

# TRENDS IN ORGANIC FARMING DEVELOPMENT IN BULGARIA: APPLYING CIRCULAR ECONOMY PRINCIPLES TO SUSTAINABLE RURAL DEVELOPMENT

**Dimitar K. Dimitrov\*, Mariyana Ivanova**

University of Agribusiness and Rural Development – Plovdiv, Bulgaria

The paper examines the development of organic farming in Bulgaria through the viewpoint of its links to circular economy concept and its potential to contribute to sustainable rural development. The significant increase in the number of organic operators and areas is analyzed in the context of stable growth in the European sector and worldwide and the increase in consumer demand. Main indicators reported by the Ministry of Agriculture and Food of the Republic of Bulgaria and the support provided by the National Rural Development Program are used to present the characteristics of organic production and agricultural holdings. The advantages of Bulgaria are underlined as a country offering the necessary conditions, along with the main problems in production and marketing. Recommendations are provided for organic sector encouragement as a sustainable business model and an entrepreneurial initiative for sustainable rural development putting a special accent on networking and capacity building activities in connection to potential solutions and policy development.

**Keywords:** organic agriculture, circular economy, sustainable development

*The choice of organic farming is the first essential step to restoring fertility to the ground, and its development on a global scale is the first, necessary step for launching a new circular economy.*

(Vandana Shiva, Founder of Navdanya International, India  
1993 Right Livelihood Award & 2010 Sydney Peace Prize)

## Introduction

Contemporary world development is marked by a number of challenges connected to the quality and scarcity of resources and environmental protection. Successful environmental management will increasingly become the basis for the success or failure of economies and social systems. New technologies for environmental protection are being applied as well as great economic and social changes are being made in agriculture and in the society as a whole and these processes are spreading world-widely. The realization of the prosperity in the economics can be reached through development of a knowledge-based and environmentally oriented (or friendly) economy and a safe and fair society which is connected very closely to ecological sustainability and it is the key point in future development trends. As a sector in the very beginning of agricultural production chains, it is the most important in all these processes and especially in environmental protection (Dimitrov et al., 2012).

In the context of the move to a circular economy, agriculture is determined as a key sector in the transition to a low-carbon and climate friendly economy (Eip-Agri, 2015). A statement says that: "people who directly or indirectly manage our food systems are also the largest group of natural resource managers in the world and could become critical agents of the change in the transformation of current consumption and production systems" (Longo, 2016). There is a need of "a science-based and market-based approach" (Potočník, 2016), i.e. turning back to traditional systems and learning lessons of sustainability, productivity and circularity. Circular economy envisages the establishment of sustainable agriculture and food systems through various solutions aiming at closing the loop at the smallest possible cycles and use of minimal auxiliary inputs (Table 1) (Potočník, 2016).

In order for circular economy to work, agriculture should be a part of it as a primary sector needing sustainability and reflecting the principles and activities at the core of the circular economy and of the biological systems on which they depend (Jurgilevich et al., 2016). The concept of circular economy is closely linked to Europe 2020 strategy for smart, sustainable and inclusive growth concerning the framework of the initiatives to promote a more resource-efficient and competitive economy. New business models are being developed, stepping on the efficient management of alternative processes and products as well as opportunities to access new markets (Eip-Agri, 2015). Circular economy approach is very appropriate and attractive to small and medium-size businesses for raising their competitiveness, as well as to maintain employment and create jobs to generate growth in rural areas. Circular economy encouragement is also connected to the sustainable production and consumption, i.e. a new approach to agrifood chains and sustainable and healthy lifestyle choices. The long-term effects that are sought could be achieved by reducing risks and pressure on natural resources and by fostering innovation and collaboration<sup>2</sup>.

Considering sustainable development priorities, initiatives and activities in the context of the circular economy, organic production as a sustainable business model should be specifically concerned. Organic farming model is considered as an effective solution to address contemporary sustainability challenges on national and international level (Eip-Agri, 2015). Ecological, social and economic benefits of this production system could be extended to the whole supply chain applying innovations according to the circular economy principles.

One of the most accepted definitions is given by International federation of organic agriculture movements (IFOAM) along with its principles of health, ecology, fairness and care: "Organic Agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved (IFOAM, 2015).

According to Codex Alimentarius' definitions: "Organic agriculture is a holistic production management system which promotes and enhances

**Table 1** Summarized potential solutions and policies towards circular economy in agriculture (Jurgilevich, 2016)

Food System Stage	Policies and Solutions	Examples of Experiments
Food production	<ul style="list-style-type: none"> <li>■ support for local farming through various policy tools (investment support, tax incentives for nutrient recovery and subsequent re-use, improved opportunities to sell local foods locally)</li> <li>■ support for the use of recovered and recycled nutrients as a partial substitution for imported nutrients to tackle nutrient imbalance</li> <li>■ the use of holistic approach for nutrient flow regulation: coordinated and comprehensive policy packages to regulate nutrient flows, close the loops and prevent leakages; demand "origin passports" for nutrients (phosphorus) to verify sustainable sources and encourage recovery rather than import</li> <li>■ consideration of all stakeholders and users involved while creating nutrient regulation</li> <li>■ support for local producers who "de-specialize" or already practice mixed farming, i.e., have both animal and plant production and use manure for nutrients or support larger-scale infrastructures, where manure and waste nutrient recycling to field is organized in a holistic way</li> </ul>	<ul style="list-style-type: none"> <li>■ <b>manure</b> – recovery of nutrients from manure helps to avoid losses, contributes to resource savings, and provides agricultural producers with resilience. Manure treatment calls for new technological innovations to overcome the problem of nutrient imbalance both globally and locally</li> <li>■ <b>sewage sludge</b> – humans excrete almost all ingested P. In communities utilizing wastewater treatment, P is trapped at waste water treatment plants. P can thus be recovered and re-used, which would contribute to resource-efficiency, energy-efficiency and resilience</li> <li>■ smart agriculture and local food movement. A renewed interest in direct sale from farmers to customers with various new innovations is increasing. Community Supported Agriculture, food circle buying clubs, seasonal food subscription boxes, on-line farm shops are ongoing experiments. Benefits include reduced packaging, improved product freshness and transparency, shorter supply chains, and development of relationships between farmers and consumers</li> </ul>
Food consumption	<ul style="list-style-type: none"> <li>■ education of consumers about food, food chains, effects on environment, sustainability, waste management and packaging</li> <li>■ sustainable consumption habit promotion through campaigns, awareness and educational programs</li> <li>■ dealing with excessively high meat consumption by promoting plant-based diets, "less but better meat" strategies or meatless days</li> <li>■ introduction of more rigid control over labelling and claims</li> <li>■ demand for more transparency, proper labelling and information about a product and sustainability of its production processes and raw materials (e.g., carbon footprint)</li> </ul>	<ul style="list-style-type: none"> <li>■ vegetarian day is an established practice in Helsinki's schools: once a week, only vegetarian meal is offered to students</li> <li>■ "less but better meat" is a strategy that promotes consumption of smaller portions of meat obtained from extensive production, such as organic or free-range</li> <li>■ "dumpster diving" is a radical experiment where mostly young people collect free food that has been thrown out by supermarkets but is still edible</li> </ul>
Food waste and surplus management	<ul style="list-style-type: none"> <li>■ promotion of sustainable food production and consumption practices throughout the whole food supply chain</li> <li>■ closure of material loops at every stage possible</li> <li>■ support for local energy production using manure from farms as local energy source or bio-waste composting to produce gas locally</li> <li>■ revision of food standards ("ugly" food is not waste!)</li> <li>■ revision of possible market distorting quotas and subsidies</li> <li>■ support for businesses which apply such practices as industrial symbiosis, re-furbishing, re-manufacturing, work in cascades, etc. (through tax incentives or other economic instruments)</li> <li>■ removal of legal barriers at the institutional level in order to ease the redistribution of unclaimed food</li> <li>■ support for consumers' sustainable choices in packaging, deposit-and-refund schemes and recycling</li> <li>■ packaging regulations, prolonged shelf-life and health issues are balanced</li> </ul>	<ul style="list-style-type: none"> <li>■ cascades – creation of added value from material considered to be waste (e.g., coffee growing: berries are consumed by people, the remains can be used for growing mushrooms that can be sold as food, the left over can be fed to animals and mushroom roots can be used to create mycelium packaging. Animals produce manure and bacteria, which can be used to produce biogas)</li> <li>■ biogas production and deriving nutrients from food waste.</li> <li>■ ban for supermarkets on throwing away food waste (e.g., recent ban in France where supermarkets are obliged to pass food waste onto charities instead of dumping).</li> </ul>
At all levels	<ul style="list-style-type: none"> <li>■ support for the development of local experiments into mainstream practices at all stages of food supply chain</li> </ul>	

agroecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, cultural, biological and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system" (FAO, 2001).

Hence, the organic production is a production method which puts the accent on wise use of resources, environmental protection, health and safety to the greatest extent and responds to the concept of circular economy.

Organic agriculture directly contributes to ecosystem preservation and restoration of natural resources, rural development and prevention of land abandonment. Organic farming leads to stabilization of farmers' incomes by entering new, emerging market of healthy food products. The development of organic agriculture can contribute not only to significantly reduced greenhouse gas emissions and carbon sequestration in soils and biomass but also to reduced use of transport fuels, fertilizers, plant protection against chemicals and others. On the other hand, appropriate crop rotation providing good soil water reserve and rapid water infiltration during heavy rains are the basis for adapting agricultural systems to climate change (European Commission, 2014).

Organic production in Bulgaria is in the early stages of its development (the stage of rapid growth), therefore the potential and opportunities are great. Bulgaria has favorable opportunities for organic farming development. There is potential for a significant increase in the number of organic operators, the size of area, the number of animals in the control system and increase of diversity of organically grown crops and livestock (Ministry of Agriculture and Food Republic of Bulgaria, 2016). Bulgarian organic products have a good market recognition on the competitive European market, while the market for organic products in Bulgaria can be defined more as incipient.

The advantages and the main factors for successful organic farming development in Bulgaria in comparison to other European countries could be summarized as follows: good soil and climatic conditions; lack of polluting industrial complexes for more than 20 years; a good level of education, training and scientific research activities; implementation of projects for lifelong learning and vocational training in the field of organic production, management and trade (UARD, 2016); and the development of organic farming concept in Bulgarian society for more than 35 years. Because of the activities conducted by scientific communities, society is developing strong attitudes for positive reception regarding healthy food, thus reflecting the increase of organic consumers on national level following the general trend in Europe and in the world.

It is also worth noting that Bulgaria is characterized by its low price of labor force which is very important in organic farming where the share of manual processes is bigger and this impacts the price of the products. This, in turn could lead to a competitive price of the final products and higher competitiveness of the offered production of high quality on national and international markets. Strong state control over food quality and safety according to the EU requirements is a guarantee and a basis for the trust of consumers.

The problems facing organic agriculture and organic operators in Bulgaria can be summarized as follows:

- Production problems – a small area of production; difficulties in renting land for a longer period; labor-intensive manufacturing and labor shortages; disease control and pest control, weeds and soil fertility; limited supply of specific feed products for organic farming and organic farming equipment.
- Economic problems – lower earnings due to higher costs of production; smaller yields (especially in the initial period) and low cost production in transition; difficult access to financing.
- Problems in the realization and marketing – demand for large batches and regular deliveries (especially for export) but most producers have little capacity; demand for processed products, but the supply is mainly unprocessed, processing is inefficient for small producers; small domestic market. The growth is limited because of the low income population; consumers do not know enough benefits of organic farming and organic products.

Despite the obstacles, organic farming in Bulgaria is developing as a successful entrepreneurial initiative in rural regions (Nikolova, 2012). The study analyzes the state of the art of sector in the context of its potential to contribute to sustainable rural development through the application of the principles of circular economy.

## Material and methods

The study makes analyses of the information on the status of organic production in Bulgaria provided by the Ministry of Agriculture and Food of the Republic of Bulgaria (Ministry of Agriculture and Food of the Republic of Bulgaria, 2016) which is based on data from the annual reports of organic production certification companies officially approved by the Ministry of Agriculture and Food. Data from annual reports of the ministry are collected and processed along with the information and analyses provided in the national rural development program.

## Results and discussion

Organic movement has been growing in Europe reflecting vibrant and innovative nature of organic food and farming in response to the expectations of policymakers and the demands of EU consumers for high-quality food production that supports the environment, animal welfare and the development of rural areas. Since the mid-1980s, the total area of farmland under organic production has increased steadily to 10.3 million hectares (as of 2014) in the European Union (EU) alone. The total value of the EU organic retail market doubles from € 11.1 billion in 2005 to €24 billion in 2014. However, a significant imbalance continues to exist between the current supply of organic production and the growing demand for organic food.

In recent years, organic production in Bulgaria has developed at a rapid pace. There is a tendency to increase both the number of operators and areas and number of animals involved in the control system. Organic production has

experienced significant growth over the period of 2007 through 2012. In 2012, the certified areas are 11974 hectares (an increase of 43% compared to 2007) and areas in conversion to organic farming in 2012 are 27164 ha (growth above 5 times compared to 2007) (IFOAM, 2016). An increasing number of animals with methods of organic farming is also reported. The production is mainly oriented towards export due to weak market development in Bulgaria. The majority of farms in Bulgaria are characterized by low agricultural diversity; their structure is reduced to the cultivation of 1–2 cultures. A very small proportion of farms develop non-agricultural activities.

In Bulgaria, there are good prerequisites for development of organic production as it has been already discussed. In addition, the development of the sector is stimulated by the opportunities provided by the National Rural Development Program 2014–2020 and the efforts of the Ministry of Agriculture and Food, as well as by academic, business and non-governmental organizations working on promotion of the benefits for producers and consumers of organic products and foods.

Except for creating the legal framework for the functioning of the control system and certification, which makes Bulgarian organic products legitimate in the European Union, the Ministry of Agriculture and Food promotes the development of the sector through information and awareness activities on the health benefits of organic farming. These efforts are directed towards Bulgarian producers to operate on the Bulgarian market, so as most of the produced quality products to reach the Bulgarian consumers.

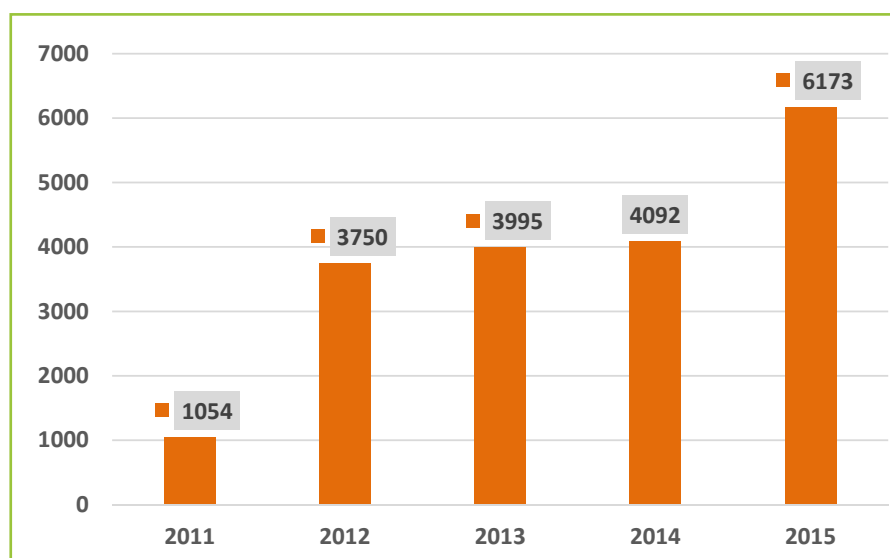
The priorities of the Common agricultural policy are set to support organic production which is stated in the framework of the National Rural Development Program which, for 2014–2020, adopts a special measure for organic farming encouragement different from the others, as well as some rank bonuses for organic farms. Bulgaria belongs to the countries that give a higher relevance to organic farming support within Rural Development Program (Ministry of Agriculture and Food of the Republic of Bulgaria, 2014).

The measures are expected to have a positive impact and contribution to sustainable rural development, contributing to the environment, mitigating the effects of climate change and supporting small and medium-sized farms, most of which are family farms.

The growing number of producers, processors and traders entering the system of control and certification of organic production shows that more and more businesses realize the benefits of this type of production. More and more farmers turn to organic farming, and more consumers seek healthy production uncontaminated by fertilizers and other chemical ingredients. The motivation of producers and consumers is the positive result for the ecological balance of the earth and for their own health.

At the end of 2015, the total number of registered organic operators was 6173–2081 which was more than in 2014 and nearly six times more than in 2011 (Fig. 1). Out of them, 5921 are producers, 161 processors of organic production and 91 traders (importers, exporters, wholesalers and retailers). In 2015, the number of operators in the control system for organic production represents 6.4% of the total number of registered farmers. For comparison, in 2014, this share was 5.4% and in 2011 – only 1.5% (Ministry of Agriculture and Food, 2016).

In 2015, the area covered by the control system of organic production reached 118571 hectares (excluding certified ecologically clean areas for collecting wild plants), which is nearly 60% more than in 2014. In 2015, the areas in the control system occupied a share of 2.4% of the total utilized agricultural area in the country and 1.9% of the total area declared under the schemes of direct payments, at 1.5% and 0.96% in 2014 respectively. At the end of 2015, 21543 ha or 18.2% of the total area in the control system went to transition period (Table 2 and Table 3).



**Figure 1** Organic operators in Bulgaria

Source: Ministry of Agriculture and Food, data provided by organic farming certification and control companies

**Table 2** Areas in the control system

Crops (ha)	2011	2012	2013	2014	2015
Cereals, incl. rice	6521	7532	7669	12061	22191
Legumes, protein crops for the production of grain	106	48	0	404	1257
Root crops	6	96	98	78	103
Technical crops – total	5846	7909	10924	12878	20873
Feed crops from arable land	995	2044	2881	5215	8330
Fresh vegetables, melons, strawberries, cultivated mushrooms (greenhouse and field production)	670	1421	1037	1445	1866
Perennials	6442	10959	16885	18213	25946
Permanent meadows and pastures	4491	7957	15476	21831	31796
Fallow	1513	2315	2905	2205	6209
Other crops on arable land	32	96	232	22	16
Total area in the control system	26622	40379	58107	74351	118571
*Wild crops	543655	472700	678025	694251	901617

\* Wild crops – mushrooms, herbs and berries, are harvested from certified and ecologically clean areas, but the areas are not cultivated and are not included in the column "Total area in the control system"

**Table 3** Areas of crops grown organically and areas in conversion, ha

Crops	Area in conversion		Converted area		Total area	
	2014	2015	2014	2015	2014	2015
Cereals, incl. rice	8378	18540	3683	3650	12061	22190
Technical crops – total (incl. Rosa damascene)	8918 644	15881 552	3960 764	4992 941	12878 1408	20873 1493
Fresh vegetables, melons, strawberries, cultivated mushrooms (total)	752	976	693	890	1445	1866
Perennials	12720	19811	5492	6135	18212	25946
Permanent meadows and pastures	16556	28361	5274	3435	21830	31796
Fodder from arable land	4019	7166	1196	1164	5215	8330
Fallow	1945	5233	259	976	2204	6209

Areas with cereals grown organically in 2015 are 22191 hectares – over 80% more compared to 2014, growing mainly wheat, corn, barley, rye, oats and triticale. Areas occupied by industrial crops in the control system in 2015 are 20873 ha (including areas with rose oil, aromatic plants, medicinal plants and spices). Compared with 2014, they increased by almost 8 thousand ha, resulting in the significant increase in areas with sunflower and colza. Significant increase is registered in the areas with aromatic plants, medicinal plants and spices, reaching 11 456 hectares – in 7754 hectares in 2014. The largest share of this group of crops is occupied by areas with lavender, which amount to 3412 ha, followed by those with coriander with 2481 ha and fennel with 1735 ha. Increase by almost 30% compared to 2014 is observed in the group of fresh vegetables such as artichokes, onions, carrots, lettuce, cauliflower and broccoli, watermelons, melons, strawberries and mushrooms. The largest share of that crop group falls on artichoke – 480 ha and pumpkin – 393 ha.

Almost 50% is the increase on an annual basis of areas under permanent grassland, which at the end of 2015 are 31796 ha. Increase of 3115 ha in comparison to 2014 can be seen in the areas with fodder from arable land, due to the increased interest of operators in organic farming.

The areas with permanent crops grown organically in 2015 amount to 25946 hectares, which is 7734 hectares more than in 2014. The raise is mainly due to the increase in areas with stone and pome fruits, nuts and vineyards. In all types of group of perennials, there is an increase of area in the control system in comparison to 2014. The interest in growing nut species continues to grow – walnuts, hazelnuts, almonds and chestnuts. In 2015, the area of that crop group increased to 15,366 ha, 10,257 ha in 2014, or nearly 50%. The increase is due to the increase in areas planted with walnuts – from 7199 ha in 2014 to 11340 ha in 2015, while other species slightly decreased. Organic vineyard increase can be seen as well – from 3543 ha in 2014, to 4199 ha at the end of 2015. It is due to the increase of areas with vine varieties from 3298 ha to 4013 ha, while the dessert varieties declined from 245 ha in 2014 to 186 hectares by the end of 2015. The areas with organically grown leguminous plants and protein crops for the production of grain (including seed and mixtures of cereals and pulses) increased to 1257 hectares; with 404 ha in 2014. Despite the fact that they occupy a small share of the cultivated area in the control system, the group of root crops (potatoes and beets) is also reported to increase in the area – from 78 ha in 2014 to



103 ha in 2015. Growing organic non-traditional crops, such as artichokes – 480 ha and kiwi – 2.9 hectares, albeit in small areas show the efforts of organic producers to meet market demand and to diversify the types of grown crops.

Certified ecological areas for collecting wild fruits, herbs and mushrooms amount to 901617 ha in 2015 which is over 200 thousand ha or almost 30% more than in 2014.

Organic livestock sector in Bulgaria remains less developed than organic plant growing, but in recent years, there has been an increased trend in organic animals. The sector has continued to grow in 2015 because of the opportunities of support for organic farming in the programming period 2014–2020. Organically raised livestock includes mainly cattle, sheep, goats and bees (Table 4). In 2015, the number of cattle raised on organic production methods increased more than 2.5 times compared to 2014 – 4209, representing 0.8% of total farmed cattle in the country. Organic sheep breeding increases more than two times compared to 2014, reaching 18792 or 1.4% of total number of sheep in the country in 2015. The trend in raising goats organically is also recorded – in 2015 they are 5381, representing 1.9% of the total for the country. In 2015, there are 67% more organic bee families on an annual basis, and their share of total number of families in the country reaches 23.9%.

According to the certifying companies, production of organic livestock in 2015 (passing the transition) is as follows: raw cow milk – 5468 tons, raw sheep milk – 1455 tons, raw goat milk – 424 tons. In 2015, 1554 tons of honey are produced in organic beekeeping, which is 36 tons more than in 2014 and equivalent to 13.6% of

total honey produced in the country during the year (Table 5).

In 2014, there are animals other than cattle included in the control system for the first time – sheep and goats – 12573 pigs and 500 chickens. In 2015, the willingness of farmers to introduce the diversity of organic animals continues as a trend. There are 2841 turkeys, 200 geese, 212 equines (horses) and 20 other animals in the control system during the year.

In 2015, there were two aquaculture farms included in the control system for the first time, which produced 80 tons of mussels in a year as a produce in transition.

The organic market in Bulgaria is relatively new and still too small, but it is rapidly growing at the same time. Over the past few years a boom in the market for organic products in the country is seen. The number of specialized shops as well as the number of large retail chains, which are included in the distribution of organic food, is increasing. Most of Bulgarian organic food and products are destined for foreign markets. Bulgaria is a traditional producer of certified organic honey with excellent quality indicators, and much of the production is exported to the world market. Bulgarian organic fresh fruits and vegetables, dairy products, jams, chutneys, dried fruits and nuts have excellent taste and are highly valued on the European and world market.

According to the data provided by the Bulgarian agency on food safety (Bulgarian Food Safety Agency, 2016) – the competent authority responsible for the import of organic products from third countries, 78 imports were made in 2015 in Bulgaria. Mainly “exotic” products are imported as they are not produced in the

country and they are mainly used as inputs in the production of organic food, such as cocoa, cocoa butter, different kinds of seeds of quinoa, dates and date paste, coconut oil, coconut flour, etc. As for non-EU countries, organic products are imported mainly from Peru, China, Tunisia, India, Sri Lanka and others.

The trend of increasing the number of organic operators and the size of area in the control system is expected to continue, as well as the increase in diversity of organic plants and animals. Based on the data presented in Rural Development Program 2014–2020 strengths, weaknesses, opportunities and threats of development of organic farming in Bulgaria as a business model applying the approach and the principles of circular economy in agriculture and food system could be summarized as follows:

### Strengths

#### Socio-economic situation in rural areas:

- ☐ Keeping a rich natural environment, offering attractive living environment;
- ☐ Areas with a unique character and untapped potential for tourism development, combining natural and cultural values;
- ☐ Well-developed network of small urban centers relatively evenly distributed throughout the country, providing basic services to the population;
- ☐ Well-developed network of kindergartens and schools providing basic public services;
- ☐ A road and water infrastructure;
- ☐ Preserved traditional crafts, services and technologies for food processing, creating employment and additional income in rural areas;
- ☐ Stored local communities, cultural traditions and strengthening of community centers and NGOs;
- ☐ Established capacity (knowledge, expertise, resources, networks) to support local development initiatives under the LEADER approach – nationally and in part of the territory of rural areas;
- ☐ Experience in implementing the Leader approach in a quarter of the rural areas.

**Table 4** Number of animals bred organically (including animals in transition)

	Organic animals					Total number of animals bred in 2015	Share of organic animals in 2015
	2011	2012	2013	2014	2015		
Livestock	976	1173	1311	1622	4209	550201	0.8%
Sheep	6648	9175	7894	9029	18792	1331894	1.4%
Goat	3397	2831	3235	4142	5381	276919	1.9%
Bee families	58855	85346	117360	106676	178331	747434	23.9%

**Table 5** Number of organic livestock that undergone the period of transition, and organic production in 2015

	Number of organic livestock that undergone transition		Total number of animals in the country	Share of organic livestock of the total number in the country	Produced organic production (tons)	Produced total production (tons)	Share of organic produce
	2014	2015	2015	2015	2015	2015	2015
Livestock	1344	1243	550201	0.2%	5468	1028036	0.5%
Sheep	7250	10681	1331894	0.8%	1455	74324	2.0%
Goat	3201	3173	276919	1.1%	424	40771	1.0%
Bee families	89553	93118	747434	12.5%	1554	11388	13.6%

**Agriculture, forestry and food industry:**

- ❑ Favorable agro-ecological potential for growing different crops;
- ❑ Fast growing sector of organic farming;
- ❑ High requirements of Bulgarian consumers for food quality and preference for local foods;
- ❑ A growing number of farms and food companies oriented to corporate strategies for quality and innovation;
- ❑ Consolidated and partially modernized food industry;
- ❑ Increased export orientation of production;
- ❑ Access to EU markets, traditional presence on the markets of Russia, CIS and the Middle East;
- ❑ Developed system of agricultural education, science and advisory services;
- ❑ A basic infrastructure for irrigation and drainage, including the number and volume of dams;
- ❑ Tradition in the creation and cultivation of forests, logging and forestry.

**Environment / climate:**

- ❑ Rich biodiversity and varied landscape;
- ❑ Areas with the most extensive and valuable biodiversity are protected by national legislation – Natura 2000 sites cover one third of the country;
- ❑ Availability of locally adapted breeds and local plant species;
- ❑ A large proportion of semi-natural grasslands, favoring the development of pastoralism;
- ❑ Gradual development of organic farming;
- ❑ Trend in improving water quality;
- ❑ Experience in protection from erosion and positive trend to limit wind and water erosion; shelterbelts;
- ❑ A large proportion of forest areas that contribute to the prevention of climate change;
- ❑ Good health of forest ecosystems;
- ❑ Sustainable forest management.

**Weaknesses****Socio-economic situation in rural areas:**

- ❑ Reduction and aging of population, migration, especially of young and highly educated population;
- ❑ Reduction of population density and the risk of depopulation of the territories;
- ❑ Weak economic activity, low level of entrepreneurship;
- ❑ Low diversification and value addition in the rural economy;
- ❑ Underdeveloped tourist attractions and infrastructure;
- ❑ Reduction of the workforce, lower educational status of the workforce, risk of loss of qualifications and skills because of long-term unemployment;
- ❑ High risk of poverty and social exclusion;
- ❑ Relatively low quality of social services in rural areas;
- ❑ Poor condition of the existing technical infrastructure and low energy efficiency of public facilities;
- ❑ Incomplete coverage in rural areas with fixed broadband infrastructure and low use ICT by citizens and businesses;
- ❑ Underdeveloped capacity of local communities for inclusion and management of local development initiatives.

**Agriculture, forestry and food industry:**

- ❑ Polarized structure of farms;
- ❑ Unfavorable age and educational structure of the farm managers and employees in agriculture;
- ❑ Unfinished restructuring and modernization of small farms;
- ❑ Downward trend of traditionally grown crops in Bulgaria including meat, milk, fruits and vegetables;
- ❑ Fragmented ownership of land and forests that are privately owned;

- ❑ Low diversification of economic activity in farms;
- ❑ Outdated equipment and outdated technologies of farming and forestry;
- ❑ Low labor productivity in agriculture, forestry and food industry;
- ❑ Low investment activity, insufficient investment in technological modernization and innovation in agriculture, forestry and manufacturing;
- ❑ Strong dependence on imported raw materials in some sub-sectors of the food industry (mainly meat, milk and canned);
- ❑ Unfavorable structure of export and import of agricultural goods – unprocessed agricultural products dominate exports and processed products dominate imports;
- ❑ Weak vertical linkages, cooperation and collaboration in the food chain;
- ❑ Poor cooperation among farmers and weak market positions due to unfair competition from imported products and the abuse of market power of intermediaries;
- ❑ Old technologies and equipment in irrigation infrastructure outside of farms and poor maintenance and use of infrastructure; problems in the management and use of irrigation facilities;
- ❑ Weak organization of knowledge transfer in agriculture, food and forestry; insufficiently effective link between research and educational institutes and businesses;
- ❑ Underdeveloped mechanisms for risk management;
- ❑ Limited access to credit and finance, especially for small and medium-sized farms.

**Environment / climate:**

- ❑ Destruction of valuable semi-natural habitats by plowing, construction and use of synthetic fertilizers and chemicals;
- ❑ Inefficient use of natural resources, including overexploitation; dirt, disturbed water balance;
- ❑ Large areas facing loss versatility of soil due to water and wind erosion; reduction of the soil organic matter; salinization, acidification and mechanical destruction of soils;
- ❑ monoculture production patterns;
- ❑ Insufficient awareness of farmers on natural value and sustainable land use and climate change;
- ❑ Insufficient density and unsatisfactory condition of forest roads;
- ❑ Insufficient integration of activities on biodiversity conservation in forest planning and management of forests;
- ❑ Lack of investment in non-productive investments related to the implementation of environmentally friendly practices;
- ❑ Low use of alternative energy sources;
- ❑ Insufficient investment in measures to prevent fires and natural disasters;
- ❑ Insufficient capacity to provide consulting services for the protection of the environment and ecosystems and adaptation to climate change.

**Opportunities:**

- ❑ Expanding markets and increased consumer demand for food products with guaranteed quality and origin, local products and organic products and products with high standards for environmental protection and animal welfare;
- ❑ Increased demand for cultural-historical, spa, adventure, eco and rural tourism;
- ❑ The technological developments in the field of green economy, including renewable energy;
- ❑ Continuous innovation in the field of social services;
- ❑ Development of ecosystem services;
- ❑ Easier access to new knowledge, technologies and practices due to membership in the European Union;
- ❑ Increased demand for agricultural products in international markets;

- ❑ New attitude of the society towards the multifunctional role of agriculture and forestry and their role in protection of the environment and creation of new production cycles;
- ❑ Increased role of local communities for rural development; strengthening the capacity and increasing the territory for the implementation of activities related to community-led local development through the LEADER approach.

#### Threats:

- ❑ Low economic growth in the country, especially with the impact on employment, training and poverty;
- ❑ Continuing effect of the economic crisis in other member states, which are major trading partners in trading with goods of agriculture and food industry, which could lead to reduced demand;
- ❑ Increasing territorial disparities in the quality of life and income, accelerating internal and external migration of the rural population;
- ❑ Loss of skilled labor and labor shortages due to uncompetitive wages;
- ❑ The growing role of transnational companies in the food chain;
- ❑ Increase in the prices of used resources and materials (land, labor, fuel, etc.) in the production and processing of agricultural and forestry products;
- ❑ Cyclical downturns and large fluctuations in agricultural commodity prices;
- ❑ Increasing pollution caused by intensive agriculture, manufacturing activities, transport and tourism;
- ❑ Global climate change – risks related to natural disasters (eg floods, accidents, fires, drought).

Main Conclusions that could be drawn are connected to the fact that agriculture and rural areas are facing multiple socio-economic changes, including the transition from an agriculture-based to a service-based economy. An effective solution for overcoming the weaknesses and threats and taking use of potentials are networking activities. Cross-sectoral networks have become one of the common forms of collaboration in the area of environmental management and sustainable development (Dimitrov et al., 2014). A network could be initiated by universities and institutes including associations of producers or traders and other stakeholders. It should work on strengthening the sector in different ways (legislative basis, strategic framework, institutional support, production, management, marketing, technology development, innovation transfer, training, motivation, capacity building, etc.), as well as on directing public attention to certain topics, dissemination of new knowledge, information and ideas for sustainable rural development.

## Conclusion

Bulgaria is a country that offers appropriate conditions for organic production. The orientation of production towards raw materials for export is the main obstacle to sector development. There is a need for investments in development of organic farms, incl. processing and storage of organic products, in order to create conditions and mechanisms for entering European markets.

The importance of agricultural producer training and motivation for organic farming is based on the efforts to raise capacity in rural areas. Along with the encouragement of new certification companies to create a competitive environment and to guarantee supervision and high control of a final product to the European consumer, the supporting activities of the state and the academic society will provide the necessary conditions for further sector increase. The establishment of a network of universities and scientists in Bulgaria working on organic production encouragement could provide the needed instruments and mechanisms for innovation transfer and raise in competitiveness through diversification and marketing activities, incl. encouragement of associations of agricultural producers, adding value to final products and fostering national markets and local development.

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- University of agribusiness and rural development. <http://uard.bg/>

## Contact address

Acad. Prof. Eng. Dimitar Dimitrov, Ph.D., University of Agribusiness and Rural Development, 78, Dunav, Blvd., Plovdiv 4003, Bulgaria, Tel. +35 93 29 60 360, Fax: +35 93 29 60 406, e-mail: [rector@uard.bg](mailto:rector@uard.bg)

