 2016.

The growth of organic agricultural land in 2016 amounted to 7.5 million hectares with a growth rate of 15%. Australia made the greatest contribution to the increase – 5 million hectares of 7.5 million hectares (66.7% of world growth). The share of other countries in the world’s positive dynamics is not great, but their individual growth rates are significant compared with the previous year: China – more than 0.67 million hectares (growth rate in the country – 42%), Uruguay – more than 0.3 million hectares (growth rate – 27%), India and Italy together – 0.3 million hectares. In Europe, the area has increased by 1 million hectares (growth rate – 6.7%). The legislation on the production and turnover of organic products operates in 87 countries. The number of producers of the organics (producers) varies considerably in different countries, reaching the maximum level in India (835 thousand), in Uganda and Mexico (210 thousand in each country) in 2016. Information on the number of operators engaged in finishing and processing (processors) of organic materials and production of final organic products, is partly available.

Table. The Key Indicators of Organic Agriculture
(The World of Organic..., 2017; 2018)

Indicator	2015		2016	
	World economy	Top countries	World economy	Top countries
Area of land engaged in organic production	50.9 million ha (in 1999 - 11 million ha)	Australia (22.7 million ha) Argentina (3.1 million ha) USA (2.0 million ha)	57.8 million ha	Australia (27.1 million ha) Argentina (3.0 million ha) China (2.3 million ha)
Share of land engaged in organic production in the total area of agricultural land	1.1%	Liechtenstein (30.2%) Austria (21.3%) Sweden (16.9%)	1.2%	Liechtenstein (37.7 %) French Polynesia (31.3%) Samoa (22.4 %)
Other land (not agricultural)	39.7 million ha (1999 4.1 million ha)	Finland (12.2 million ha) Zambia (6.6 million ha) India (3.7 million ha)	39.9 million ha	Finland (11.6 million ha) Zambia (6.7 million ha) India (4.2 million ha)
Number of producers	2.4 million (1999: 200,000)	India (585,200) Ethiopia (203,602) Mexico (200,039)	2.7 million	India (835,000) Uganda (210,352) Mexico (210,000)
Organic market	US\$81.6 billion (EUR 75 billion) (2000: US\$17.9 billion)	USA (US\$39.7 billion, or EUR 35.8 billion) Germany (US\$9.5 billion, or EUR 8.6 billion) France (US\$6.1 billion, or EUR 5.5 billion)	US\$89.7 billion (EUR 82.4 billion)	USA (US\$43.1 billion, or EUR 38.9 billion) Germany (US\$ 0.5 billion, or EUR 9.5 billion) France (US\$7.5 billion, or EUR 6.7 billion)
Number of IFOAM -Organics International affiliates	2017 – 833 in 121 countries	India – 111 Germany – 88 USA – 63 China – 56	2017 – 1,003 in 127 countries	Germany – 88 India – 111 China – 56 USA – 63

This is caused by the differences in the method of grouping business entities of the organic segment (in some countries they are not divided into the given categories), as well as the peculiarities of data provision in general. Based on available information on operators in European countries, the largest number of processors is registered in Italy (16,578 units), Germany (14,501), France (12,826). These countries are leaders by this indicator (taking into account the fact that the US statistics does not highlight processors as a separate category in the report).

The global organic market is characterized by a concentration of demand: about 90% of organic food and drinks are consumed in North America and Europe. Countries in Africa, Asia, Latin America, even the vast majority of operators in Australia and New Zealand produce organic products exclusively for external markets. Organic markets of the USA (US\$43.1 billion), Germany (US\$10.5 billion) and France (US\$7.5 billion) have the largest market capacity.

The world organic market in 2016 amounted to US\$89.7 billion, that is 10% more than last year. According to the statistical data the greatest contribution to this growth is made by the US economy – 42%, French consumers – 17.3% and Germany buyers– 12.3% (figure 1). The highest rates of the organic market growth by countries are observed in Ireland and France – 22% of growth, Denmark and Norway – 20% of growth in national consumption.

The leaders by the share of organic products in total domestic market are Denmark (9.7%), Luxembourg (8.7%), Switzerland (8.4%), Austria (7.9%), Sweden (7.9%). In Western Europe a high rate also takes place in Italy and the United Kingdom. Such Eastern European countries as Poland, Ukraine, and Hungary are becoming important producers of organic crops. However, their domestic markets of organic products are relatively small in scale.

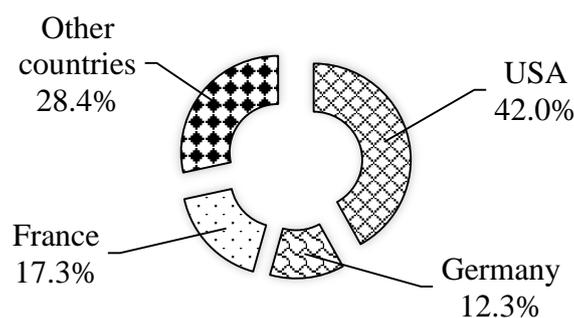


Fig. 1. Contribution to the global organic market growth by country, 2016
(The World of Organic..., 2017; 2018)

While the highest consumption per capita by continent occurs in North America, the highest indicator by country is observed in the European countries with a high share of organic market: Switzerland (US\$304.14 – the world’s highest volume), Denmark (US\$251.97), Sweden (US\$218.67) (Fig. 2). Previous research on organic

consumption are focused mostly on the factors determining it estimated by means of questionnaire survey method. Such the studies were conducted in particular in Australia, France, Germany, Lithuania, Poland, Romania, Taiwan and some other countries (Chih-Ching Teng, 2015; Dumea, 2012; Żakowska-Biemans, 2009). There are generalizing assessments as well (Jyoti, 2017; The World of Organic..., 2018). The list of factors generating consumer positive attitudes is pretty similar so as their ranking is: taste, habits, healthy lifestyle, food safety, environmental consciousness, consumer confidence. The environmentally responsible consumption model is associated with countries where the organic consumption is more than US\$100. For example, most German buyers of organic food buy it because they are sure that organic farming is less polluting. The share of French consumers with similar beliefs is 58%. A typical portrait of the consumer of the organics matches in most countries: inhabitants of large cities with high income and meticulous attitude to food, most of them – women and/or young parents.

Respondents were asked about the main issues and they mentioned high price and limited availability. These obstacles can deep the “attitude – behavior gap” and play a critical role in low-income countries. There is quite a wide divergence between the per capita consumption. We consider income as a key factor that causes a significant organic consumption variation by country (figure 2). To estimate how much the adjusted NNI matters, we used the model of pair linear regression, where the dependent variable (Y) was the level of consumption; the independent variable (X) was the level of adjusted NNI per capita (in 36 countries). An equation of the theoretical relationship is:

$$\hat{Y}=3.666*X - 29.257$$

The model is statistically reliable according to the Fisher’s F-test (with significance level 0.05 $F^c = 66.409 > F^t = 4.12$). The X coefficient is statistically significant according to the Student’s t-test ($t^c = 8.149 > t^t = 1.691$). It can be stated with a confidence level of 95% that the growth of adjusted NNI by US\$1,000 increases the organic consumption by US\$3.666. It has been found that the level of economic development of the country in terms of adjusted NNI per capita explains the variation of organic consumption on 66% (the determination coefficient $R^2 = 0.66$). That is why, as we show later, in some countries there are the government-funded programs and projects aimed at stimulating organic consumption and at the direct supplying organic products for the specific population groups, for instance, for school pupils. High income in developed countries makes the organic products affordable stimulating both domestic production and import.

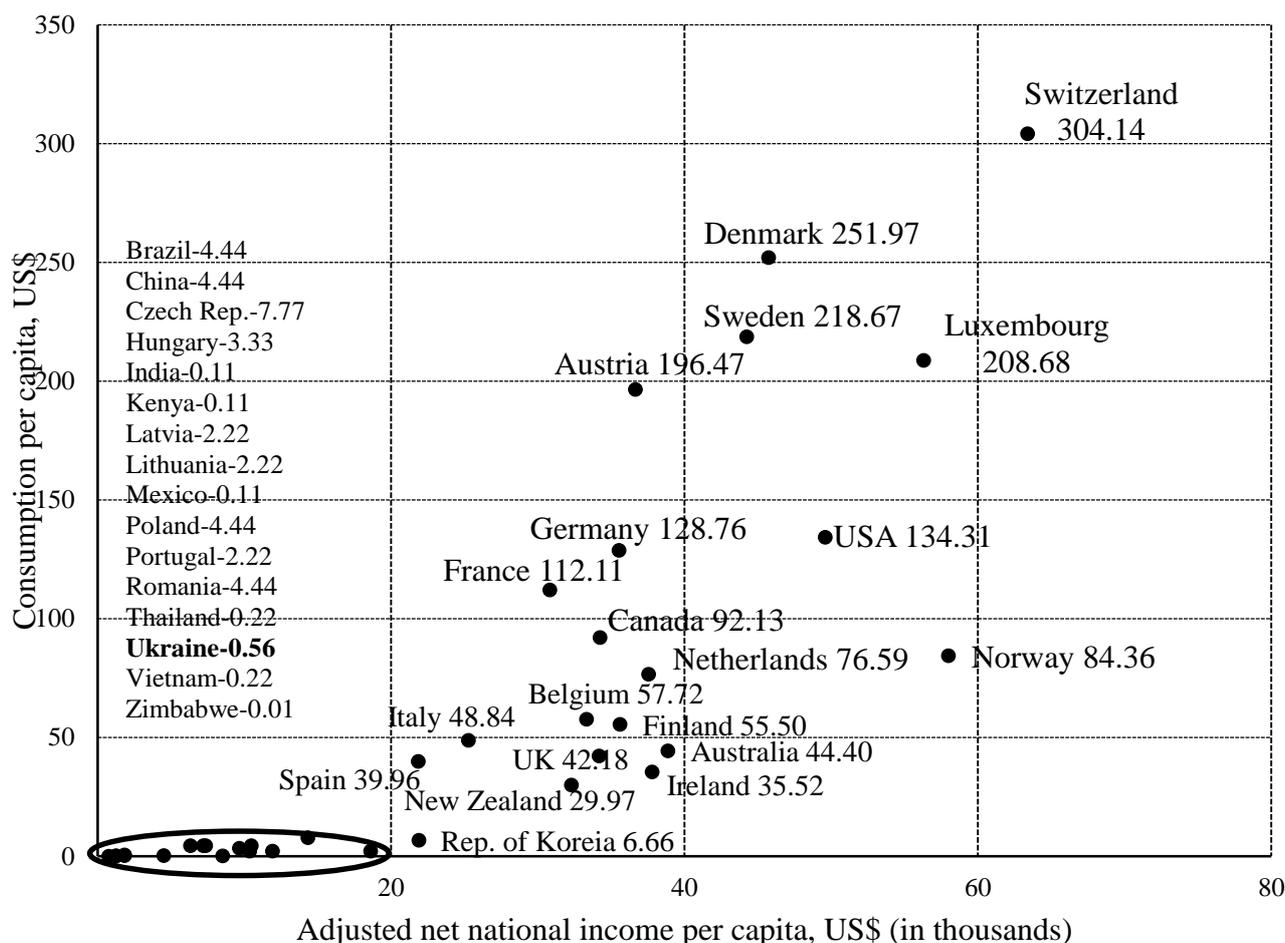


Fig. 2. Relationship between adjusted NNI per capita and consumption of organic products, 2016 (Statista...; The World Bank...; The World of Organic..., 2018)

The influence of other factors accounts for 34% of the variation in consumption. As mentioned, these factors are consumption traditions, consumer awareness, the development of market infrastructure and others. That is why there are different countries in the group with organic consumption below US\$5: the ones with the level of ANNI per capita US\$1,200–1,800 (Kenya, India, Vietnam) and those with the indicator value above US\$10,000 (Latvia, Lithuania, Poland). In the former the internal consumption is not a factor determining positive organic production dynamics but covers the increasing demand for organic products in developed countries.

The practice of organic agriculture is impactful on economic processes. Farmers can charge higher prices for their products that means higher added value comparing with conventional agribusiness. The in-depth analysis of the added value distribution in the supply chain in 9 countries (Czech Republic, Germany, Denmark, Estonia, Spain, France, Hungary, Italy, Great Britain) for three products (drinking milk, apples and paste made of hard wheats) based on the materials of 18 research studies found that the organic food market is represented by three components: markets that depend on imports from the third countries; markets that are predominantly based on

domestic production; markets that currently entered the EU and are at the stage of structural development (Sanders, 2016).

According to the assessment, the share of organic producers in the total added value doesn't differ much from the share of conventional ones. In both cases, the farmers' contribution to added value is pretty low. This may be partly explained by the similarity of organic and conventional supply chains. It was found out that the added value distribution directly depends on the structure and characteristics of a specific supply chain, in particular, the level of integration and interaction among market agents. Investing in products quality and diversification and improving attitudes towards organic products are the contributive factors to a higher added value as well.

While raw organic product mix remains relatively steady the range of end products is wider: meat products, baby food, wine, beer, yoghurts, juices, tea, coffee, confectionery, bakery, cereals for breakfast, chilled meat, semifinished products, canned fruits and vegetables. Organic processors have better opportunities to develop new production directions to satisfy diverse consumers tastes and preferences. Typical sales channels don't significantly differ between conventional and organic producers: local and specialized organic markets, specialized organic stores, departments at stores, direct raw material supply, online sales, etc.

One of the modern trends of organic production in the EU is stimulating short supply chains and interaction among local producers, local market retail agents and consumers. Such an interaction being an effective mechanism of rural areas development creates the synergy of different sectors of the economy – agriculture, tourism, food industry and so forth (Yakymyshyn, 2014). A smaller number of participants in the supply chain, co-operation among organic producers and other operators, creation of regional organic brands, special agreements between upstream actors and retailers for high quality products, direct marketing increase bargaining power and can provide farmers with higher share in the final price. The access to the information on the origin and characteristics of products represents an additional benefit for local consumers. Thus, the development of regional (ideally – local) markets facilitates development of the organic industry.

Because of positive effects on individual economic actors and economy as a whole, governments are paying much attention to stimulating the organic sector. Specific tools of influence are determined not only by the level of production development but also by the performance of the organic market, market infrastructure, institutional environment, export opportunities and access to financial resources. Organic production has been identified as a key element in the EU sustainable development management in the field of natural resource. The organic policy tools are aimed at different supply chain elements and have a shape of financial and information support of producers, stimulation of the organic products consumption, promotion of the development and implementation of innovative projects (Guidelines..., 2017; Organic farming..., 2014):

1) direct payments; according to the new Common Agricultural Policy (CAP), starting from 2015, all the EU member countries must use 30% of direct payments to finance sustainable development practices;

2) the financial support of transformation of conventional farming into organic according to the Rural development programmes (2014–2020). Additional financial funding is available for promoting cooperation in the food sector to stimulate innovations, introduction of quality control system for agricultural products, creation of producers and processors associations etc.;

3) the enhancing of awareness of organic farming under the new CAP with the purpose of promoting “green development”: associations of organic farmers, associations of other agricultural producers, environmental organizations and other stakeholders may organize educative and promotional events in rural areas under the EU co-financing;

4) School Fruit and Vegetable Scheme (SFVS) and School Milk Scheme (SMS): EU finances projects that enable schools to get organic products and integrate the topics about organic production to the educational process. These projects set the pupils’ ties with organic farming and help to create a long-term demand for organic products;

5) promotion of EU organic farming: EU is financing trade (international trade) organizations to raise the European consumers’ awareness of organic products, quality control system and to build consumers’ knowledge and recognition of the organic logo. EU considers all types of promotion activities in domestic and foreign markets as potential projects to be financed. Typically, the EU finances up to 50%, the applicant – at least 20%, and the EU member co-finances the rest;

6) scientific research and innovation. The Agricultural European Innovation Partnership (EIP-AGRI) supports farmers, researchers, advisors, businesses associations, non-government organizations in rural areas for cooperation and collaboration in innovation projects. Financing is provided by the European Agricultural Fund for Rural Development (EAFRD) and the Horizon 2020 program.

The tendency of implementation of the various forms of the organic sector support takes place in other countries. For example, the program “Toxin Free Nation Program” was introduced in Sri Lanka in 2016. This is a 3-years plan, which establishes ten areas of activity aimed at a gradual phasing out of toxic chemicals in agriculture (Powered by people..., 2017). The federal government of India launched a program PKVY, according to which, 40 million euros are appropriated to the development of the organic sector. The Ministry of Agriculture continues to support 150 thousand farmers. Also, government funding covers costs of the establishment of bodies for organic products certification and obtaining by them the appropriate accreditation.

To foster the organic sector in the Philippines there are educational activities popularizing organic practices and explaining relevant benefits, subsidies refunding certification-related costs, costs on organic production resources and research. In

Armenia, the government launched the “Organic Agriculture Support Initiative” project, funded by the EU, to implement measures stimulating organic agriculture.

The government of China plans to invest about EUR 187 million in education and training of farmers with emphasis on organic and sustainable agriculture during 2016–2020. Appropriate measures are implemented at the local level as well. For example, in São Paulo 2 million lunch meals for school pupil will have become “organic” by 2019.

Organic agricultural policy has developed rapidly in the USA in recent years. The federal government and state governments offer a wide range of measures to participants of the supply chain. The farmers support has been transformed from direct subsidies per unit area into various forms of direct and indirect assistance (Help for Organic...; Krykunova, 2018; Sanders, 2014). Since January 2017, certified organic producers and processors may receive a refund of up to 75% of certification costs, but not more than US\$750 for each certification case once a year. The Farm Service Agency (FSA) finances the transformation of farming into organic, the costs of real estate, equipment, insurance, buffer zones creation, operating costs, costs of equipment for storage and processing, reimbursement of crop losses, costs of water and land resources conservation, field mapping and reporting.

The practice of organic production regulation includes a system of tools and directions that can be classified according to different criteria (figure 3). The tools mentioned should be in line with general agricultural and food policy, the elements of which are also related to organic production, but may conflict with its principles. Examples of policy tools, which are potential sources of negative impact, are subsidies for chemical fertilizers and synthetic pesticides; permits for the import of pesticides and their use; support for the cultivation of energy crops (biogas or biofuels producing plants); unfavorable regulation of the production of organic fertilizers and fertilizers produced by farmers, plants and seeds protecting products; unfavorable conditions of agricultural risk management programs (compensation schemes for harvest losses, etc.); permits for the cultivation of GMO crops; legislative acts regulating access to agricultural land.

In order to enhance the organic supply chain, governments use different combinations of direct and indirect regulation tools determined by the conditions of production, capabilities and needs of a particular economy. Different stages and conditions of development require a suitable combination of organic policy tools, since their contribution and effectiveness vary significantly depending on the scale and qualitative characteristics of the analyzed sector of the economy. For example, direct payments to farmers play an extremely important role at the initial stage of production and supply stimulation, contributing to the positive dynamics of the organic sector. In countries with developed organic production and limited land resources that meet the requirements, direct subsidies remain important, but by their nature are no longer critical to persuade farmers to transform conventional production into organic and can't stimulate further significant growth through factors supply.

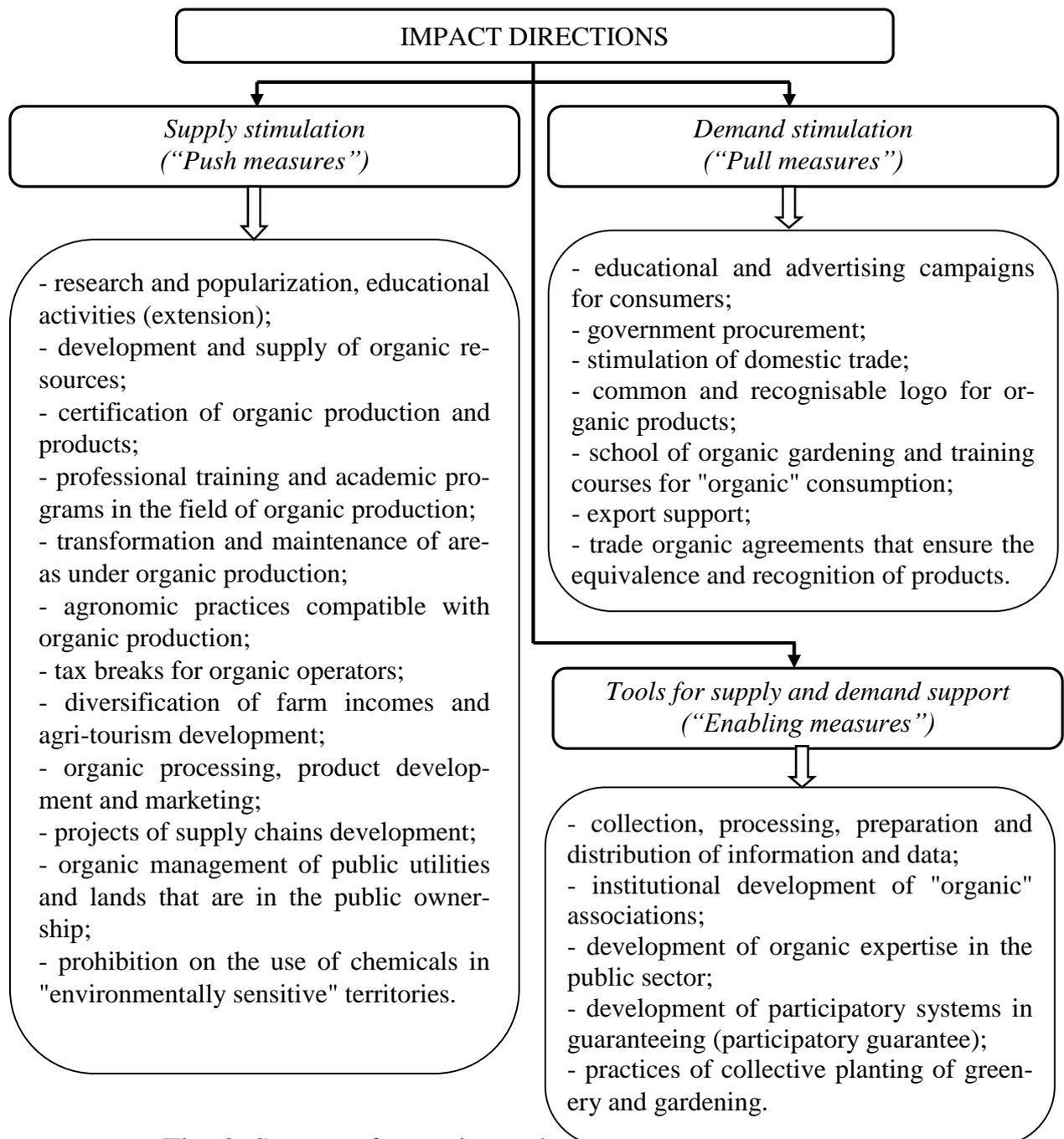


Fig. 3. System of organic production support in practice
(Guidelines for public..., 2017)

In developed countries, the market is characterized with high and continually expanding capacity and the organic policy is an integral part of natural resources management according to the concept of sustainable development. The policy is aimed at the market expanding in the long run, rural areas development, stimulating research, diversifying high added value end organic products.

In some countries the simultaneous accelerating dynamic development of the organic market and organic production takes place. In this case unilateral support for farmers may have a negative impact on the market causing a significant imbalance of supply and demand. On the other hand, stimulation of the demand for organic products alone can't guarantee introduction of organic practices at local level. Besides, the dynamics of the organic sector is determined not only by mentioned factors, but also by others, among which a positive attitude of farmers and consumers towards organic practices, access to the information on organic production technologies are the most important.

In developing countries, where the organic market was not formed the organic production is aimed at the export that creates the source of farmers' income. Competitive advantages in this case are provided by a relatively low level of soil pollution and land use costs, cheap labor. At the initial stage, under conditions of financial constraints, underdeveloped market infrastructure, low technological level of production, low farmers and consumers' awareness direct payments per unit area for the transformation of conventional farming and consulting support are of paramount importance.

The scale of organic production in Ukraine is growing at an accelerated pace. According to the Ministry of Agrarian Policy and Food, more than 420 producers of organic products have been registered in Ukraine by June 2017. Certified organic production occupies 421.5 thousand hectares of land (that is, no more than 1% of the total area) and certified wild crops (herbs, berries and mushrooms) – 550 thousand hectares of land (Novyi zakon...).

Ukraine ranks the 11th in Europe and the 20th in the world by the total area of agricultural land certified as organic in the beginning of 2017. 48.1% of the cultivated area is occupied by grain crops (the 7th place among the countries producing organic grain), more than 16% – by oil crops (the 5th place in the world); 4.6% – by bean crops (the 7th place). Vegetables occupy 2% of the land (the 10th place), and fruit – 0.6% (Analiz rynku..., 2018).

The development of this segment is mainly determined by exogenous factors: the permanent growth of organic demand in the EU stimulates exports that explains high investment attractiveness. According to the commercial service of the US Embassy in Ukraine, the average return on investment in organic farming is about 300%. The domestic organic products market started to take its shape in the early 2000s, amounting about EUR 400 thousand in 2006. In 2008, the first marked organic products appeared in retail trade (Hranovska, 2017). Development of the domestic market is constrained by low purchasing power, insufficient awareness of organic products, absence in most cases of environmentally responsible model of consumer and producer behavior, lack of effective organic marketing and cooperation among supply chain actors.

The annual volume of the domestic market in the current period is EUR 21–22 million. Organic consumption per capita in Ukraine is EUR 3 (in the beginning of 2018), while in the EU an average amount reaches EUR 53.7. By the volume of the

internal organic market, Ukraine ranks the 25th in Europe. From 1 hectare of organic land in Ukraine the products worth EUR 50 are forwarded to the domestic market, while in Europe this value is EUR 2,345 (Orhanichniy rynek...). Consequently, most products satisfy the external demand (even taking into consideration lower productivity in agriculture). In 2016, the volume of organic products exported from Ukraine amounted to about 300 thousand tons worth more than USD 65 million (estimates according to the survey of all Ukrainian exporters of organic products, conducted by the Certification body “Organic Standard”). The Netherlands, Germany, Great Britain, Italy, Austria, Poland, Switzerland, Belgium, the Czech Republic, Bulgaria and Hungary are the 11 biggest countries (in terms of volume) importing the Ukrainian organic products of operators certified by all certification bodies. The Ukrainian producers also provide export to the USA, Canada, Australia and some Asian countries.

The export orientation of organic production in Ukraine determines the current trends in its development (Orhanichna polityka...):

1) agricultural holdings, looking for new markets and products, consider organic direction as a perspective way of adaptation to lower prices on traditional products in world markets. A similar trend is replicated by medium and small export oriented operators;

2) the tendency of operators’ co-operation typical for developed organic production is taking place in the Ukrainian agriculture. In particular, the project The First National Agrarian Cooperative, which is a platform for the association of organic producers within the framework of cluster, was launched;

3) organic production has been identified as a priority of the agricultural strategy “3 + 5” of the Ministry of Agrarian Policy and Food, that implies the institutional basis improvement, the legislation and infrastructure development. On July 10, 2018, the Verkhovna Rada of Ukraine passed the Law 5448-d “On Basic Principles and Requirements for Organic Production, Turnover and Marking of Organic Products” (Pryiniato zakon...). Implementation of the legislation on organic production, circulation and labeling of organic products; establishment of the register of organic producers, certification bodies and organic seeds; the development of control (supervision) systems over the production and processing in line with the EU countries practice will help to overcome export technical barriers and build consumer confidence in the Ukrainian organic products;

4) mechanism for viticulture support and organic production stimulation through specialized land auctions has been developed and implemented. The participants are offered land for the organic production and viticulture at reduced rental rates. Benefits enter into force only after the actual start of investment projects – after the stage of planting, beginning of the certification process etc.;

5) export expansion. There is an active search for new foreign partners (the supply of organic wheat to the USA is one of the promising directions).

Both high potential of organic products export and the positive dynamics of the domestic market are factors determining the development of organic production in

Ukraine and its investment attractiveness. The sources of competitive advantages in world market lie in available non-involved resources, relatively lower costs for the land and labor use, and relatively low level of environmental pollution. The institutional base for the organic sector is at the formation stage.

3. Conclusions

1. During the last twenty years both the organic market and the area of organic agriculture land have increased as much as five times (to US\$89.7 billion and to 57.8 million ha respectively). The number of organic producers has expanded 13.5 (to 2.7 million). The world organic market in 2016 amounted to US\$89.7 billion, that is 4.5 times greater than in 2000. The growth of the organic segment provides economic, social and environmental benefits – development of agrarian production, food safety, rural development, consumer choice diversity, pollution reduction, farmers' incomes rise.

2. The growth rates of the organic production and consumption vary considerably by countries. Australia, Argentina and China are leaders in production and the market volume leaders are the USA, Germany and France. The organic production is being stimulated by growing demand and the potential of supply is determined by the availability of the appropriate land resources and financing, the demand is stipulated by the level of income and consumers' motivation. According to the results of the regression analysis carried out for 36 countries, the level of consumption per capita is determined by adjusted NNI by 66%. Switzerland, Denmark and Sweden have top ranking in terms of per capita consumption in 2016 (US\$304.14, US\$251.97 and US\$218.67 respectively). In most countries of Eastern Europe, in the countries of Africa and the East where the consumption is low (less than US\$5) the high growth rate of the organic segment is stimulated mostly by external demand.

3. According to the growth rates of production, market volume, export and consumption countries can be divided into several groups:

1) countries with developed production, wide range of high added value organic products, positive domestic demand dynamics, which can't be satisfied by domestic production (Denmark, Luxembourg, Switzerland, Austria, Sweden). Actually the domestic demand of these countries stimulates the development of organic production in the second and third group of countries;

2) countries, where the organic consumption is formed or actively growing and production is rising at consistently high rates in order to meet both domestic and external demand (for example, Poland, Ukraine, Hungary, China);

3) countries, where the production of organic products is aimed at providing export (Kenya, India, Vietnam). In this case, the exported products are mainly raw materials.

4. In order to enhance the organic supply chain, governments use different combinations of direct and indirect regulation tools for organic supply and demand. These measures are aimed at reducing costs of transformation farming into organic, operation and transaction costs (direct subsidies, refunding etc.) and to improve producers' and customers' awareness of benefits of organic production and products (educational and promotion activities). At the initial stage direct subsidies for pro-

ducers and the government-funded programs for current and potential customers have a crucial meaning for production and consumption.

5. Despite the domestic organic market in Ukraine in 2017 is 52 times greater comparing with the beginning of 2000s and is estimated as EUR 22 million, currently the development of organic production is determined mostly by export opportunities. To balance development, it is important that realization of competitive advantages in the global market in the face of growing demand be combined with the development of the domestic market and the formation of a model of organic consumption. For these purpose a range of measures are to be applied: government financial aid for transformation, certification, partly for products promotion; training and academic programs for producers and consumers; fostering collaboration among supply chain agents; the organic legislation implementation. This tools combination will not only directly stimulate environmentally responsible production practices, but also produce additional positive effects to rural population incomes and rural territories development, diversification of agrarian business, improvement of human capital etc.

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PASAULIO EKOLOGINĖ GAMYBA IR VARTOJIMO TENDENCIJOS

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Gauta 2018 10 29; priimta 2018 12 02

Santrauka

Kokios pasaulinės tendencijos turi įtakos ekologiniam Ukrainos sektoriui ir kokios tarptautinės patirties pagrindu taikomos ekologinės politikos priemonės gali būti naudojamos veiksmingai plėtojamos? Straipsnio tikslas – išanalizuoti pasaulines ekologinės gamybos ir vartojimo tendencijas ir pasiūlyti priemones jų vystymuisi Ukrainoje. Remiantis tarptautinių organizacijų statistiniais duomenimis ir išnagrinėjus bei apibendrinus mokslinius ir kitus šaltinius, apskaičiuojami ekologinės gamybos ir rinkos augimo tempai bei vartojimo priklausomybė nuo pajamų. Ekologinės gamybos variklis yra paklausa, gera žemės kokybė ir kitų išteklių prieinamumas bei finansavimas. Ukrainos ekologinio sektoriaus plėtra apima konkurencinių pranašumų įgyvendinimą pasaulinėje rinkoje, tuo pačiu metu plečiant vidaus rinką, dėl kurios būtina naudoti reguliavimo priemones: vyriausybės finansinę paramą gamybos transformavimui, sertifikavimui, produktų reklamai; informacijos ir švietimo programa; tiekimo grandinės dalyvių sąveikos skatinimą; teisės aktų įgyvendinimą. Straipsnis gali būti naudojamas moksliniams tyrimams ir mokymams, taip pat ekonominės politikos plėtrai.

Raktiniai žodžiai: ekologinis žemės ūkis; organinis vartojimas; organinė politika; ekologinė gamyba; tiekimo grandinė.

JEL kodai: O13; Q10; Q18.