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ORGANIC FARMING IN POLAND IN ASPECTS OF BIOECONOMY AND SUSTAINABLE AGRICULTURE

ROLNICTWO EKOLOGICZNE W POLSCE W ASPEKTACH BIOGOSPODARKI ORAZ ZRÓWNOWAŻONEGO ROLNICTWA

Key words: bioeconomy, sustainable development, organic farming

Słowa kluczowe: biogospodarka, zrównoważony rozwój, rolnictwo ekologiczne

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Abstract. The aim of the study is to present the essence of the bio-economy, with particular emphasis on sustainable agricultural development. The attention focused on the prospects of development of organic farming as a supplier of raw materials for the production of green energy. The basis of this research was mainly critical analysis of national literature and data from the Central Statistical Office and Quality Inspection of Agricultural and Food. The data covered years 2010-2014.

Introduction

Bioeconomy constitutes the group of sectors, which, in a production chain, use and convert biological resources into food, feed, bio-based products and bio-energy. It encompasses agriculture, silviculture, horticulture, fishing industry, food industry, leather industry, textile industry, timber industry, chemical industry branches, pharmaceutical and cosmetic industry, and bio-energy sector. Bioeconomy is considered to be the key feature of intelligent and ecological economic growth, and its key role is attributed to knowledge, innovativeness and biotechnology. Sustainable development ought to guarantee access to basic economic and social services as well as the natural environment for all residents of a community, yet it should not cause harm to ecosystems and social-economic systems on which those services depend. Trying to juxtapose the concept of sustainable development and bioeconomy, this sector can be referred to as a means to reach a general goal, which is the development, so actions within bioeconomy should aim at sustainable development. Thereby, bioeconomy is of interest for the EU authorities and is connected with implementing various EU policies, such as regional or environmental policies, to name just two.

Materials and methodology

The aim of the study is to present the essence of the bio-economy, with particular emphasis on sustainable agricultural development. The attention focused on the prospects of development of organic farming as a supplier of raw materials for the production of green energy. The basis of this research was mainly critical analysis of national literature and data from the Central Statistical Office and Quality Inspection of Agricultural and Food.

The idea and concept of bioeconomy

Neither primary sources nor any other key documents of international organisations have formulated so far one, officially acclaimed definition or a term of bioeconomy. The multitude of definitions of bioeconomy indicates that its key idea revolves around using biotechnology and bioproducts in both production and services sectors. A bioeconomy involves three elements: biotechnological knowledge, renewable biomass, and integration across applications. In the most

general terms, it denotes a sustainable production of renewable resources (products of agriculture, forestry, fisheries and fishing) and their conversion into food, feed, bio-based products, fibre and bioenergy [EC 14]. The idea stays unchanged as it involves using biological resources: plants, animals and microorganisms. According to the definition proposed by European Commission ‘Innovating for sustainable growth: A bioeconomy for Europe’, bioeconomy encompasses the production of renewable biological resources and conversion of these resources and waste into value-added products such as food, feed, bioproducts and bioenergy. Bioeconomy for many regions both in Europe and Poland may become an intelligent specialization, which will define the characteristics of production of the region and an important source of socio-economic growth [Adamowicz 2016]. Strong and stable economy in EU may create an opportunity of reaching and sustaining the economic growth, create work places, manage organic natural resources efficiently, lower the dependence on the non-renewable energy sources, increase the economic efficiency, so that EU economy would become more competitive, support the multifunctional farming and rural areas in terms of its social, cultural functions as well as ensuring biodiversity [EC 2014]. The essential basis for successfully implementing those tasks is the good economic growth, whose main determinants are the potential biological resources, human and social resources, together with accepting the changes and advancement in bioeconomy, research facilities, the possibility of financing the investments, as well as factors connected with legal regulations and economic policies – tax system, public support [Gołębiewski 2013, 2015]. Numerous economic and social benefits derived from bioeconomy, including many environmental constraints, result in sustainable production of renewable biological resources.

The concept of sustainable development in bioeconomy

Human intervention in nature makes the growing ecological crisis, the main negative consequence is the inability to maintain human activity within safe for humans and the natural environment [Wielewska 2007, Prus 2002]. As a consequence; for this reason the widely discussed issue of sustainable development involves many issues gaining importance [Matuszczak 2013, Wielewska 2016, Prus 2010].

The concept “sustainable development” is defined as “(...) development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [The Brundtland Commission 1987]. The sustainable development is a chance for the society to see a long-term vision. The sustainable development is an integrated concept that includes all people activities to the local level and promotes the following actions: try to improve the quality of life for existing generations and next generations by protecting and preserving the Earth power to ensure life in all its diversity at the same time; to repose on democracy, rule of law, and respect, to human rights and freedom, including equal possibilities and culture diversity; to promote high level of employment formation, in economies whose force is based on education, innovations, social and economic cohesion, and protection of human health and environment [Haite 2010]. The sustainable development is the only possibility of solving problems of today’s world. Mohan Munasinghe and Ernst Lutz [1991], Gerhardus Schultnik [1992] made an attempt to describe sustainable development in terms of resources used. In all these endeavours, it is using natural resources that is stressed by the present and future generations. Using natural resources means that the quantity of the particular resources should not lower in time [Markandya, Perce 1988, for: Bernaciak 2009, p. 304]. Robert Goodland and Guy Ledoc [1987] present similar views. The authors postulate that managing resources must lead to using renewable natural resources in such a way that will not eliminate or damage them and will not decrease their utility. Such defined sustainable development, often used interchangeably with eco-development, in an indirect but unambiguous way, introduced a new definition of ecological space, understood as performance of natural renewable and non-renewable resources and global or continental absorption performance, or economic sectors (e.g. tourism) and local communities.

Results

Farming is heavily dependent on environmental resources production factors, but simultaneously, it exerts a huge impact on its potential and condition. The role of macroeconomic factors is to create conditions for growth and development of farms. Factors of production, such as land, capital and labour, under the influence of internal and external variables, should function harmonically. Land is a basic factor of production in farming and, as a result its resources fundamentally define production capacities of a farm. A traditional attitude towards the effectiveness related to the size businesses is more often disputed [Czudec 2013, p. 74]. Matthew Gorton and Sophia Davidova [2004, p. 8] claim that there is a phenomenon of temporary imbalances, which lasts on account of incomplete account of efficiency of the farms. The key issue is the case of land being organic (immobile). Spatial diversity of land quality influences the regionalisation of agricultural productivity. It shapes the regional structure, efficiency and production costs of farming as well as absolute regional comparative advantage. It influences the diverse competitiveness of farming, which is dependent on natural conditions in the region or country, agricultural space and effectiveness of expenditure [Czubak 2013, p. 64]. Sustainable farming is characterised by rational usage of areas of agricultural productivity and sustaining production potential of soil, which lead to food self-sufficiency of the country and food safety. Furthermore, it is characterised by production of raw materials with desired and expected quality parameters, at the same time reducing the environmental hazards. In a final process, sustainable farming should allow deriving income in farming which would be comparable to other sectors of the economy in terms of profitability and securing financial means on modernisation and development.

According to the data from Statistical Yearbook of Agriculture, in 2012 there were 1 456 398 farms, whose area exceeded 1 ha, while in 2008 there were 1 810 371 farms in the same agricultural land. In 2012 the number of farms with the largest area (50 ha) increased in comparison to 2010 by 35%, however, the number of farms up to 1 ha decreased by 26.8% in years 2002-2010. According to the research results of farm structures their number in June 2013 was 1,429 thousand including 1,117 thousand farms over 2 ha of agricultural land. In comparison with the results of agricultural census from 2010, counted according to the new definition of a farm, in 2013 the number of farms in general decreased by about 94 thousand, which is 5.3% (Tab. 1).

The largest decrease was recorded in the 5-10 ha group (−9%) and in 2-5 ha (−7%), where the number of farms decreased respectively by 31.1 thousand and 34.5 thousand farms. However, the number of largest farms increased – 20-50 ha and over 50 ha and more agricultural land – respec-

Table 1. Number of farms by area groups

Tabela 1. Liczba gospodarstw rolnych według grup obszarowych

Specification/ <i>Wyszczególnienie</i>	Number of farm/ <i>Liczba</i> gospodarstw	Structure/ <i>Struktura</i> [%]	Number of farm [thous.]/ <i>Liczba</i> gospodarstw [tys.]	Structure/ <i>Struktura</i> [%]	The change of the numbers of farms/ <i>Zmiana liczby</i> gospodarstw	Change of the structure/ <i>Zmiana</i> struktury
	2010		2013			
Total/ <i>Ogółem</i>	1509.1	100	1429	100	−94.7	−5.3
<i>Groups of area/Grupy obszarowe [ha]:</i>						
0-2	325.5	21.6	312	21.8	−13.0	−4.1
2-5	489.8	32.5	455.3	31.8	−34.5	−7.0
5-10	346.3	23	315.2	22	−31.1	−9.0
10-20	223.5	14.8	211.5	15	−12.0	−5.4
20-50	97	6.3	103.2	7.2	6.2	6.4
> 50	27	1.8	31.8	2.2	4.8	17.7

Source: own study based on CSO data [2011, 2014]

Źródło: opracowanie własne na podstawie [GUS 2011, 2014]

Table 2. The structure of the surface area of organic farmland organic farms in 2011-2014

Tabela 2. Struktura wielkości powierzchni ekologicznych użytków rolnych w gospodarstwach ekologicznych w latach 2011-2014

Specification/ Wyszczególnienie	Structure/Struktura								The change/Zmiana	
	number/ liczba	%	number/ liczba	%	number/ liczba	%	number/ liczba	%	of the number/ liczby	of the structure/ struktury [%]
	2011		2012		2013		2014		2014-2011	
Total/Ogółem	15 234	100	18 187	100	26 598	100	24 829	100	9 595	63
Groups of area/Grupy obszarowe [ha]										
< 5	3 801	25.0	3 991	21.9	5 003	18.8	3 624	14.5	-177	-5
5-10	3 720	24.4	439	24.1	6 311	23.7	5 785	23.3	2 065	56
10-20	3 270	21.5	4 254	23.4	6 996	26.3	7 006	28.2	3 736	114
20-50	2 471	16.2	3 077	16.9	4 739	17.9	5 028	20.3	2 557	103
50-100	1 320	16.2	1 661	9.1	2 370	8.9	2 228	9.0	908	69
> 100	652	4.3	814	4.5	1179	4.4	1 158	4.7	506	78

Source: own study based on Quality Inspection of Agricultural and Food data [IJHAR-S 2013, p. 24]

Źródło: opracowanie własne na podstawie [IJHAR-S 2013, s. 24]

tively by 6.4% and 17.7%. Analysing the data concerning the number of ecological producers to 2011, it was noticeable that there was a steady growth of organic production sector in Poland (the increase in the number of organic producers by 13.8% in comparison to 2010). The rising tendency concerned 2012 as well (the increase by 10.6% in comparison to 2011). 2014 experienced a fall in the number of organic producers in 15 voivodships, which was visible in małopolskie voivodship (-456), podkarpackie voivodship (-269) and świętokrzyskie voivodship (-212) [IJHAR-S 2015]. In 2013 and 2014 the highest percentage of organic farms 26.3% and 28.2% were farms with organic agricultural land from 10 to 20 ha. The largest farms, over 100 ha of organic produce, constituted 4.4% of the whole number of organic farms (Tab. 2).

In 2012 the average size of an organic farm in Poland was regionally diversified and differed from 10.01 ha in małopolskie voivodship to 42.59 ha in wielkopolskie voivodship. In 2013 the average size was 25.19 ha. Relatively smaller farms are located in south-east Poland (e.g. małopolskie, świętokrzyskie and podkarpackie voivodships), the largest, though, are located in northern and north-west part of Poland (e.g. wielkopolskie, zachodniopomorskie, lubuskie and pomorskie voivodships). The organic production concentration in the area with worse environmental and land conditions may stem from a simple calculation. Although natural conditions (soil, water conditions, bioclimate, landform) limit the production possibilities, the transition to organic farming that is supported financially, is an opportunity to improve the economic situation of farms. However, the transition to this type of production must meet the relevant requirements of production set by accrediting bodies and certifying organic production [Mickiewicz et al. 2015].

Summary

According to *Condition of organic farming in Poland. The report 2015* the organic farming produce increased, whilst the level of processed foods decreased significantly. This tendency may be related to the difficulties in selling organic products to processing plants, and hence introducing these products on the market as non-organic goods. Ecological processing plants encounter obstacles with obtaining proper amount of organic raw materials to process, which resulted in decreasing the level of process production, and in some cases resulted in not processing any food products. Management in organic farms falls within the scope of sustainable farming and is supported by Rural Development Programme. In this way organic farming is presented as environmentally-friendly and the one which produces highly nutritious food.

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Streszczenie

Celem opracowania jest przedstawienie istoty biogospodarki, ze szczególnym naciskiem na zrównoważony rozwój rolnictwa. Uwagę skupiono na perspektywach rozwoju rolnictwa ekologicznego jako dostawcy surowców do produkcji zielonej energii. Podstawą badań była przede wszystkim krytyczna analiza literatury krajowej i dane GUS oraz Inspekcji Jakości Handlowej Artykułów Rolno-Spożywczych. Dane dotyczyły lat 2010-2014.

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