



LEADING INNOVATIVE PRACTICES IN THE THEMATIC AREA “HEALTHY LIVING INDUSTRY AND BIOTECHNOLOGIES” AT A REGIONAL LEVEL

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ABSTRACT

The regional context of smart specialization continues to be in the focus of academic discussions as the innovative potential of regions in Bulgaria is being determined. The aim of the present work is to identify innovative practices in one of the leading thematic areas – “Healthy living industry and biotechnologies” during the period of 2014-2019 in a selected region. The object of research is the region of Yambol listed in the National Strategy for Smart Specialization in the Republic of Bulgaria as a promising region in the thematic area “Healthy living industry and biotechnologies”. We have applied methods of regional economic analysis based on objective statistical data. Regional analysis has been complemented with a survey to reflect the subjective viewpoint of stakeholder representatives. The survey and the analysis of the collected information proves presence of potential in the region of Yambol for expanding organic production in the food industry and generating “green energy” in the energetics sector.

Key words: healthy living industry and biotechnologies, Yambol region, organic farming, biotechnologies

INTRODUCTION

The regional context of smart specialization continues to be in the focus of academic discussions as the innovative potential of regions in Bulgaria is being identified. According to the socio-economic analysis of regions in the Republic of Bulgaria in 2019 all regions but the South-West have kept their last positions in the EU rank for leading economic indicators (GDP per capita, labour efficiency – at least twice as less than the average for the European Union) (1). With the adaptation of regional economies to the steadily changing competitive environment, and the implementation of new technologies and innovations, the possibility for realizing sustainable development has become one of the leading strategic goals of the EU. It is

worrisome that even in the field of research, technologies and innovation Bulgarian regions have been lagging behind in recent years. A more pressing concern is the implementation of green innovations which not only improve the state of the environment but also reduce the exhaustion of resources and secure energy supply (2). They facilitate the increase in competitiveness of businesses through the production of ecologically clean products and the use of green technologies in the production process. Even though in 2017 Bulgaria adopted the OECD Declaration for Green Growth (3) studies have shown that the capacity of the organic economy sector in Bulgaria has not been used rationally (4), including the absorption of the so called recycled material (5). Moreover, the projects realized so far with the support of the Operational Programme “Regions in Growth”, the Programme for Development of Rural Regions and the National Programme for Energy Efficiency include mainly the application of measures for renovating buildings and changing window

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frames, while investment for RES for individual use is absent (6). Moreover, due to the lack of data about the monitoring of saved energy realized through projects for residential building in Bulgaria, the levels of energy efficiency cannot be reported (7).

As for innovative practices, data from the Regional Innovation Scoreboard (2019) (8) show that only the South-West region in Bulgaria has reached a level of indicators placing him among moderate innovators. All other regions remain in the group of modest innovators. Considering that innovation of regions at level NUTS 2 correlates directly to innovative practices at a regional and municipal level, it is necessary to exercise better monitoring and involvement to the degree and character of each innovative initiative, including those related to the leading thematic areas of smart specialization. According to the Innovation Strategy for Smart Specialization of the Republic of Bulgaria (9) priority thematic areas for the region of Yambol are: “Healthy living industry and biotechnologies”, “Mechatronics and pure technologies”, as well as “New technologies in creative and recreational industries”. Production with distinct potential comes from the sphere of “Healthy living industry and biotechnologies”. This is preconditioned by such regional characteristics such as the plain land, suitable climate, the big share of arable land, and traditions in regional economy.

According to an analysis done by the Ministry of the Economy in 2019 regions show a relatively little activity in “Healthy living industry and biotechnologies” (19% of all activity). In the South-West region to which Yambol area belongs the submitted grant applications are only 20 out of 396 in this thematic area. In comparison, the total number of proposals from the South-West region are 143, and from the North-West region – 123 (10). It is necessary to find out what hinders the greater activity in submitting applications and whether there are any obstacles for the development in this priority direction for the region of Yambol, despite the availability of identified potential and opportunities.

The aim of the present work is to identify innovative practices in the thematic area “and welfare industry and biotechnologies” during the period of 2014-2019 in a selected region. The object of the study is the region of Yambol

listed in the National Strategy for Smart Specialization as one of the promising in this thematic area in the Republic of Bulgaria. The accent of the subject of research is on finding registered productions in the area of biotechnologies, as well as on identifying regional advantages.

METHODS

We have applied methods of regional economic analysis for which first and foremost objective statistical data have been used. For bioproduction in the region of Yambol we have used objective data from the electronic *Register of organic farming for operators and subcontractors*. The register provides a complete monitoring on organic farming, storage and trade with bioproducts in Bulgaria according to the requirements of EU regulations. The electronic register is maintained in accordance with the provisions of Art. 28, (5) of Regulation (EC) № 834/2007 and Art.16a, para. 1, item 1 of the Law for application of the Common Organization of the Markets of Agricultural Products of the European Union (ZPOOPZPES). Regional analysis has been complemented with conducting a survey to reflect the subjective viewpoint of stakeholder representatives.

The survey includes questions eliciting important information for innovative practices, directed towards the thematic area “Healthy living industry and biotechnologies”, potential and issues related to start-ups or expanding businesses.

AVAILABLE INNOVATIVE PRODUCTION PRACTICES IN THE THEMATIC AREA “HEALTHY LIVING INDUSTRY AND BIOTECHNOLOGIES”

Most of the arable land on the territory of the region of Yambol contribute to the leading position of the sector “Agriculture, forestry and fisheries” in the regional economy. The existing traditions are prevalent in cultivating wheat, barley, sunflower and other crops. Good conditions are also present for growing herbs on the territory of the region. The contribution of the agriculture sector to the gross value added of the region of Yambol in 2018 was 11.8%, which has earned it seventh place in a total of 28 regions for the level of contribution of the sector to the GVA (11). According to data provided by the Regional Administration of Yambol (12), regarding the state of productions in the thematic area

“Healthy living industry and biotechnologies”, we must add that the region has the potential for development in the agriculture sector, because it has been well-established producer of agricultural goods which is visible in the higher concentration on organic farming.

According to data from the Regional Administration of Yambol as early as 2014:

- In the area of organic farming lavender plantations have been differentiated on 32 decares and a distillery for lavender oil has been built in the village of Zimmitsa. A company called “Bulherbs” EOOD produces organically certified essential oils and herb seedlings.
- In Elhovo Municipality the Association “Business Centre Elhovo” grows herbal plantations. Organic farming is being developed, and more specifically the cultivation of medicinal plants in the region of Strandja-Sakar. Sustainable farms in the area of herbal production and organic farming are also developing. There is an enterprise for packaging organic products with the trade mark of “Tronka”, offered in retail networks around the country. A biofarm for herbs, seasonings, and vegetables called “Ostrova” has been certified on the territory of the Municipality. “Yanitsa Energy” OOD company produces ecologically clean products with a focus on growing vegetables and cultivating rye and spelt wheat.

A study on organic production in the region of Yambol in 2016 (13) shows a very slow developmental tendency, despite the 71 new bioproducers registered in 2015. The study proves that soil-climate resources of the territory have efficient capabilities for active agricultural work and supports the fact that the region is one of the biggest agricultural producers in the country. A key factor for successful organic farming is the clean environment and the absence of pollutants from heavy chemical industry. Still, the contribution of the region of Yambol to the total number of registered productions in the Organic farming sector on a national level remains low (2.8%). As of April 2020 according to data provided by the Ministry of Agriculture and Foods (14), the number of producers, processors and retailers of agricultural products and foods coming from organic farms in the region of Yambol is more than 142, which is twice as much as the number in 2015.

Despite the increased number of producers, the relative share at a national level remains low. This is indicative of the fast speed at which the sector is developing and the need to stimulate and support the industry.

The following figures contain data about the registered farm practices certified for bioproduction in the region of Yambol (**Figure 1**).

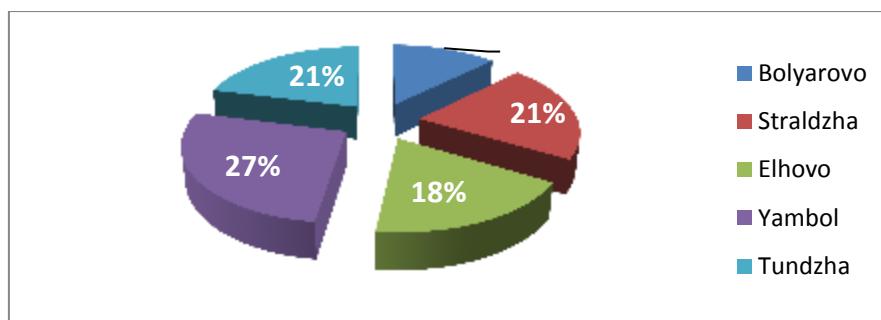


Figure 1. Territorial structure of farm practices, certified for bioproduction per municipality in the region of Yambol, %

Source: Authors' calculations based on data from the Ministry of Agriculture and Foods, 2020

Figure 1 shows the relatively even distribution of bioproducers in the municipalities of the region of Yambol. The largest number of registered and certified bioproducers are within the Municipality of Yambol. Tundja and Straldja municipalities come next. The smallest number of bioproducers are from Bolyarovo municipality. We must note that three retail companies for biofoods and one for organic

milk production have been registered in Yambol municipality. On the territory of Elhovo municipality there is also a registered biofoods retail firm, as well as organization for processing and trade of herbs and an organic milk producer.

The next figures present an analysis of specific sectors in bioproduction (**Figure 2**).

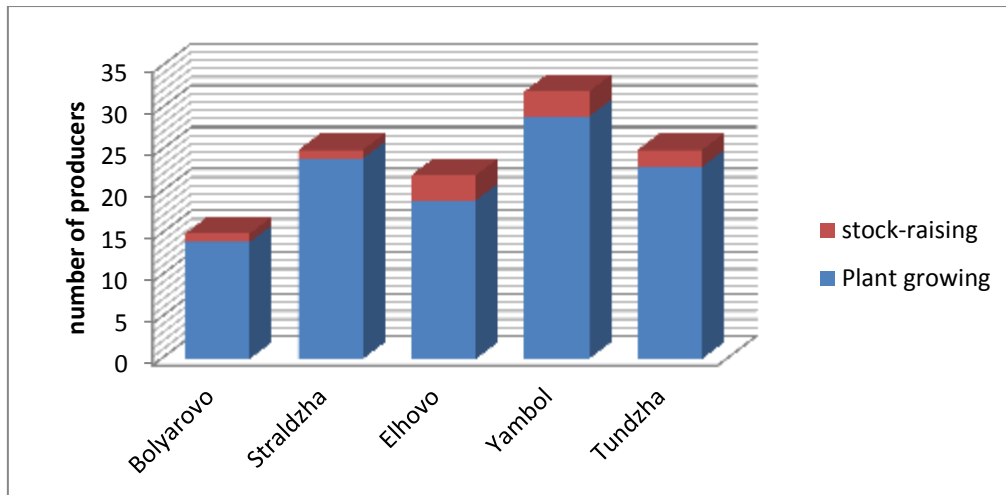


Figure 2. Branch structure of farm practices certified for organic production in the municipalities of The region of Yambol.

Source: Author’s calculations based on data from the Ministry of Agriculture and Foods,2020

Figure 2 shows the limited number of farms in the livestock sub-branch. They are represented mainly by a total of nine producers of honey and bee products. There is a clear preference for plant production, justified by the suitable natural resources and specifics, as well as traditions in this industry. According to data from the Ministry of Agriculture and Foods (15) in 2019 among the areas of South Bulgaria the South-East region has the highest relative share of crops per arable land, and the region of Yambol - the highest production of cereal crops (including fodder), wheat and sunflower. As for wheat and sunflower production, the region of Yambol is among the leading regions in the country with relatively

high shares of land planted with these crops. This demonstrates the traditions of the region in agricultural production and presupposes the development of organic farming in the region. **Figure 3** proves the region’s leading position in growing cereal crops, amounting to 34% of all registered bioproductions in the area. Next in place are pastures – 18%, followed by orchards – 17%. With a relatively low share of representation are herbs – 13% (concentrated in Straldja and Elhovo municipalities), and nuts – 11% (represented in Tundja municipality). The lowest number of certified producers remains for the sectors of vegetable production and yielding bee products.

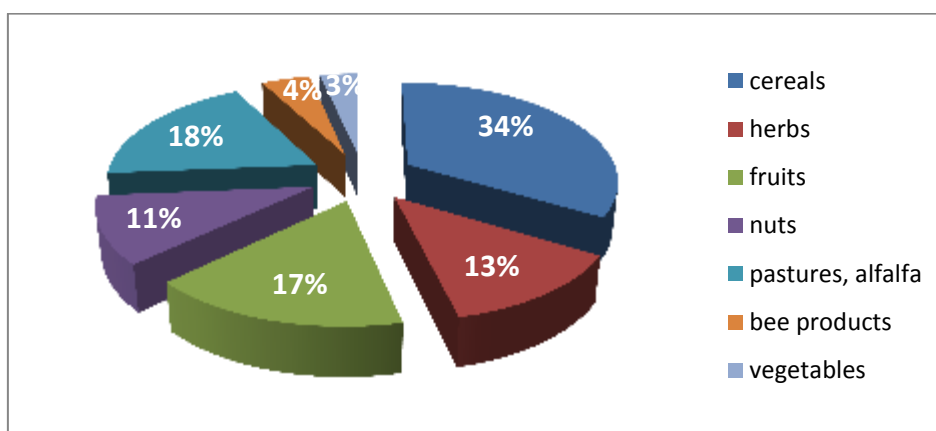


Figure 3. Relative share of all farm practices certified for organic production in the region of Yambol as of April 2020.

Source: Author’s calculations based on data from the Ministry of Agriculture and Foods,2020

Figure 4 illustrates more specifically the shares of registered bioproducers in sub-branch “Cereal crops” which emphasizes the region’s role in the cultivation of this type of biofoods. The data in **Figure 4** underline the leading role in the production of wheat and coriander (25%

each among the certified producers in the sub-branch), followed by the share of producers of sunflower (19%) and barley (15%). However less represented, organic producers of durum wheat (12%) and rapeseed (4%) are still active.

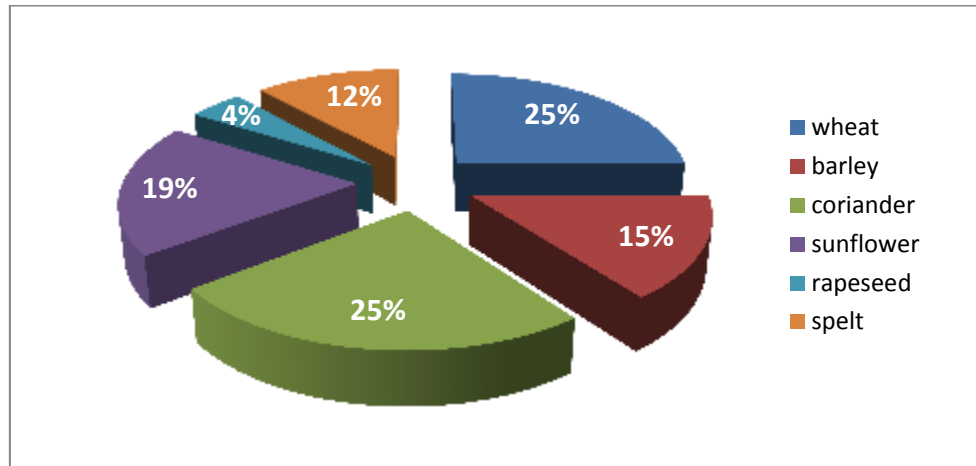


Figure 4. Structure of the production in organic farming – sub-branch “Cereal crops”
Source: Author’s calculations based on data from the Ministry of Agriculture and Foods,2020

Agriculture is a sector entailing much organic waste which is a potential for installing biomass power plants. There are a number of studies on using biomass from the agricultural sector (16-18), which prove its efficiency as a renewable, perspective and easily absorbable energy source. The use of biomass for energy purposes saves fuel costs and reduces the dependency of the country and regions.

Another sector in the area of “Healthy living industry and biotechnologies”, which is represented in the region of Yambol is the production of RES energy. A study conducted in 2016 on the potential of renewable energy sources in the region of Yambol highlighted the leading role of power harvested from photovoltaic installations (19). They are in second place of all solar installations used in our country. It is important to underline that the region of Yambol ranks third in the country for wind power installations concentrated mainly in Straldja municipality. On the territory of the municipality there are 6 wind turbines and a wind energy park for harvesting electricity. On the whole, Tundja municipality has the largest number of installed RES powers followed by Straldja, and Yambol as third in this ranking.

A social-economic analysis (2019) (1) shows that a novel alternative use of RES is the

decentralized production of energy mainly for individual needs, in order to reduce the costs of energy logistics.

RESULTS AND ANALYSIS OF THE CONDUCTED SURVEY AMONG THE STAKEHOLDERS

A survey was conducted among stakeholders from the region of Yambol. The total number of questions was 11, from which 9 were about identifying specific practices in the thematic area “Healthy living industry and biotechnologies”, one open question on the unique resources of the region of Yambol and one open question on the main issues that need to be tackled in order to foster bioproduction in the region. The survey was prepared in electronic format and as such was sent to all stakeholders. The number of respondents was 87. Out of the total number 15% were students, 2% - unemployed, and the other 83% were involved in nine different spheres of work. In terms of educational background, 82% had higher, and 18% secondary education. The shares of the respondents in terms of age show that the biggest part is within the age group of 41-50 – 31%, followed by people of 51-60 – 21%, and at third place -the participants between 25-40 years of age – 17%. The share of the other age groups is as follows: between 18-25 – 11%, between 61-70 – 16%, and over 70 – 2%. **Figure 5** shows the answers to the

first question, regarding the presence of “Clean production, storage, processing and delivery to the end consumer of specific Bulgarian ingredients, means and products (e.g. yoghurt,

honey and bee products, bread, wine, dairy and meat products, essential oils, beer, herbs and herbal products, cosmetic means and products)”.

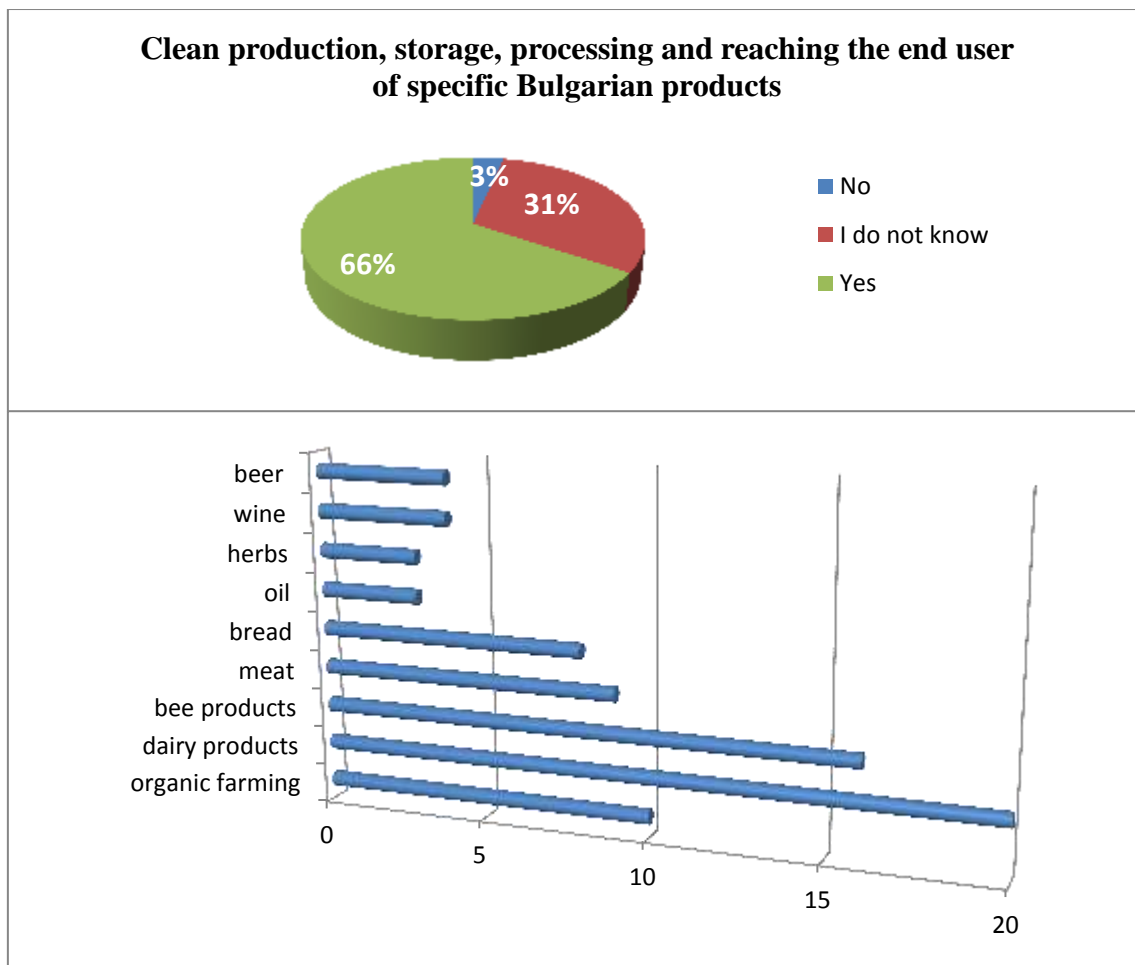


Figure 5. Presence of “clean production” on the territory of the region of Yambol.
Source: Data from the conducted survey

The responses illustrate two facts. On the one hand, a third of the participants have not been informed about the existence of these practices, and on the other, mainly practices related to the production of dairy and bee products are known as “clean production”, which only covers the part of the objective data related to products for end consumption.

Even though the region is known for its producers in the branches of agriculture and food industry, the answers to the question related to the existence of production of specialized foods and drinks (e.g. baby, children and “cosmic” foods) signal insufficient awareness (I am unaware – 48%), yet even those who know of such production (4%) have not specified the types of products.

The responses to the other questions about the available practices relative to the thematic area of “Healthy living industry and biotechnologies” (“Production of tools, facilities, consumables for medical and dental diagnostics and therapy and/or participation in supra-national production chain”; “Personal medicine, diagnostics, and individual therapy, medicinal and drug forms and means”, “Medicinal and recreational tourism with an emphasis on possibilities for personalization (not mainstream, but bespoke tourism)”) also show a high percentage of respondents marking “I am unaware” – between 45-53%. Practices that are indicated by the informed respondents are as follows: acupuncture, herb cultivation, growing industrial hemp under

special supervision, presence of organized tourism, opportunities for walks to the Ormana

area, the Town Garden and the Bakadjik area where air has healing properties for respiratory conditions, production of durum wheat, processing of biomass and available installations for biogas on the territory of the region.

Figure 6 illustrates the structure of the answers to the question about the presence of “Production of installations for harvesting ecologically clean electrical energy and industrial water” in the region of Yambol, where specific practices have been indicated. The results show that 66% of the respondents are not aware of these practices, because only 34% have answered affirmatively and have indicated the specific practices for obtaining “pure” electrical energy and “pure” water in

the region of Yambol. These are installations for harvesting electricity from renewable sources – photovoltaic systems and wind generators, as well as installations for biogas and water purification. To the question on the unique natural features of the region of Yambol for production within the thematic area “Healthy living industry and biotechnologies”, the biggest share of respondents agreed that organic farming is a unique phenomenon for the region. The role of the suitable climate for developing hiking tourism has been emphasized, as well as the reopening of recreational facilities in the Bakadjik area to stimulate the development of this economic sector. The respondents state the possibilities and natural conditions for harvesting electric power from renewable sources.

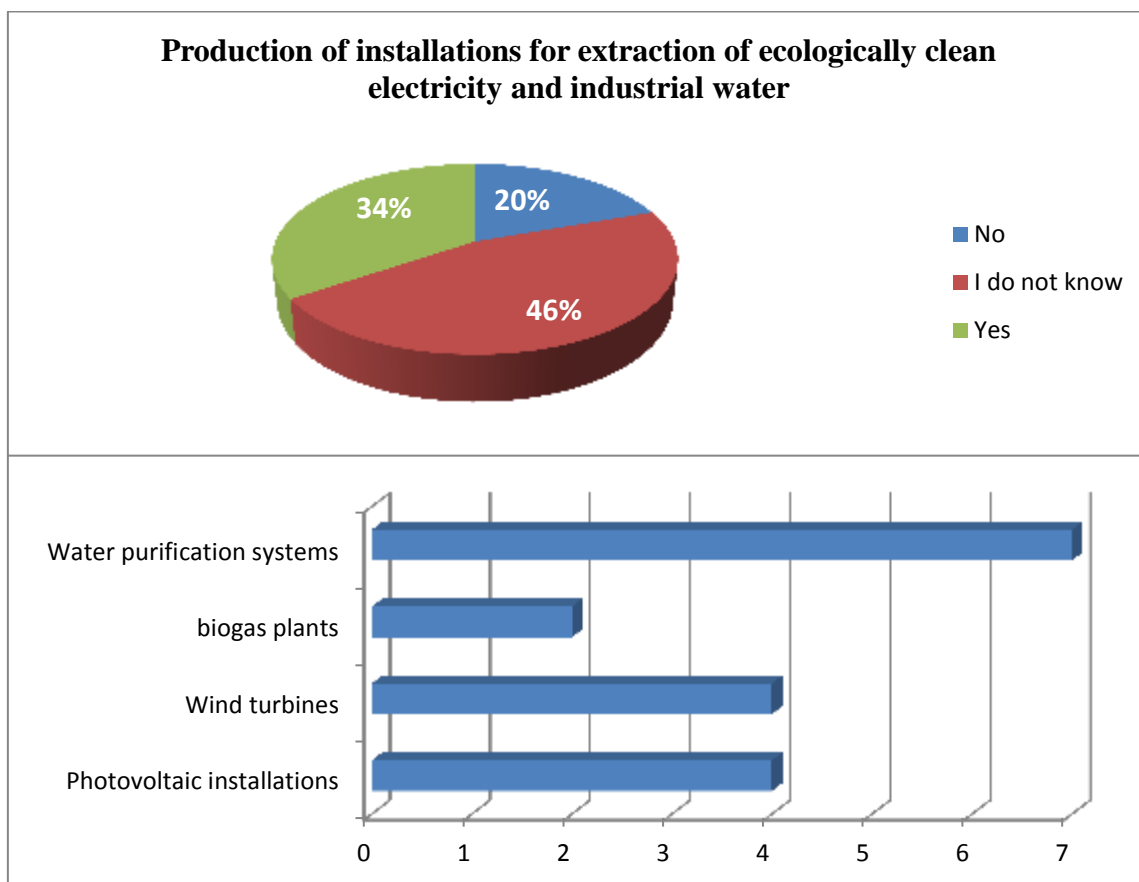


Figure 6. Presence of innovative practices for harvesting ecologically clean electricity and pure industrial water.

Source: Data from the conducted survey

The main issues which must be tackled according to the respondents have been presented in **Figure 7**. First is the need for financial stimulation and attracting foreign

investment on the territory of the region. A big share is also taken by ecological problems related to separate waste collection and its processing, polluted air in the municipal towns,

and polluted sewage waters. It is necessary to build and maintain contemporary purification stations for protecting water resources in the region. The issues of administrative nature, as

well as the need for tax relief for businesses in the observed directions are also among the problems indicated as being on the agenda.

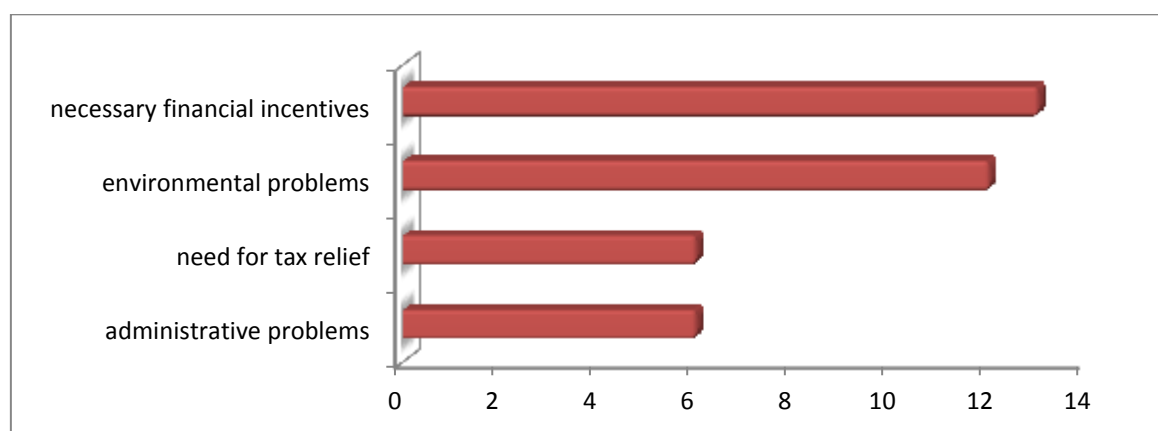


Figure 7. An overview of the responses to questions on issues which need tackling in order to stimulate organic production on the territory of the region of Yambol.

Survey: Data from the conducted survey

CONCLUSIONS AND RECOMMENDATIONS

For the observed period a significant increase in the registered certified bioproducers has been noticed, which reflects the priorities in the sector of bioeconomy and circular economy and becomes a leading bioeconomic direction in the region of Yambol.

A distinct contradiction between the growing share of organic farming practices with pastures and the very small share of livestock farms within bioproduction creates the need for additional research on this issue, and for more measures for using available potential.

The innovative practices of photovoltaic and wind installations which are very well developed at a regional level may extend their range to reach a larger scale green growth through investment in RES for individual use.

The low awareness of stakeholders in the area about the active practices in the thematic area of “Healthy living industry and biotechnologies”, as well as some issues related to the administrative and financial restrictions for businesses from the bioeconomy sector determine the need for developing measures in their support both at a regional, and at a national level.

Supporting bioproduction is decisive for retaining bioproducers on the market and expanding the sector regionally and nationally,

as each incentive would increase the activity when applying for grants in the sphere of bioeconomy within the different Operational programmes.

Additional measures are needed for encouraging municipalities in the region to evaluate local bio-resources, as well as to utilize them through innovations.

It is also necessary to launch a study at a level of economic subjects to identify practices, integrating research achievement at all stages - production, processing, realization of the end product. In this respect, the Yambol based Faculty of Technics and Technology must play an active role in the region as a structural unit of Trakia University which is as a leader in the area of agrarian sciences.

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