

Directions of development of rural areas in Poland (sustainable agriculture, organic agriculture)

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Abstract. The development of rural areas is determined primarily by the natural environment. Abiotic factors such as soil, water and ambient temperature are very significant for agriculture. At the same time, the development of rural areas is conditioned by demographic aspects, structure of settlement, and professional activity of the local people. The main objective of rural land management is improving the spatial structure and the working and living conditions of the rural population in close relation to environmental protection and development of such grounds. In Poland, agricultural development directions include sustainable and organic agriculture. These forms of agriculture are developing intensively with regard to a large need for maintaining high crop yield and at the same time reducing the environmental burden. The production of high quality food is significant, while the highest possible biological equilibrium in the natural environment should be maintained at the same time. This article aims to indicate that the above-mentioned directions of development of rural areas are very important for Poland and they generate many advantages for the natural environment. In addition, a useful procedure in improving the spatial structure is land consolidation process carried out in rural areas. Its main objective is improving the configuration of land giving it an optimum shape. This process has a positive impact on agriculture and the community living in such areas.

1 Introduction

The development of agriculture in Poland as well as its production capacity is much differentiated in terms of space. This is a result of, among other factors, long-term transformations of agricultural management in areas with different social and economic status continuing for many years. Currently in our country there are agricultural areas which in many respects can compete with agriculture in the member states of the European Union. However, in some areas agricultural production run by private farms owned by individuals is on the verge of or falls below the limit of profitability [1-3]. Therefore, the fundamental objective of land management in rural areas is developing such areas by improving their spatial structure and the working and living conditions of the rural population in a positive relation to environmental protection. Land consolidation is a geodetic process improving the spatial structure of rural areas. Thanks to this rural management process, rural areas become competitive and cultivation of crops in such areas generates financial benefits and as such contributes to improvement in the living standard of their inhabitants.

In Poland, the directions of agricultural development comprise: sustainable and organic agriculture. These forms of agriculture are developing intensively when there is a large need for maintaining high crop yield and at the same time reducing the environmental burden. The production of high quality food is significant, while the

highest possible biological equilibrium in the natural environment should be maintained at the same time.

This paper aims to demonstrate that the presented directions of development of rural areas are significant and they generate many ecological and economic advantages for the natural environment. Land consolidation is a useful process for improving the spatial structure. Its main objective is improving the configuration of land giving it an optimum shape. This geodetic procedure has a good impact on agriculture and on the community living in such areas.

2 Land consolidation – geodetic instrument for the development of rural areas

Consolidation of land was the first tool used for the purposes of developing rural areas and agriculture. The basic definition and goal of land consolidation is given in the Act of 26 March 1982 on Land Consolidation and Exchange, where it is defined as: “(...) rural management procedure aiming at transformation of the spatial arrangement of rural land in order to create more favourable management conditions by improving the territorial structure of farms, ensuring reasonable configuration of land, and aligning the limits of real properties with the system of water irrigation structures, roads and terrain.” [4].

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The Rural Development Programme for the years 2014-2020 promulgates land consolidation works as geodesic works during which: “(...) new plots are formed in a configuration different from that of original plots in order to reduce the number of small, scattered plots constituting a single farm and to increase their average size. The consolidation project also includes works related to post-consolidation management of land, that is, in particular, creating a functional system of access roads to agricultural land and forestland and performing tasks affecting the regulation of the water regime in the consolidated area.” [5].

Currently, improved agricultural and forestry management conditions are created for the purposes of land consolidation [4]. This is a group of project and technical measures which should result in improvement of living and working conditions in rural areas. Investments related to village renewal carried out during such works along with the construction of technical and social facilities are significant. Also, tasks related to environmental protection and measures for maintaining natural fundamentals of existence are important. An important aspect is cutting down on the costs of production in agriculture and forestry as a result of reducing the workload and eliminating structural barriers. Abiotic factors such as: terrain relief, soil type, precipitation – water, air temperature, and wind are significant to agriculture. The development of rural areas also determines demographic, economic, and natural and landscape aspects and public interest.

Therefore, during land consolidation particular attention must be paid to identification of agricultural problem areas [1,6] and then to adequate management of such areas.

Literature does not contain a uniform definition of agricultural problem areas [7]. This is connected with various fields of study and approaches of experts investigating this issue. Scientific publications related to that topic use a number of terms such as: conflict areas, shortage areas, depressed areas, difficult areas, production reserve areas, risk areas, less developed areas, backward areas, marginal areas etc. [8]. These words are assumed to be synonymous with ‘problem areas’.

Currently, according to law, art. 2 par. 7 of the Act of 27 March 2003 on Spatial Planning and Management defines problem areas as: “an area where special phenomena related to spatial management or spatial conflicts occur as indicated in the spatial management plan of a voivodeship or in the study of conditions and directions of spatial management of the gmina” [9].

In terms of performance of land consolidation works, the definition of agricultural problem areas proposed by Wójcik-Leń as areas that are still used for agricultural purposes, but do not generate benefits with regard to [10]:

- I. location in relation to selling and employment markets consisting of:
- tax district
 - high unemployment rate,
 - high population density,
 - low structure of income,
- II – terrain relief, including:
- situation on large slopes,

- unfavourable slope exposition,
 - risk of erosion,
- III – soil conditions with respect to soil quality and usefulness
- low soil class,
 - poor complex of agricultural usefulness,
 - excessive humidity or outstanding dryness of soil.

Information regarding problem areas should be taken into account as a group of factors in identification of areas for land consolidation purposes, which is mentioned by [11- 17]. It is reasonable to promote alternative economic functions, and thus the most attractive method of management of the discussed areas during consolidation of land that can be allocated in the first place [10,18]:

- for planting forests and trees,
- to purposes not related to agriculture and forest management, e.g. for building purposes, transport infrastructure, agritourism, recreation etc.,
- after conversion into ecological areas,
- for cultivation of energy crops [19],
- for setting up wildlife food plots [20].
- other.

It is very important that all changes harmonize with natural resources because the principle of sustainable development is extremely significant to the development of rural areas. This principle mainly refers to protection of soil, water, plant and animal gene resources, environmental degradation, technical correctness, economic sustainability and social acceptance [21].

The concept of sustainable development of villages and rural areas must be implemented simultaneously at a few levels: lowest – farm, medium – region, highest – country [22]. The process of consolidation is the basic tool to ensure sustainable development of rural areas.

3 Sustainable agriculture

Sustainable development is defined and explained in many different ways such as for instance [23]:

- a social and philosophical idea indicating the needs for changes in the contemporary values recognized by the society,
- a contemporary direction of socioeconomic development identifying new methods of organization and management of economy,
- newly emerging field of science.

The principle of sustainable and permanent development sprung from the need for taking the interest of both present and future generations into account in management processes. The World Commission on Environment and Development in 1996 recognized that the concept of permanent and sustainable development is: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. This principle imposes an obligation to ensure equilibrium in three fundamental dimensions, i.e.: economic, social and environmental dimension. Its performance is determined by specific developmental factors and determinants of the level of actual development and development-related goals. Reasonable management in the natural environment should make it

possible to accomplish economic and social goals, concurrently respecting the cultural, ethical and spatial aspects [23].

The classic concept of sustainable development took into account three main interacting dimensions:

- ecological – maintaining correct quality of the natural environment and reasonable utilization of natural resources,
- economic – issues of effectiveness and productivity,
- social – improvement in living conditions, access to infrastructure and efficiency of economic systems.

The concept of sustainable development of rural areas comprises the following basic directions of rural development:

- protection of soil, water and air against pollution generated by agriculture,
- permanent and sustainable development of agriculture,
- protection of rural areas, including protection of their biodiversity, landscape values and preventing soil erosion,
- caution with regard to the development of biotechnology and genetic engineering.

In addition, sustainable agriculture can be described in 5 points:

- natural resources should be utilized reasonably,
- food production should be increased only upon an increase in the productivity of resources (by introducing technologies that protect the resources and at same time maintain their high quality),
- such agriculture is poorly susceptible to upheavals and fluctuations,
- full symbiosis between production and ecological goals in sustainable agricultural systems,
- management of natural resources (changing needs can be met and at the same time high quality of natural environment is maintained).

On 25 April 2012, the Council of Ministers adopted the Strategy for Sustainable Development of Rural Areas, Agriculture and Fisheries for 2012-2020 [24]. In 2012, Resolution of the Council of Ministers No. 163 concerning the adoption of the “Strategy for Sustainable Development of Rural Areas, Agriculture and Fisheries” for 2012-2020 was published in the Official Journal “Monitor Polski” and thus the Resolution became effective. In 2013, the Minister of Regional Development issued an opinion on full compliance of SZRWRiR with the Interim National Development Strategy for 2020. Active Society, Competitive Economy, Efficient State.

The above-mentioned strategy for development of rural areas, agriculture and fisheries for the years 2012-2020 is one of the development strategies referred to in the act of 6 December 2006 on the rules of the development policy implementation [25].

The main objective of SZRWRiR is identifying the key directions in the development of rural areas, agriculture and fisheries in the perspective until 2020, and thus correct orientation of the scope of public intervention financed from domestic and Community funds.

The long-term main goal of the measures for development of rural areas, agriculture and fisheries was

defined in the strategy as follows: improvement in the quality of life in rural areas and effective utilization of their resources and potentials, including agriculture and fisheries, for the purposes of sustainable development of the country. The general goal will be accomplished by means of measures assigned to five specific goals:

- increase in the quality of human and social capital, employment and entrepreneurship in rural areas;
- improvement in living conditions in rural areas and improvement of spatial access;
- food security;
- increase in productivity and competitiveness of the agricultural and food sector;
- environmental protection and adaptation to climatic changes in rural areas.

Measures provided for in the strategy accommodate new civilization challenges, including: ageing of societies, climatic changes, generation exchange, development of information technologies, professional and territorial mobility and impact of global demographic situation on food security.

Sustainable agriculture is an alternative concept regarding the method of management and a less extreme form of intensive agriculture. The main idea behind the above-mentioned concept is deriving as many benefits as possible from crop cultivation and animal breeding, at the same time taking care of our own future and the future of subsequent generations. Therefore, it combines the use of state-of-the-art engineering and technology developments with widely interpreted ecology both on a micro and macro scale.

The concept was developed about 40 years ago. It assumed economic development without compromising the natural environment. The onset of intensive development of technology at the end of 19th century resulted in huge environmental losses and increased deterioration or many ecosystems through armed conflicts and ecological catastrophes. At the end of the 20th century the idea of unlimited progress with no regard to environmental costs was gradually abandoned, which resulted, among other things, in developing the concept of sustainable agriculture.

It can be noted that sustainable agriculture is a very broad term. Sustainable agriculture aims at promoting the sustainable management system, that is, reasonable utilization of natural resources, which facilitates mitigation of the negative environmental impact of agriculture and prevents the loss of organic substance in soil.

It is believed that this form of agriculture will develop most intensively in the following years. This is connected with making our agriculture green, that is, the will to maintain high crop yield with a lower environmental load. It is significant that this is an alternative to farmers who are not willing to apply the organic soil cultivation method but they are aware of the negative impact of excessive use of chemicals in agriculture. Then, the farmer attempts to reduce the use of chemicals in agriculture to the maximum extent possible. This is an attempt at inhibiting the degradation of soil.

The type of agriculture under discussion is believed to be a multi-layer related system of production which,

operating in a specific way, determines the choice of certain technologies. In the first place, in sustainable agriculture specific agricultural practices are a priority. Social issues are recognized while the economic aspect is kept in mind. It is essential that farmers and advisors receive adequate and professional preparation to ensure that the foodstuffs produced are of high quality [26]. The production aims at accomplishing the assumed goals and profits, at the same time reducing the consumption of energy, workload and land use, and necessary capital to the minimum. In addition, sufficient soil cover to prevent erosion and protection of useful insects must be ensured and care must be taken of natural and landscape values. Sustainable agriculture assumes that changes in the environment caused by human activity should be offset with the rate of renewal of ecosystems. There are a number of rules underlying this idea:

- the intensity of utilization of available natural resources must not exceed the rate of their renewal,
- the amount of pollutants discharged to the environment must not exceed the absorption potential of the environment, that is, its ability to absorb, process or render such pollutants harmless,
- the time of supply of substances to the environment must comply with the time of natural processes occurring in the environment.

Observing the above-mentioned principles, one can ensure continuous growing of crops but also their higher quality, at the same time taking care of the environment and welfare of the future generations.

One of the fundamental assumptions of sustainable agriculture is economic profitability. It is difficult to establish the income from such a method of management in comparison to intensive and extensive management. However, if the crop area is sufficiently large, the benefits are satisfactory. When a correct rate of renewal of ecosystems in a crop field is maintained, there is no need for additional agricultural practices that are necessary in case of intensive farming with regard to the fact that the soil is deprived of fundamental nutrients. This reduces the farmer's workload, which is an additional benefit. Another advantage is that the discussed method of management requires large financing from the state budget and the European Union (in case of compliance with the lawmaker's requirements).

Sustainable agriculture is an interesting way of management, because it is based on high ecological awareness of farmers. This form of agriculture is not very common yet but with the progress of civilization and growing awareness of people, perhaps it will become a predominant concept in the agriculture of the future.

4 Organic agriculture

Organic agriculture (or organic farming) is defined as a system of management according to soil requirements, including sustainable plant and animal production. Its primary goal is the production of high quality food, at the same time maintaining the highest possible biological equilibrium in the natural environment. First and foremost, organic production should combine

environment-friendly management practices, support high level of biodiversity, make use of natural processes and ensure animal welfare.

Organic agriculture is one of the fastest developing branches of agriculture in the world, and in particular in the European Union. Recent years in Poland have been characterized by fixed dynamics of increase in the area in use and the number of organic farms. The development of the organic farming sector is also reflected in the number of processing plants and the range of organic products available in the market.

The dual nature of the organic farming system is emphasized very often. First of all, it is a system having a positive impact on the natural environment, which also contributes to achieving widely understood agricultural and environmental benefits. On the other hand, organic agriculture is a response to the changing structure of demand in the market. Consumers tend to choose organic products. They are interested in buying such products and usually pay a higher price than for products manufactured by means of other methods. According to this approach, organic agriculture is a market-driven system.

According to statistics, at the end of 2016 the number of organic producers operating in Poland was 23 375. In 2015-2017 a significant increase was noted down in the number of entities preparing products for sale, and for processing (from 562 entities in 2015 to 705 in 2016 and 7953 in 2017). 449 processing plants operating in 605 processing categories operated in 2017 [27].

Studies show that in 2015-2016 ecological area was covered mostly with crops cultivated for animal feed production, meadows and pastures and grains which in total accounted for 80.2% of the area in 2015 and 76.7% in 2016. The most important species of animals raised by organic methods were poultry, sheep and cattle. In 2013-2016 the production of organic grains increased considerably from 117 to 150 000 tonnes and that of organic vegetables from 28 to 51 000 tonnes. In 2015-2016, the share of meadows and pastures in the ecological area decreased from 27.2% to 25.6%, that of crops cultivated for animal feed production from 35.5% to 32.2% and that of orchards and berry fruit plantations from 8% to 6.6% [27].

In 2015-2016 the most numerous group of organic producers was agricultural producers – 22 435 producers (i.e. 96.0% of all organic producers). The producers were also involved in other activities: preparation of organic products, putting organic products on the market (except products imported from third countries), supplies of qualified sowing material and vegetative propagating material, putting organic products imported from third countries on the market, collection of plants from natural habitats and apiculture.

The control system in organic agriculture established in Poland complies with the provisions of Council Regulation (EC) No. 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No. 2092/91 [28] and meets the conditions specified in Regulation (EC) No. 882/2004 of the European Parliament and of the Council of 29 April 2004 on official controls performed to ensure the verification of compliance with feed and food law, animal

health and animal welfare rules [29]. Thanks to the control system, consumers can be certain that organic products are manufactured according to the requirements set forth in the regulations concerning organic farming.

A significant element of the organic production system is ensuring that products labelled as organic products were produced according to regulations in force. This compliance is confirmed by the special system of control and certification. This system is formed by the Minister of Agriculture and Rural Development, Agricultural and Food Quality Inspection, Polish Accreditation Centre and 12 certification units for organic agriculture.

Organic agriculture has received financial support since 1998. The organic farming sector was also supported under the “Rural Development Programme for 2007-2013”. The Common Agricultural Policy until 2020 also deems organic agriculture very significant. It was reflected in solutions connected with ‘greening’ of Tier 1 of the RDP and in regulations underlying the assumptions of RDW 2014-2020. In many measures of RDW 2014-2020, organic farming is preferred or producers are granted extra points for running organic production.

Measures provided for in the “Framework Action Plan for Organic Food and Farming in Poland for the years 2014 – 2020” implement and support the goals set by the European Agricultural Fund for Rural Development, in particular by supporting transfer of knowledge and innovation in agriculture, increasing the profitability of farms, supporting the organisation of food supply chain, including processing and putting agricultural products on the market, promoting animal welfare and supporting effective management of resources and change to low-carbon economy.

5 Conclusions

The contemporary model of management subject to land consolidation based on the idea of sustainable development allows the intensification of farming to an extent posing no threat to the environment and causing no degradation of soil (acidification, decrease in the content of organic substance, erosion etc.), contamination of surface and underground waters, excessive concentration of production on a unit of area, overdrying of soils as a result of incorrect irrigation and drainage or improper use. Poland signed many international conventions on environmental protection, which, in combination with the necessity of implementing EU laws, puts our country under an obligation to undertake challenges typical of sustainable and organic agriculture [30].

Implementing and maintaining equilibrium between agriculture and the natural environment must be a permanent and long-term process based on a holistic approach to the farm and adequate legal regulations.

A farm should be guided by the Code of Good Agricultural Practice which provides for [31]:

- correct situation of the farm in agricultural landscape maintaining the environmental and aesthetic values of such landscape to the maximum (grassland, cropland, non-productive areas),

- multispecies mixtures ensuring correct sequence of crops and maintenance of the phytosanitary status of soil,
- correct organic and mineral fertilization taking into account the sustainable balance of minerals and increased fertility of soil,
- energy efficient and effective tillage techniques and methods of keeping farm animals.

The discussed directions of rural development contribute to improving the situation of the inhabitants of rural areas. The process of land consolidation has a positive effect on the arrangement and development of the specific area. On the other hand, sustainable agriculture and organic agriculture generate a number of advantages for the natural environment.

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