

Landscape Aspects in Land Consolidation Procedures in Poland

Prof. Wojciech WILKOWSKI and Adrianna PUŁECKA, Poland

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ABSTRACT

The paper presents the changing approach to the land consolidation procedure, considering the necessity of preserving the landscape and protecting environmental components. So far, the improvement of spatial structure of farms has the priority in consolidation procedure. Despite the Polish long tradition of land consolidation, the problem is usually limited to designing a new road network and new shapes of arable land plots convenient for modern farming. The paper displays that presently valid land consolidation criteria in Poland are outdated and too narrow to fit landscape-protection-oriented transformation of the Polish countryside. The basic land consolidation criteria, such as:

- Value of a new farm cannot exceed more than $\pm 3\%$ of the value of an old one
- New area of a farm should not differ more than 20% from the old area, a farm should be composed of the smallest possible number of plots
- The plots should be of rectangular or trapezoid shapes,
- The plots should be located as close as possible to the habitation place.

are regardless landscape and environment protection. Extraordinarily large volume of land consolidation projects necessary in Poland calls for carefully prepared procedures to preserve the landscape as a cultural heritage and to create countryside recreation space. The paper considers a set of additional criteria appropriate for landscape-preserving-oriented procedures of land consolidation adjusted to the specific circumstances of the Polish countryside.

CONTACT

Prof. Wojciech Wilkowski and Adrianna Pułeczka
Affiliation: Association of Polish Surveyors
Warsaw University of Technology, Institute of Applied Geodesy
Plac Politechniki 1
00-661 Warsaw
POLAND
Tel. + 48 22 625 15 27
Fax + 48 22 625 15 27
E-mail: wwilk@gik.pw.edu.pl or adrp@go2.pl

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1. INTRODUCTION

The objective of land consolidation is creating the better conditions for farming and forestry management. Such a goal can be reached by improvement of spatial structure of farms, forests and forested areas. Land consolidation projects are aimed at rational management of the spread of land plots and border adjustment to the water and road networks considering terrain relief.

Land consolidation projects have long tradition in Poland. However, in the past they were mainly focused on improvement of spatial structure of farms. A holistic approach to rural areas being popular recently have not been practically applied in Poland yet. This may result in the fact that land consolidation projects in Poland have been traditionally relating exclusively to the management of rural areas. Considering such an approach the legal regulations and proper instructions have been developed.

It is a generally agreed that besides improvement of spatial structure of farms, the modern approach to rural management should take into account landscape and environmental issues. On the other hand, the Polish legal regulations concerning land consolidation do not practically specify which landscape components should be considered in land consolidation procedure. The mentioned gap in legal regulations extends over the principles of land consolidation procedures as far as sustainable development of rural areas and financing principles concern. Such a gap does not foster realization of the landscape-protection-oriented projects. It should be mentioned, however, that there have been many reports widely discussing rural areas development issues recently published in Poland.

2. THE POLISH RURAL LANDSCAPE

The Polish rural landscape is far from uniformity. The central, eastern and south-eastern regions represent the typical landscapes of small farms. The northern and north-western regions stand out the landscape typical for large-commodity farms. Some of them used to be the property of the state and co-operatives in the period of 1945 – 1990. Others have been private farms of the area exceeding country's mean (7 ha). Range of the landscapes types in Poland is presented in Fig.1.



Figure 1: Types of the Polish landscapes;
 (1) – landscape of large-commodity farms, (2) – landscape of small farms

The landscapes created by small farms, in the majority of cases consisting of mosaic arable-land-pieces, colourful meadows and pastures with many species, where cattle have been extensively raised are still preserved. For that Poland is called “the country of storks” by ornithologists. About 40,000 storks stay in Poland in summer, whilst only about 4,000 storks stay in Germany (RIBBE, 1997). The typical landscape of those regions of Poland is presented in photograph 1.



Photo: MASSTEL

Photo. 1.

In areas where large-commodity farms existed in the past many forested areas, communities of grasses and scrubs, small water reservoirs located within arable fields or at the edges of arable fields have been removed.



Photo: W.ZIEMAK

Photo. 2.

Such processes resulted in devastation of the landscape within such areas. Those areas are characterised by the oversimplified landscape, what may result in considerable reduction of biological-and-ecological components and serious environmental threat due to the quick development of devastation processes. Typical landscape for such areas of Poland is presented in photograph 2.

3. LEGAL REGULATIONS INFLUENCING LANDSCAPE DEVELOPMENT

In many countries, including the European Union member-states, intensive development of agriculture results in serious pollution of soils, water and air and in decrease of the number of wild animals and plants. Despite many disadvantageous changes in the landscape, recent legal regulations in Poland have been already partly aimed at creation of the “sustainable development of the agricultural landscape”, considering, first of all, the following factors (cf. REENBERG, 1991, RICHLING, SOLON, 1994):

- Effects of changes in land use structure,
- Influence of various land use forms on changes of landscape components
- Considering of the past, historical landscape forms in the course of development of scenarios of future changes.

The following legal acts influence the management of landscape by means of implementation of the above mentioned objectives:

- 1) The act on destination of arable lands for afforestation (came into force on January 1, 2002)
- 2) The act on ecological agriculture (came into force in 2001),

3) The act on consolidation and exchange of lands (came into force in 1982). According to the act on destination of arable lands for afforestation, owners of arable lands are authorised to afforest those lands if one of the following criteria is met:

- 1) Arable lands are characterised by low production values (V and VI soil quality classes)
- 2) Arable lands are located on slopes of average inclination higher than 15%
- 3) Arable lands are periodically flooded
- 4) Arable lands have been degraded.

Landowners who performed afforestation works, get specified financial equivalents from the state paid for the period of 20 years.

The act on ecological agriculture allows to create belts of inter-field trees or hedges in order to restrain negative influences on ecological farms arable land of the factors harmful for the yields quality.

The act on the protection of the nature admit creating ecological-arable-land in the process of transformation of other croplands. This concerns the fields being important for preservation of unique resources of genes and types of habitats. In general, the following features may be transformed into ecological lands:

- Natural water reservoirs, inter-field and inter-forest water features
- Clusters of trees and bushes
- Marshes and peatbogs
- Dunes
- Areas of useless vegetation, clumps of old trees
- Outcrops, slopes, rocky-lands etc.

The act on consolidation and exchange of lands authorises the land surveyor who develops the concept of rural areas management during land consolidation procedure for creating the “sustainable agricultural landscape”. As the best approach to such issues the concept of agricultural-forest-pasture balance is recommended. This means that the possibly highest bio-diversification of the landscape should be ensured. It is understood as the high diversification of crops preserving considerable areas of ecotones as the components supporting agricultural development.

4. LANDSCAPE AS A RESULT OF LAND CONSOLIDATION

Land consolidation essentially aims at optimisation of management of specified rural area. As a result of land consolidation diversified functions of rural areas should be pointed out. Location of the areas having the following function should be indicated in land consolidation project:

- Areas of intensive agricultural production
- Areas, which are periodically used for agricultural purposes

- Areas of intensive forest production
- Future built-up areas
- Areas planned for recreation
- areas of particular protection due to their high ecological values
- areas planned for future infrastructure investments (motorways, railways, gas and oil piping etc.).

Results of implementation of the land consolidation project and planned investments will impact specifically on the landscape. The landscape creates an organisational unity. Therefore it is recommended considering all of its components, i.e.: forests, forested areas, bushes, arable lands, meadows, pastures, orchards, surface waters and technical infrastructure elements as an integrity. Preserving appropriate relations between those elements is the condition of appropriate ‘functioning of the landscape’. Proportions of areas, as well as spatial relations between particular areas are very important. One of the basic methods of rational arrangement of agricultural landscape is to develop the optimum land use structure for particular natural requirements.

The level of transformation of the landscape and related necessity of biological requirements should be based on the following assumptions (cf. TALALAŁAJ, 2000):

- The landscape capacity is limited with respect to a monotonous, agricultural land use
- Arable lands, being the unnatural, i.e. temporary form of land use, tolerate negative impacts to the very limited level only
- In the case of intensively developed agricultural landscape (uniform as regards the biological-and-ecological and view aspects) it is necessary to preserve or arrange natural or similar elements (point, linear, surface) inside the landscape
- The measure of the level of progress of transformation of the agricultural landscape is, among others, disproportion between the area of arable lands and the area of such components as: forests, green areas, waters, forested areas etc.
- The capability indicator of ‘the biological arrangement of the landscape’ by means of introduction additional forested areas is the presence of such elements, as: roads, streams, ditches, settlements, water reservoirs, peat-bogs, barren-lands, surface-mining-excavations etc.

Particular attention during land consolidation process should be paid to the following landscape-creative elements:

- Preserving natural and historically formed agricultural structures influencing the value of rural landscape
- Protection and cultivation of the natural environment by developing such methods of production and related spatial structures which support preservation of healthy life

- Creating encouragement system in order that, at least, a part of the rural community continue conventional methods of cultivation and shepherding as a guarantee of preserving some typical features of the rural landscape.

5. CONCLUSION

The Polish rural areas will undergo many changes in the nearest future. Landscape issues will play important role of those changes. Regardless the model of agriculture (industrial or ecological) dominating in particular region, rich and diversified landscape will appropriately play its role if it has good protectors. Inhabitants of rural areas will be responsible for landscape heritage. Consideration of both production, esthetical and protection criteria by the farmers may create the rationally composed agricultural landscape, the “landscape of tomorrow”. Such landscape will be created on pieces of land belonging to many individual owners. It will be the result of rational solution resulting from the course of land consolidation projects.

In the process of arranging the landscape the main role will be played by surveyor–designers, who will closely cooperate with landscape architects. Therefore it is very important to work out appropriate standards related to designing of landscape in the course of land consolidation projects as well as procedures of management of landscape resources. It would be reasonable to aim at convincing municipal authorities to perform “landscape monitoring” in municipalities/parishes in order to make inventory and validate landscape resources, to register existing and potential sources of hazards and to protect and cultivate landscape resources.

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BIOGRAPHICAL NOTES

Wojciech Wilkowski is the professor at the Warsaw University of Technology, Faculty of Geodesy and Cartography, Institute of Applied Geodesy. He is the Head of the Laboratory of Cadastre and Land Management. He is the member of the Polish Society of Valuation of Real Property, the Association of Development of Rural Areas, the Polish Association of Real Property Experts, the Association of Polish Surveyors and the Royal Institution of Chartered Surveyors. He is the author of 180 publication on the following topics: rural and forest information systems, computer-aided land consolidation, real estate valuation, environmental protection, land reclamation and soil conservation, thematic cartography, photogrammetric methods applied to inventory of stands, surveying for forest land management, limitation of real estates of the State Forests, cadastre of lands and buildings, land information systems, multi-criteria methods of evaluation of the influence of construction of motorways on farms.

Adrianna Pulecka graduated from the Faculty of Landscape Architecture at the Agricultural University in Warsaw. At present, she is a student of the 3rd year of PhD-studies at the Faculty of Geodesy and Cartography of the Warsaw University of Technology. She is preparing her doctor thesis on management and protection of landscape in the course of processes of transformation of spatial structure of rural areas in Poland.