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SUSTAINABLE DEVELOPMENT OF AGRICULTURE – CASE OF POLAND

ZRÓWNOWAŻONY ROZWÓJ ROLNICTWA – PRZYPADEK POLSKI

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Słowa kluczowe: rozwój, rolnictwo, konkurencyjność

Abstract. The paper reviews the concept of sustainable agriculture, indicating its various dimensions. The similarities between sustainable development and sustainable agriculture are demonstrated. The fundamental objective of the paper is to conceptualize sustainable agriculture in Poland. The paper raises several essential issues concerning the lack of such studies in the past and proposes research objectives. Firstly, to present the main issues of sustainable agriculture and to show the possibilities of implementing the idea of sustainable development, an evaluation through the prism of change directions and dynamics, as well as regional differentiation of Polish agriculture, was necessary. Secondly, to present the situation in the economic sustainability of Polish agriculture in the period 2000-2010, the following research methods were employed: monographic and descriptive methods, analysis and synthesis, induction and deduction. Findings of foreign scientists were also used in the research. The analysis of the condition of agriculture considers the main changes that occurred between the years 2000-2010. These were presented on the basis of Main Statistical Office data from statistical yearbooks and reports of agricultural censuses results.

Introduction

Sustainable social and economic development is one of the most important challenges of the modern world. It is based on the assumption that a compromise should be identified between further economic development and preservation of the environment. The theory focuses its attention on the existing correlation between economic social development and the quality of environment. It provides the possibility to preserve existing environmental values such as fighting pollution and the degradation of the natural environment, which was very seriously disturbed by human activities in the 20th century. The concept of sustainable development was defined in the most transparent and commonly used way by G. Brundtland's World Commission for Environment and Development founded in 1983. The Commission defines sustainable development¹ as one in which the needs of the present generation should be met without compromising the ability of future generations to meet their own needs. This development relates to environmental, economic and social aspects. The Commission mentioned above contributed to organizing the 2nd Earth Summit in Rio de Janeiro in 1992 which was the most crucial event for implementing the idea of sustainable development [Czyżewski, Brelik 2013]. Sustainable development² is translated into Polish literature differently [Poskrobko, Olenska 2001, Zaręba 2000]. Sustainable development is a contested concept although the fundamentals are well defined: maintaining the integrity of biophysical systems and reducing poverty and risks. Sustainable development derives from social consensus on what is considered unsustainable and in contrast what constitutes progress, however perspectives will differ across nations and localities.

¹ This is because the concept itself is understood differently by economists, ecologists and sociologist. However, the idea of sustainable development emerged from numerous environments in earlier decades and was defined in 1987 by the World Commission on Environment and Development [*Our Common...* 1987] as: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The Brundtland report argued that the vast and complex issue of environmental deterioration should be integrated with the equally vast and complex issue of human development and poverty, clearly suggesting that both challenges needed to be resolved simultaneously and in a mutually reinforcing way [Robinson 2004].

² More about sustainable development can be found in [Brelik 2012].

Sustainable agriculture integrates three main goals—environmental health, economic profitability, and social and economic equity. A variety of philosophies, policies and practices have contributed to these goals. People in many different capacities, from farmers to consumers, have shared this vision and contributed to it. Despite the diversity of people and perspectives, the following themes commonly weave through definitions of sustainable agriculture. Sustainable agriculture is the act of farming which uses principles of ecology, the study of relationships between organisms and their environment. The phrase was reportedly coined by Australian agricultural scientist Gordon Mc Clymont. It has been defined as “an integrated system of plant and animal production practices having a site-specific application that will last over the long term”. In the view of economists [Woś, Zegar 2002], “the nature of socially sustainable agriculture is such an activity of individuals, which poses no danger to long-term social interest”, and “without a social and economic balance it is impossible to achieve ecological balance in the long term.” In a more practical perspective, sustainable agriculture simultaneously and harmoniously reaches production, economic, ecological and social goals. In different definitions, the significance of one group of goals is emphasized more strongly at given times. The economic, social and environmental dimensions of sustainable agriculture are to a certain degree complementary to one another. A prospering and efficient agriculture is capable of investing in environmentally-friendly production activity, while environmentally-friendly production and low prices of agricultural products are beneficial from a social standpoint. However, there may be some contradictions among these three dimensions of sustainable agriculture, since intensive agricultural production degrades environment [Turner 2000].

Objectives and scope of the paper

The fundamental objective of the paper is to conceptualize a sustainable agriculture in Poland. The paper reviews its concept, the lack of such studies in the past and proposes research objectives: 1) to present the main issues of sustainable agriculture; 2) to show the possibilities of implementing the idea of sustainable development which is evaluated through the prism of change directions and dynamics as well as regional differentiation of Polish agriculture; 3) to present the situation of economic sustainability in Polish agriculture in the period 2000-2010. The following research methods were employed in the present research: monographic and descriptive methods, analysis and synthesis, induction and deduction. Findings of foreign scientists were also used in the research. The analysis of the condition of agriculture takes the main changes that occurred during the course of 2000-2010, into consideration. These were presented on the basis of Main Statistical Office data from statistical yearbooks and reports of agricultural censuses results.

Economic aspects of sustainability³

The most significant objectives assigned to agricultural functions are economic and ecological ones. The former are associated with the incomes of farmers and their families – obtaining satisfying income from a farm constitutes fundamental economic objectives to farmers. The latter ecological objectives are linked to natural environment. The former arise from human needs, the latter – from nature’s needs. The manner of production used in agriculture, called industrial (or alternatively a conventional) way, ensured that sufficient food supply was provided to feed the population, however it simultaneously created risks to natural environment to a scale never before encountered. Therefore, modern states more and more often explicitly formulate ecological objectives. All the defined objectives are comprised in the concept of a multifunctional and sustainable agriculture development [Zegar 2013]. Agricultural and economic-agricultural literature clearly emphasizes the idea that currently one of the priorities is sustainable development of agriculture and rural areas.

³ Information was partly obtained from the publication in research on socially sustainable agriculture: *Selected aspects of sustainable development of agriculture* [2013].

The characteristics of the stage of agricultural development in Poland (Tab. 1) also demonstrate changes in the relations between the following spheres: technical (production), social and information-related. Simultaneously, this shows the possibilities of implementing the idea of sustainable development which needs to be evaluated through the prism of change directions and dynamics as well as regional differentiations in Polish agriculture. Such an approach ought to contribute to the creation of studies based on the reality of Polish agriculture [Matyka, Harasim 2010].

In comparison to EU countries, Poland is characterized by small average farm areas and their unfavorable surface structure. The average farm area in Poland in 2009 was equal to 6.5 ha, whereas in the EU (27) it was 12.8 ha. The share of farms with an area larger than 20ha in Poland was 5%, while in the countries of Western Europe it ranged between 40-60%. The consequence of agrarian fragmentation is high costs of administering the Common Agricultural Policy, since the share of total arable land (AL) in Poland is only 8.3%, but as many as 17.5% of the total number of EU farms. In the entire EU only Romania has smaller farms and a worse agrarian structure than Poland.

Polish agriculture is characterized by a high employment rate in the total number of employed persons, despite the fact that agriculture generates only 4% of GDP. The percentage of people employed in agriculture in the total number of the employed amounted to 15.8% in 2009, i.e. 6.2 pp percent less than in 2003 (22.0%). In comparison, average employment in this sector of the economy in the European Union amounts to 4.5%. There are significant differences between individual voivodeships as far as people employed in agriculture are concerned. The highest decrease of dynamics in the percentage of people employed in agriculture was recorded in the Swietokrzyskie Voivodeship (a decrease of 14.5 p.p.); the lowest – in the Warminsko-Mazurskie Voivodeship (a decrease of 5.6 p.p.). The decrease in the share of people employed in agriculture results from the fact that a growing number of the rural population finds employment in other sectors of the economy (an increasing trend in the number of people employed in agriculture was observed only at the beginning of the transformation, which was a consequence of a decelerating rate of economic growth and a decrease in the demand for labour in non-agricultural sectors).

The appropriate size and structure of agricultural production is essential for the functioning of agriculture in economic conditions and living standards of the rural population. Global agricultural production increased in 2000-2010 by 13.4%, with an increase in plant production of 1.5% and a far greater increase in livestock production of 24.5%. Individual farms recorded a lower growth of changes in output and commodity compared with holdings of legal persons and organizational units without legal personality. The share of agriculture in national gross value added to 2004 significantly increased (4.8%), but from 2004 a systematic decrease was observed in the trend, to -3.4% in 2010. In the period 2000-2010, the Polish economy recorded an increase in gross value added; however in agriculture a decline of 12.6% was noted. One of the main reasons was higher profitability of crop production compared to livestock production. The resignation of many farmers from livestock has many negative consequences for the health of soil. From the perspective of sustainable land management this illustrates that a significant part of agricultural land is devoid of organic fertilization of animal origin, as well as mineral and chemical fertilizers. This situation has a negative impact on the overall picture of sustainability of agriculture in this area.

The use of fertilizers and plant protection measures is a key factor for sustainable agricultural development. In the years 2009/2010 a reduction in their application was observed, with a level of 114.7 NPK per 1 hectare of land. One of the reasons for this was a drastic increase in fertilizer prices. It is worth noting that use of plant protection increases yield, although its overuse could be harmful to the environment and food safety.

In the years 2000-2010, real⁴ gross disposable income of household farmers increased by 32.9%, with a 28.3% increase in the total number of households. The significant improvement in the incomes of farmers had their origins in the creation of new mechanisms of public support: EU and national funds. The support under the CAP was undoubtedly conducive to the development

⁴ More about Polish income you may find in paper [Grzelak, Brelik 2011].

Table 1. Simplified characteristics of agriculture in Poland in the 20th century, taking into account the stages (waves) of development according to Toffler
Tabela 1. Uproszczona charakterystyka rolnictwa w Polsce w XX wieku z uwzględnieniem etapów (fal) rozwoju według Tofflera

Development stages/Etapy rozwoju	Technosphere/Technosfera	Social sphere/Socjosfera	Infosphere/Infosfera
Agrarian to 1950/ <i>Agrarny do 1950</i>	time-consuming technologies with the use of animal power, low production intensity, craving for land, dominance of natural agriculture – production for own consumption, low degree of agricultural product processing/ <i>technologie pracochłonne z wykorzystaniem żywej siły pociągowej, niska intensywność produkcji, głód ziemi, dominacja rolnictwa naturalnego – produkcja na samozapatrzenie, niski stopień przetworzenia produktów rolniczych</i>	high share of agricultural and rural population, agrarian overpopulation, multi-generation agricultural families, strong family bonds, respect for tradition/ <i>wysoki udział ludności rolniczej i wiejskiej, przeludnienie agrarne, wielopokoleniowość rodzin rolniczych, silne więzy rodzinne, szacunek dla tradycji</i>	Poorly developed, significant role of tradition and oral tradition, tendency towards increasing importance of information (science, consultancy), news obtained from the radio and the press/ <i>słabo rozwinięta duża rola tradycji i przekazu ustnego, tendencje do wzrostu znaczenia informacji (nauka, donadżstwo), wiadomości nabywane za pośrednictwem radia i prasy</i>
Industrial 1950-1989/ <i>Industrialny 1950-1989</i>	substitution of animal with mechanical power, increase in production intensity (fertilizers, pesticides), preference to the nationalized sector, decrease in land resources, deficit economy, production maximization as a priority in agriculture/ <i>substytucja siły żywej przez mechaniczną, wzrost intensywności produkcji (nawozy, środki ochrony roślin), preferencje dla sektora upolseczającego, zmniejszenie zasobów ziemi, ekonomia niedoboru, maksymalizacja produkcji jako priorytet w rolnictwie</i>	migration of rural population to towns, social promotion, negative selection of individuals working in agriculture, growing interest in education, income disparity, gradual weakening of family bonds, change of family model, departure from many traditions/ <i>migracja ludności wiejskiej do miasta, awans społeczny, selekcja negatywna pracujących w rolnictwie, rosnące zainteresowanie zdobywaniem wykształcenia, dysparytet dochodów, stopniowe rozłączanie więzi rodzinnych, zmiana modelu rodziny, odchodzenie od wielu tradycji</i>	gradual, diversified development (television, press) extension of the scope of consultancy, chiefly technological consultancy, low ecological knowledge and awareness (<i>stopniowy, różnicowany rozwój (telewizja, prasa), rozszerzenie zakresu doradztwa, głównie technologicznego, niski poziom wiedzy i świadomości ekologicznej</i>)
Post-industrial after 1989/ <i>Postindustrialny po 1989 r.</i>	change in farming priorities (instead of maximization – optimization), sustainable development, extensive farming production after 1989, harvest stabilization, decrease in cattle and sheep population, simplified plant production overproduction, exclusion of land from production, interest in various systems of farming/ <i>zmiana priorytetów gospodarowania (zamiast maksymalizacji optymalizacja), rozwój zrównowazony, ekstenzyfikacja produkcji po 1989 r., stabilizacja plonów, zmniejszenie pogłowia bydła i owiec, uproszczenie w produkcji roślinnej, nadmiar produkcji, wyłączenie gruntów z produkcji, zainteresowanie różnymi systemami gospodarowania</i>	significant decrease of employment in agriculture (also the existence of unemployment), relatively lower education and mobility of rural population, acceleration in the alternation of generations in agriculture, high significance of welfare support, and in recent years – of subsidies, search for work abroad, attempts to use the multi-functionality of rural areas, increase in ecological awareness, concern about food safety/ <i>znaczący spadek zatrudnienia w rolnictwie (także istnienie bezrobocia), relatywnie niższy poziom wykształcenia i mobilności ludności wiejskiej, przyspieszenie wymiany pokoleń w rolnictwie, duże znaczenie wsparcia socjalnego, a w ostatnich latach dopłat, poszukiwanie pracy za granicą, próby wykorzystania wielofunkcyjności obszarów wiejskich, wzrost świadomości ekologicznej, troska o bezpieczeństwo żywnościowe</i>	intensive development of information sphere (computers, then the Internet, mobile telecommunication, television), decreasing importance of oral tradition, evolution of agricultural consultancy from technological focus to economic-organizational focus/ <i>intensywny rozwój sfery informacji (komputery, potem internet, telefonia komórkowa, telewizja), malejące znaczenie przekazu ustnego, ewolucja doradztwa rolniczego od technologicznego do ekonomiczno-organizacyjnego</i>

Source: own study based on [Fotyma, Krasowicz 2007]

Źródło: opracowanie własne na podstawie [Fotyma, Krasowicz 2007]

of sustainable agriculture – on one hand alleviating disparities in the income of farm families and other social groups, on the other hand enforcing environmental measures, which in many funding programs are an indispensable condition for receiving grants. The final total income from all sources of financing, both EU and national amounted to 38.7% in 2004 and 55.6% in 2010. More than half of farmer income resulted from external funding.

Conclusions

A review of English-language, interdisciplinary literature on sustainable development (SD) reveals the following problems. According to Jabareen [2004], there is a distinct lack of theoretical framework for the understanding of sustainable development and its complexity, and in particular for the concepts of “development” and “sustainability”. Furthermore, as C. Villanueva observed [1997], suitable definitions are not fit for operationalization (there is an agreement among scholars as to how the concept is to be translated into the language of practice [Berke, Conroy 2000]). Sustainable development can be optimal, as planning occurs at local and regional levels [Haughton 1999]. One can risk claiming that changes in how the approach to the natural environment and to climate, create new market conditions and thereby force farms to change. They adapt to fierce competitiveness, having both the environment and own profits in mind and apply new technologies that ensure more extensive economic benefits to farms and social benefits to the population. There is a trend in Poland of a decrease in the number of farms and an increase in the average farm acreage. This is a result of unfavorable farm structure and regional differentiation in agricultural conditions and production intensity. Poland has a chance to create sustainable agriculture if its ecologization is to be considered. Varied surface features, diversity of soil and climatic conditions mean that Poland features a significant variety of natural habitats and landscapes. Sustainable agriculture is enjoying increasing interest from members of the society, mostly on account of its environmental friendly characteristics, its importance to food quality and the vitality of rural areas. Irrespectively of this interest, if it fails to meet the requirement of competitiveness, it will have no chance to grow in market economy conditions [Zegar 2012]. It also needs to be mentioned that when attempting to evaluate sustainability, one must consider that all the functions of agriculture have to be perceived as self-complimentary, and agriculture is but one of the elements in the implementation of the whole concept of sustainable development. In macroeconomic terms, the image of Polish agriculture in the context of meeting the conditions for sustainable development is not clear. Nonetheless, empirical data presented in this paper indicates a positive direction of change in the period 2000-2010, especially after entering European structures. Research has showed that Polish agriculture features a high employment rate in the total number of the employed in Poland, despite the fact that agriculture generates only 4% of GDP. The percentage of people employed in agriculture in the total number of the employed amounted to 15.8% in 2009, i.e. 6.2 percentage points less than in 2003 (22.0%). To compare, the average level of employment in this sector of the economy in the European Union amounts to 4.5%. Farmers’ income increased, despite the emerging unfavorable price relations, mainly as a result of transfers of funds for agriculture-related mechanisms of the CAP. However, significant differences were observed between individual voivodeships in regards to people employed in agriculture, efficiency of agricultural production, improvement of economic conditions, global production and marketability of agriculture.

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Streszczenie

Celem badań była konceptualizacja zrównoważonego rolnictwa w Polsce. Przedstawiono koncepcję zrównoważonego rozwoju, wskazując jego różne wymiary. Punktem wyjścia do rozważań było wykazanie zależności między zrównoważonym rozwojem i zrównoważonym rolnictwem. Zastosowano następujące metody badawcze: metody monograficzne i opisowe, analizy i syntezy, indukcji i dedukcji. W analizie sytuacji rolnictwa uwzględniono główne zmiany, które zaszły w latach 2000-2010, przedstawiono je na podstawie danych GUS zawartych w rocznikach statystycznych i opracowaniach wyników z powszechnych spisów rolnych.

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