
Bio-products market in Georgia: current challenges and development perspectives

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Abstract: The article explores the organic food market in the world and in Georgia. The growth tendency of demand for bio-products is assessed. For Georgia, bio-production is considered as an alternative to the traditional system of agricultural production. The paper examines the experience of European countries. The ways for development of production of bio-products in Georgia are identified by comparative analysis; opportunities for population employment and income growth, nutrition quality, and environmental improvement are substantiated through the development of bio-production. The authors have studied the state programs for production of bio-products and sales promotion; conclusions were made on the feasibility of implementing adapted programs in Georgia. Qualitative research was carried out in order to identify the problems and directions of development in the field of bio-production and bio-market development; through the impact and urgency matrix were identified the barriers to bio-production, drawn conclusions on the identified problems and proposed appropriate recommendations.

Keywords: bio-products; bio-products market; urgency-impact matrix; a scheme of priority; state programs; Georgia.

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1 Introduction

The market for bio-products is characterised by growing trend worldwide. The number of farmers engaged in this sector and land areas used for growing bio-products is also increasing. According to the recent data, the world market for bio-products has grown over three times. Experts predict that the market turnover will reach 200–250 billion USD by 2020 (AgroNews, 2017). It is worth mentioning as well that global economic crisis made almost no impact on the production of bio-products and the bio-products market. In today's Europe, despite high prices the demand for bio-products has sharply increased. It should also be noted that the structure of consumers of bio-products is not homogeneous as such products are bought by people with different payment readiness, like a millionaire, a pensioner, a student. Such approach by customers affects the activities of the manufacturers and suppliers, which do not produce eco-friendly goods. The growth of bio-products market is also affected by the fact that in European countries organic farms receive funding from the state budget and almost all the states have various programs for encouraging both production and realisation of primary bio-products.

Bio production in Georgia is regulated by the Law 'on Bio Production'. The program to support bio production has been introduced since 2019. In general, organic products are environmentally friendly products made with the minimal use of pesticides, synthetic mineral fertilisers, artificial additives. The term 'bio' is a definition provided by the law of Georgia. Bio farming shall be regarded as a unified management system of production defined by international standards and legislation of Georgia by using certain methods that ensure environmental protection, efficient use of natural resources and preservation of biodiversity, ecological and biological balance. It shall be in compliance with the rules set according to the above mentioned requirements in the stages of production, processing, storage, packaging, transportation, labelling marking, distribution and sale (Resolution of the Government of Georgia No. 198, 2013). Herein, the terms 'ecological' and 'bio' or 'organic' are considered synonyms.

Organic farming in Georgia can be considered as an alternative to the traditional system of agricultural production. Due to the economic situation of the country, the development of bio-production is related to various, especially financial problems. However, considering that the transition to bio-farming is not only a precondition of healthy environment and healthy food but it also has a growing economic potential, to develop this field based on the experience of foreign countries seems to be quite important (Tsomaia, 2019).

The bio-product market in Georgia is underdeveloped; however, it is already observed a tendency of forming a layer of bio-products consumers (Europe for Georgia, 2017). This kind of customer is ready to pay a different price (Sirbiladze and Memarnishvili, 2016), especially, as the income of the population is gradually increasing. In addition, various studies also substantiate the attitude of Georgian customers to healthy food purchasing (Todua, 2017). In Georgia, the demand is mainly for local products as consumers consider that they contain less preservatives and other harmful substances (Kharaishvili et al., 2015).

Georgia is a small and mountainous country; therefore, it is quite hard for the country to compete on local and international markets with low prices and large quantities of agricultural products. On the other hand, Georgia has good climatic conditions for growing various and high quality bio agricultural products. Sustainable development of the sector will require development of bio-production to utilise export potential of Georgian bio-products both on Georgian and international markets.

Competition in international markets of bio-products is quite high. However, demand on this market is still higher than supply. This trend is evident in European bio-products market (Willer and Lernoud, 2019). Georgia has a natural and resource potential for the production of bio-products and in case this potential is effectively utilised, it can expand its position in the local market and find a niche in the international bio markets.

Identification of the current challenges in food markets, including bio-products markets, is highly important for effective utilisation of resource potential. Demand for ecologically friendly food products is expected to increase in the future, which, in turn, will contribute to sustainable development of agriculture (El-Hage Scialabba, 2013). Therefore, the issue of bio-products market development does not lose its topicality; on the contrary, it is becoming more important. For determining the prospects of bio-products market development in Georgia, it will be necessary to identify the factors that hinder the development of these markets, determine the attitude of the population towards bio-products, analyse the legislative environment of the country for

bio-production, implement state programs for producing bio-products and strengthening positions in the market, etc. Such study will also contribute to solving the problem of food security as well.

1.1 Research objective

The research objective is to identify current challenges on the bio-products market and to develop recommendations on the priorities of its development.

1.2 Research methods

General and specific research methods are used in the research process:

- bio-production and bio-market indicators are calculated by using statistical methods
- databases of bio-products market research, publications provided by Georgian and foreign research institutes as well as by various scholars and statistical data is used to determine patterns between analytical and statistical assessments; in-depth interviews with experts have been conducted to determine quantitative and qualitative indicators
- in-depth interviews have been conducted with experts for determining quantitative and qualitative indicators
- hindering factors for the development of bio-products market are identified using the urgency-impact matrix
- the main directions of bio products market development are identified by the 'priority scheme' and the priorities of stimulating economic policy are determined.

2 Literature survey and data discussion

Currently, many countries are facing the need of solving the problem of food security. Development of food markets and growth in the production of agri-food products play an important role in overcoming this problem and generally, in economic development (Kharaisvili et al., 2018). Developed food markets lead to the increase in population incomes; in addition, employment and welfare rates are high (Ekanem et al., 2016). In terms of increased demand for food, including bio products, it is important to assess trends of production development and improve productivity in the sector (FAO, 2017). Modern researches prove that food security is directly related to the growth of productivity, especially in developing countries; otherwise, increasing demand for food products cannot be met (FAO, 2017).

At present, the nutrition structure of the population in developing countries is under transformation – traditional food structure is replaced by high-calorie food and the food processed with high technology. As for the developed countries, one important trend is observed in these countries – a growing demand for healthy dietary products, including fresh fruits and vegetables. In such conditions increasing access to bio-products is considered a major challenge for the food market.

Urban trends have also affected nutrition structure of the population. Local agricultural markets have been replaced by modern supermarkets in low and middle income countries. However, this process is negatively evaluated by scientists in terms of impacts on health – supermarkets supply customers with processed food products with supplements (Mendez and Popkin, 2004).

Today, the global food market is seen as a new factor for inclusive growth. In addition, developing countries in these markets play an important role in supplying agri-food products (Dybowski and Bugala, 2016).

Against the background of structural changes in the economy and nutrition, the forecast indicators for 2050 are expected to create a special growing demand for agricultural land. The future of the society will largely depend on the global trends and challenges in this regard. Moreover, the changes in nutritional structure of the population require global changes in the environment from the perspectives of food safety and sustainable agricultural development (FAO, 2017).

In the conditions of structural changes, it is important to identify the factors that determine economic growth. In this respect, researchers consider the expansion of bio-economy and bio-products market as the main factor. Moreover, in many countries (e.g., Finland) national bio-economy is seen as a strategic direction for creating jobs (Ministry of Economic Affairs and Employment of Finland, 2017).

Researchers today believe that diversification of bio-production will have a major impact on agri-food production and food market development. The studies have concluded that bio-production is the only agricultural system that can settle many problems like environmental protection, employment, income generation, food quality improvement, etc. (Semos, 2002).

Bio-production increases in many European countries and in global context, Europe continues to be a leader in the production of bio-food products. This positive development is due to a number of reasons, some of the most important ones are the consumers growing demand for bio food products, the requirements for the production and labelling of bio food products, legal environment defined by the EU and national legislation, standards developed for bio products, etc. (Meredith and Willer, 2014).

Modern studies on the global bio-product market assess production processes in this area, provide price analysis and key policy directions, include structural changes in the import/export of bio-products, and describe the ratio of consumption and supply (Kuam News, 2019).

Development of bio-economy contributed to the creation of 2.7 million jobs in the EU countries, and this sphere provides safe raw materials for population and production sector (FarmEurope, 2017). In order to find a niche in the bio-products market, researchers seek to study prices and conduct a comparative analysis of prices for the bio-products of market participants (Bitter and Petryshyn, 2018).

According to the analysis of bio-products markets in the EU countries, both the number of bio-zones and the share of bio-products in the food markets are growing, (Willer and Schaack, 2015), and in some countries (in Bulgaria and Croatia) there is a boom of producing these products (BalkanInsight, 2018). The bio-market share is particularly high in Germany (almost 6%) (Schaack, 2017).

In 2017, the occupied area of bio-products accounted for 7% of the EU's total agricultural land. In the EU the total area under organic farming continues to increase. In

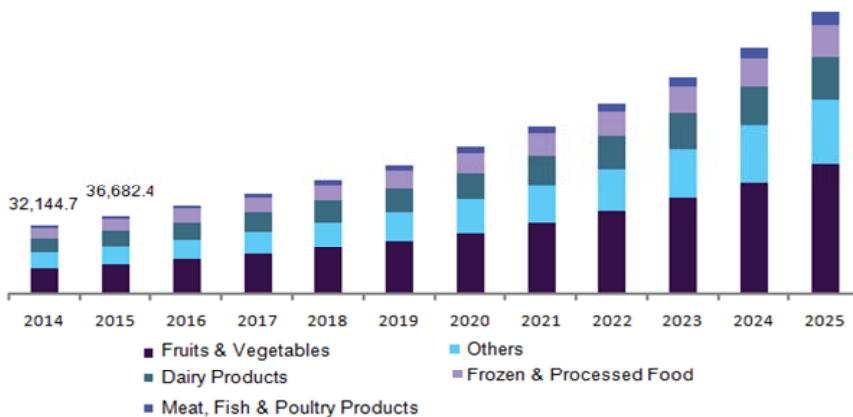
2018 organic farming covered 13.4 million hectares of agricultural land. Organic area made up 7.5 % of total EU agricultural land in 2018 (Eurostat Statistics Explained, 2017).

The demand for bioproducts is high in almost all European countries. For instance, the results of the study indicate that potential demand for these products in Hungary is high. In particular, 62.9% of the population prefers local products and 48.1% consider that it is not important for them whether these products are organic or not. The researchers have identified the factors that hinder both demand and supply in the bio market. Trust in bio-products is considered as one of the most influential factors (Szente and Torma, 2015).

The necessity of development of bio food markets is also substantiated by the study of factors that affect demand and supply of these products (Hamzaoui-Essoussi and Zahaf, 2012).

The bio-product market has grown almost four times over the past 15 years. The world's leading bio-products markets are fruit and vegetables, bread and cereals, beverages, milk and meat markets. On the global level, there is a continuous growth trend in the market of bio-grain food products (Golijan and Dimitrijević, 2018). Significant growth of the bio-products market is expected in the future (see Figure 1).

Figure 1 US organic food market revenue by product, 2014–2025 (USD million) (see online version for colours)



Source: Grand View Research (2018)

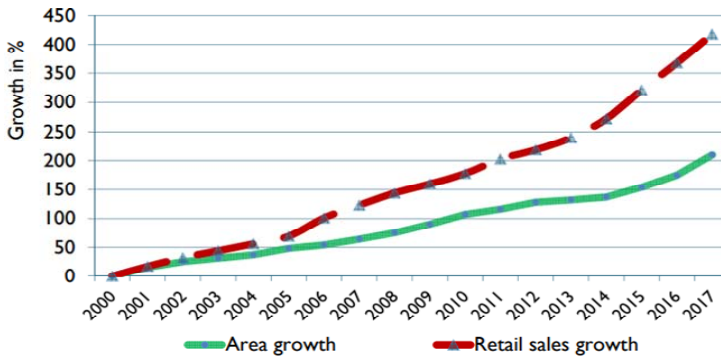
The development of bio-food market is confirmed by the increase in the land area used for growing bio-products and in the sales of bio-products (see Figure 2).

In the countries such as Slovenia, Hungary, Poland and Slovakia, jobs are shrinking due to ongoing structural changes in traditional industries. On the other hand, the bio-food industry (wine, meat, milk) is developing well. Therefore, these industries represent a good way of creating jobs (Interreg Central Europe, 2017).

Bio-food and beverage industry is dominant in European and American countries. Development of bio-food production in these countries is promoted by state programs.

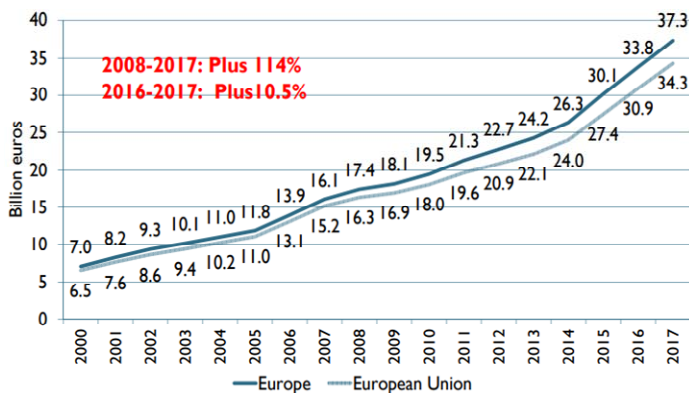
New technologies are being developed for encouraging development of bio production and financial and legal support is provided by governments for the introduction of these products in the markets (Fendrihan, 2016).

Figure 2 Europe: market growth and area growth compared 2000–2017 (see online version for colours)



Source: Willer and Schaack (2019)

Figure 3 Europe and European Union: development of retail sales 2000–2017 (see online version for colours)



Source: Willer and Schaack (2019)

The study of international experience of bio-farming has shown that the state support programs for these farms are quite diverse, including support for investing in organic farming (Ireland, Tunisia); support for the development of the bio-products supply chain (Austria); management of organic land in public areas and on public land (France, USA, Germany, Denmark, etc.); support for bio-product companies in producing, processing and marketing of organic products (Denmark); public procurements (Denmark, Brazil); promotion of local trade (the USA, Japan, Tunisia, China, Brazil, Bhutan, India, the Philippines); the collection and dissemination of local data (the USA, Switzerland, Canada); promotion of institutional development of organic associations (Belgium, Denmark); support for consumers educational programs (Denmark, Saudi Arabia); support for diversification of the company’s revenues and development of agri-tourism (Indonesia, Czech Republic, Italy), etc.

The US Department of Agriculture (USDA) has established the Farm Service Agency (FSA), which provides assistance to the farmers in transferring to organic farming, certifying, rehabilitation of buildings, insurance, operating expenses, storing and

processing goods, etc. (Farm Service Agency and Organic Agriculture, <https://www.fsa.usda.gov/programs-and-services/outreach-and-education/help-for-organic-farming/index>). For example, since January 2017, organic producers can visit any of 2,124 USDA FSA offices to receive 75% of their certification costs, which amount to \$750 per year. In addition, the program of financial assistance for crop losses due to natural disasters provides financial assistance for 55 to 100% of the average market price for organic crop losses between 50 to 65% of expected production due to a natural disaster. Farmers are given low-interest rate loans to help farmers transition to organic production. The loan can be used to purchase or enlarge real estate, construct or improve buildings as well as for soil and water conservation, operating expenses, fuel, insurance, equipment, repairs, etc. In addition to the above assistance, farmers are offered assistance in mapping farm and field boundaries, preparing reports on organic acreage that can be provided to a farm's organic certifier or crop insurance agent, etc. (Farm Service Agency and Organic Agriculture, <https://www.fsa.usda.gov/programs-and-services/outreach-and-education/help-for-organic-farming/index>).

Bio production should be considered in the contexts of transition from classical system of linear economy to the system bio economy. This process requires new research, knowledge and technologies. At the same time risks and uncertainties are specific characteristics of this transitional process. For a bio economic development biotechnological advancement and social transformation is required. Researchers and experts suggest that challenges should be approached from a human behaviour perspective. New market opportunities will appear and new biotechnology products will provide benefits. Further development of bioeconomy will influence and be influenced by the public support and changing attitudes (Dinu, 2019).

The bioeconomy is an alternative economic mode of growth whereby renewable biological resources are transformed to meet food, feed, fuel and fibre needs. It has emerged as one potential alternative to meet societal needs in a more environmentally sustainable manner. As defined by European Commission, the bioeconomy: "encompasses the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, biobased products and bioenergy" [European Commission, (2012), p.9].

Political attention concerning the bioeconomy has been connected with ideas of the circular and the cascading principle of sustainable biomass use. From a policy perspective developing the bioeconomy is very complex. The bioeconomy has is influenced by a number of policy areas, actors, possesses, inherent trade-offs and conflicts regarding resource use. Successful bioeconomy must meet needs of various stakeholder groups of producers and consumers. A national bioeconomy policy can be an essential first step in establishing common bioeconomy principles, goals and governance objectives (Devaney and Henchion, 2017).

From the consumer point of view very often bio products are associated with 'fresh', 'environmentally friendly' and 'eco' foods. Thus, promotion and marketing of bio products can be successfully integrated in the sale system of locally produced food. Previous research and the experiences of initiatives of the Center for Environmental Farming Systems around the USA indicate that strong and transparent in-store promotional materials that communicate a certain package of characteristics can increase local food sales. Such package of characteristics includes value/affordability, freshness/quality, and direct social impacts [an initiative of CEFS (2013)].

Attitudes of consumers have great impact on food sale. Growing scientific literature exist that explore factors influencing purchase intention in general. As *John Cranfield, Spencer Henson and Jose Blandon explored* while socio-demographics characteristics play only a limited role in shaping local food purchase intentions, attitudinally-based variables have far greater influence. Positive views towards local farmers and agriculture in general, as well as food quality, are positively related to purchase intention. The importance placed on brand-specific quality is inversely related to the intention to buy local food. At the same time consumer opinions on the concept of local foods range from very strong support to critical view. Promotion of local foods have become an increasingly political issue (Cranfield et al., 2012).

The tendency of demand for food has an increasing trend and the development of food markets still remains one of the most important challenges of contemporary world. However, access to global food markets for Georgian agri-food products is limited due to low agricultural productivity, low product competitiveness, non-compliance with standards to enter the market, non-sufficient technologies and other factors. Positive tendencies of export growth of Georgian agro-food products exist in agro-food markets of Azerbaijan, Russia, Kazakhstan, Ukraine, Uzbekistan, Iran, Spain. At the same time, official statistics shows negative tendencies of export in Iraq, Italy, Germany, Angola, Saudi Arabia, Armenia and Czech Republic. Consequently, the development of food markets remains an important challenge for Georgia. The development of these markets will improve the economic and social performance of the society. In general, food markets are an important part of whole economy of the country and the city. Therefore it is necessary to pursue food markets development supporting policies at national, state and municipal levels (Kharaiashvili and Natsvlisvili, 2019).

Thus, overview of existing literature shows that foreign researchers have studied the trend of changes in the nutritional structure of the population and have argued that demand for bio-products is increasing. Also, the scientists evaluated strategic directions of bio-production, justified the opportunities for employment and income growth, improvement of food quality and environmental protection through the development of bio-production. The main focus is made on the positive results of the development of this field. The development of bio-production in Georgia is at an early stage. Accordingly, the following questions must be discussed: in which field of agri-food sector is the potential for bio-production development? What are the mechanisms for stimulating bio-production in Georgia and is it sufficient for the development of this field? What are the impediments to the development of bio production in the country? What is the financial and legal support for bio-production from the state? In which priority areas bio-production in Georgia can develop?

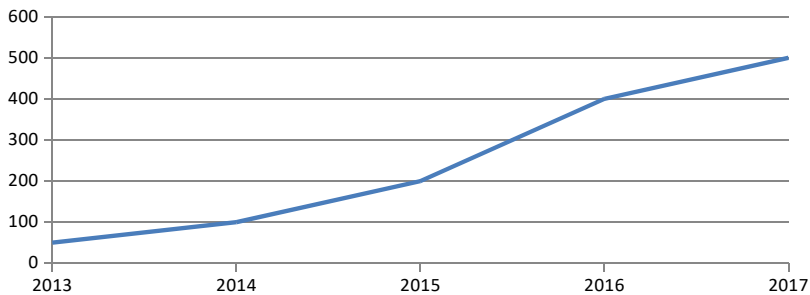
3 Factors effecting bio production in Georgia and development directions

As the analysis showed, different countries of the world attach great importance to the development of organic production and organic agriculture. In many cases, development of bio-production is considered as a guarantee for improving competitiveness of agriculture and increasing its profitability (Europe for Georgia, 2017). The above-analysed supporting programs are not available to Georgian farmers. Therefore,

bio-products sales network is underdeveloped. The problem is further complicated due to the low level of cooperation in this area development (Elkana, 2017).

Despite weak support policies, in general, bio-production in Georgia increases and the share of these products in the international bio-market is especially increasing. The sales volume of Georgian bio-products in Europe increased by 75% compared to 2013, while the annual average growth rate for retail sales of organic products was 12.6% (see Figure 5). According to the data provided by Caucascert, liquorice is at the top of the list of organic products exported from Georgia for many years. Over 300 tons of liquorice was exported in 2017.

Figure 4 Dynamics of export of Georgian bio-products, (tons) (see online version for colours)



Source: The Figure is Developed by the Author Based on the Data Provided by Caucascert, <http://www.caucascert.ge/>

In order to assess the development potential of bio-market, we first studied the level of certification of bio-products in Georgia. The bio-production certificate is issued by Caucascert Ltd., which is accredited by DAkkS (German Accreditation Body). Caucascert is the first local company that provides organic certificates which are legally recognised in Georgia, European Union and Switzerland.

According to the information provided by Caucascert, 19 entrepreneurs had gained organic certificates as of 25 April 2019 and 42 more entrepreneurs are in the process of certification (Caucascert, 2019). For obtaining the status of organic farmer in Georgia, an entrepreneur needs to go through the transition period and meet the requirements of bio standards. For annual crops this period lasts for two years. The crops harvested after two years are certified. Perennial crops need a three-year transition period and only the harvest obtained after three years is considered to be a bio-product. According to the data provided by the International Federation of Organic Agriculture Movements (IFOAM), 1,500 hectares of land is used to grow bio-products in Georgia, which accounts for only a very small part of total land area. In Europe, there are over 120 thousand farms engaged in organic farming and stockbreeding. For instance, in the Netherlands, Sweden and Germany 20% of agricultural land is occupied with organic farms; the growth rate is especially high in bio-products market for children, which accounts for almost 50% of total organic product market (Gakhokidze, 2015). The share of organic market in Denmark, Switzerland, Austria, Sweden and Germany is relatively high compared to other countries and it is growing annually (Meredith and Willer, 2016).

The study of the types of bio-products has shown that these products are mainly produced in the fields of viticulture and winemaking, cereal crops, some species of fruits and berries. In addition, bio potatoes, maize, vegetables and bay leaves are also produced

on a small scale. For Georgia, as a small country with rich traditions in viticulture and winemaking, development of bio-wine production is of great importance for industrial development of this sector and getting a niche of bio-products in the international market (Kharaisvili, 2017).

As mentioned above, the share of bio-production sector is increasing in most of the EU countries. The analysis of the directions of recent agricultural policies in these countries also shows that the policy mechanisms regulate the supply of quality products to consumers, which gives more incentives to the population to buy more bio-products and provides more possibilities for further development of the market. In this regard, first of all, it is necessary to introduce biological methods in the field of production of bio-products in Georgia (Mirvelashvili et al., 2018). It should be mentioned as well that in Georgia, and mainly in its capital Tbilisi, a consumer layer, who prefers healthy food and is ready to pay higher price for that has already been formed; this is very important, even more when their income is rising. In the nearest future, increasing customer demand for safe, high-quality food will become an irreversible trend in the long run. Therefore, in order to create an environment conducive to this process, it is necessary to identify the factors hindering the development of bio-products. In addition, the research conducted in Georgia proved the necessity of creating cooperatives in the agricultural sector in general (Sirbiladze and Memarnishvili, 2016). However, from the perspective of developing cooperatives among farmers, there are a number of barriers in the development of bio-production and bio-market. Overcoming the existing barriers and determination of the corresponding ways requires identification of the factors that hinder these processes.

Experts of mentioned field were surveyed in order to identify the factors hindering bio-production and bio market development. In Georgia 19 entrepreneurs are certified in bio production and 42 entrepreneurs are in the processes of certification. Correspondingly, both types of entrepreneurs were surveyed. Moreover, bio farming specialists, experts of bio farming association 'Elkana', officials and experts of the Ministry of Agriculture and Environmental Protection of Georgia were surveyed (in total; 45 representatives). The research was conducted in 2018–2019. In the process of evaluation of reviled challenges focus group discussion materials were used. Herewith individual deep interviews were conducted with representatives of state officials and experts.

The results obtained were sorted using the 'urgency-impact' matrix. Qualitative research was carried out to identify the problems and directions of development in the field of bio-production and bio-market development. Research field experts and bio product producers (certified and in the process of certification) were selected for the survey. The most urgent problem in the field was rated by one-point, the least urgent by five-points. For the research purpose respondents' views were grouped according to the similarities using the 'urgency-impact' matrix. As a result, it was determined that the following factors hinder the development of bio production and bio market in Georgia:

- In Georgia the share of organic farms in the total number of farms is small. Organic farms cover only 0.06% of all agricultural land in Georgia. The products grown on 1,042 ha are certified as bio. These land areas are used to grow apples, pomegranates, persimmon, grapes, cereals, beans, and essential oils. The surveys have shown that bio farms are small and the level of cooperation in this area is low.

- Access to financial resources for producers and exporters of bio-products is limited and participation in state support programs is low. There are no funds allocated in the state budget for the development of bio-production or promoting export of these products.
- Development of bio market is significantly hindered by the low level of bio-product certification. The problem is especially acute when it comes to entering the international markets. Development of bio-production is also hindered by expensive certification.
- Bio products are expensive and due to the low income of the population they cannot compete with cheap counterfeit food products; in addition, the impact of changing prices on food products is high.
- The sales network for bio-products is underdeveloped and, in general, the bio-products market is less accessible to the population.
- The legislative basis regulating the bio-production is weak and vague; the law of Georgia on biological agri-production is suspended and the market is saturated with products labelled as ‘eco’, ‘bio’, ‘ecologically friendly’, etc., however, these products are not certified according to the organic standards.
- Awareness of bio-products in the population is low.
- The National Statistics Office of Georgia does not record data on bio-production and bio agri-products markets. Determination of the land areas occupied with bio cultures became possible only by surveys which make it difficult to manage bio-lands. As a result, it is not possible to make relevant estimates and conclusions based on official data.
- There are scarce scientific studies on bio-production and food markets for these products (the level of competition is not evaluated; indexes of market power are not estimated, etc.).

Based on the analysis of the factors hindering the development of bio-production, the priority directions of development in this field were identified. Among them the most important directions are listed below:

- The small share of bio-farms in the total number of farms has been identified as the major challenge in the field of bio-production. Their small size is a problem as well. Increasing production scales should be driven by the development of land markets and the creation of cooperatives. Promotion and popularisation of individual farmers and farmers’ groups needed who do business by using bio methods. At the same time backing to bio-product producer companies in organic production, processing and marketing is essential. For example, Belgian annual support per hectare for transition to organic production is: 300 euros for pasture farming, 450 euros for arable farming, 900 euros for horticulture and viticulture. The similar scheme in India includes a subsidy of €680 per hectare, which is transferred to farmers’ clusters for three years (IFOAM – Organics International, 2017). Development of export stimulation programs for bio products is also a priority for Georgia.

- One of the obstacles to the development of bio-production is the low level of access to financial resources. It is necessary to develop special programs and activities to support bio-farming such as: co-financing the certification process, support for bio-production through the introduction of preferential credits, backing for environmental practices, co-financing measures to promote development of cooperative farming. At the same time it is important to purchase materials from the state budget for bio-production (for example, organic seeds, bio-fertilisers, mineral supplements, bio-control mechanism) and transfer them to farmers at low prices (such as in India, the Philippines, Mexico, Brazil). Strategic documents on access to financial resources should be developed at the government level in order to develop farmers' cooperatives producing bio-products, to improve access to the markets, to expand the bio-product sales network.
- Among the factors hindering the development of bio-production problems in the process of certification were identified. The certification process for bio products in Georgia is based solely on the standard developed by 'Green Caucasus Standard' (2016). In most cases the certification is costly and is not affordable to producers, especially to enter international markets. To gain accreditation for Georgian bio products locally and internationally, it is advisable to set up independent competitive certification structures. At the same time, there is a need to significantly reduce the cost of certification services. In many countries there is a national certification body financed from the state budget and free of charge to all bio producers (for example, Denmark). In some places organic product certification subsidies are introduced (for example, cost-sharing program in the USA, Tunisia, China) or certification costs are fully funded by the state (for example, the Philippines, Samoa). A number of European Union countries have subsidies for certification of food quality control scheme. In Georgia it is quite possible to form an independent national certification body that initially issues certificates at a relatively low cost only for local bio-farms.
- An important challenge in bio-production is the improvement of the laws regulating this area and the adoption of relevant legislative rules, which will have a stimulating impact on the development of bio-farming as a business. First of all, harmonisation with European and other food market standards and legislative space is needed. In particular, the Georgian Law on 'Bio Production' must be harmonised on above mentioned base. In addition, there are 31 ongoing trade agreements on organic products trade worldwide. Georgia has a free trade agreement with several countries, but there are no such agreements in terms of bio products. Preparation of trade agreements on Georgian bio products is also important.
- Other factors also hamper the development of bio-production, such as few researches on the contemporary challenges of the bio market, malfunctioning bio-market information system, low level of awareness of Georgian bio-products, low level of education and experience in the field and etc. According to the identified hampering factors, the main directions of development should be considered as followings: expansion and encouragement of research on bio-production and markets, development and delivery of comprehensive informational and consultation services to beneficiaries, development of adaptation mechanisms for foreign bio-production models and etc.

To achieve desirable directions of development of bio-production in Georgia wide range of attempts must be taken by the state. The development of bio-production in Georgia is one of the integral elements of the 'green economy policy' of Georgian Government and it can be developed in many directions. However, a major obstacle and delaying factor in the process of development is limited access to financial resources. However, specific funding programs (up to €4 million) with support of the Austrian Development Agency have recently been implemented (Commersant, 2018). Liberalisation of the tax regime in the field of bio production is also planned. Such programs and measures will play a certain role in stimulating bio-production, but there are still insufficient for development.

In order to improve access to financial resources in the near future, it will be important for the government to take part in co-financing the bioproduct certification process. Moreover, it is appropriate to support the creation of new bio-enterprises and increase export potential under the state program 'Produce in Georgia' that is initiated by the Government of Georgia. Georgia can also gain a niche in the international food markets by supplying bio-products. Consequently, it will be important to change the financial support schemes for bio-production in existing models of typical bank credit for agriculture with introduction of preferential lending credits and to shift priorities to bio-production. To co-finance measures that support the development of cooperative business in agriculture also should be considered as an important opportunity to reduce financial risks in bio-production.

4 Conclusions

The following conclusions and recommendations were made based on the assessment of emerging challenges and prospects for the development of the Georgian bio-products market:

- The scale of bio-production is very small. It is advisable to develop a relevant policy document on bio-production for encouraging development of bio-farm cooperatives and improving market access.
- The legislative basis regulating bio-production and bio market is incomplete or vague. Development of new regulatory rules and improvement of the existing ones based on the experience of the European countries, as well as providing consultation services to manufacturers and consumers is advisable.
- State programs supporting bio-production are weak in Georgia and in some areas there are no such programs at all. Specific programs for marketing and selling bio products need to be elaborated. It is desirable to carry out targeted activities related to product branding and popularisation, organising regular local fairs, attracting possible investments, promoting sales networks and encouraging market relations.
- Access to financial resources in bio production is limited. It is desirable to develop a financial resources management strategy which will take into account the resource potential of bio-farms and determine different approaches to cooperatives at different levels in terms of resources ownership.

- There is no official statistical data on bio-production and bio-market in Georgia. A structural unit should be created within the National Statistics Office of Georgia that will develop appropriate databases in accordance with the European forms of bio-production and bio-markets.

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