

Sustainable Residential Development in Rural Areas in Relation to Nature Conservation

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Abstract. In the last decades residential development in rural areas has aroused great interest. It is particularly the suburban communes that have been adopting a spatial policy conducive to this trend. The communes with protected areas must adjust their spatial tactics to Appraisable legal requirements. This article aims at indicating how residential development can be harmoniously reconciled with the protection of nature values in legal terms, but also in spatial and social ones. These deliberations will be put in the context of sustainable development, which is desirable for any space, including rural areas.

Keywords: sustainable development, rural areas, nature conservation.

Conference topic: Environmental protection.

Introduction

The idea behind sustainable development is to meet the needs of a modern society while not lessening the chance of development for the future generations. At the same time, sustainable development should address social and economic needs in harmony with the natural environment. The dynamic changes occurring in the rural areas in the recent decades entail transformation of landscape and space. Those changes have been caused by population increase in the rural areas. According to Central Statistical Office of Poland, the annual figure of relocations exceeds 400,000. Majority of them (78%) are relocations within the same voivodeship (province). 44% relocate to the country, while 28.8% move from the country to towns and cities. The average distance of relocation does not exceed 50 km. The population increase is occurring mainly in the rural communes adjacent to cities (Central statistical office 2015). The statistics refer to the dynamics of the processes occurring in the rural areas. This article aims to investigate whether the changes occurring in the rural areas follow the principles of sustainable development and allow for the crucial, invaluable issue of nature conservation.

The article makes use of the following research tools: analysis of law regulations, analysis of domestic and foreign literature, and direct research (survey). The study makes use of the data from the commune of Dywity, statistics, and the survey data. The emphasis is on the legal, spatial, and social contexts of the research. The subject of the research is the rural commune of Dywity, located in the vicinity of the city of Olsztyn, Warmia-Masuria voivodeship.

Definition of Sustainable Development. Development of civilisation resulted in the natural environment being jeopardised by excessive exploitation of mineral resources, air and water pollution, and uncontrolled spatial planning. In consequence, there appeared a necessity of adoption of a model of development addressing natural, economic, and social issues while meeting the future generations' aspiration for development. The official definition of sustainable development, which included the above terms, was adopted at the 1992 Rio de Janeiro Earth Summit (Preamble to the... 1992). The declaration proclaimed that human beings are at the centre of sustainable development, and they have the right to healthy and productive life in harmony with nature and the natural environment. The Johannesburg summit in 2002 confirmed the validity of the assumptions and definition adopted at the Rio Conference.

As to Poland, sustainable development is made reference to in the Constitution of the Republic of Poland. Article 5 provides that “The Republic of Poland shall safeguard the independence and integrity of its territory and ensure the freedoms and rights of persons and citizens, the security of the citizens, safeguard the national heritage and shall ensure the protection of the natural environment pursuant to the principles of sustainable development. The Constitution also provides that “protection of the environment shall be the duty of public authorities” and that they shall “pursue policies ensuring the ecological security of current and future generations”. The Act of 27 April 2001, Environmental Protection Law defines sustainable development as “socio-economic development which integrates political, economic and social actions, while preserving the natural equilibrium and the sustainability of basic natural processes, with the aim of

guaranteeing the ability of individual communities or citizens, of both the present and future generations, to satisfy their basic needs”.

A major tool for implementation of sustainable development is the Act of 16 April 2004 on Nature Conservation *Journal of Laws* 2013, item 627 as amended. Pursuant to Article 2.1 of the Act, nature conservation consists of conserving, sustainable exploitation and renewing natural resources, features of nature and its elements: 1) wild plants, animals, and mushrooms; 2) legally protected plants, animals, and mushrooms; 3) migratory animals; 4) natural habitat sites; 5) habitat sites of endangered, rare and protected species of plants, animals, and mushrooms; 6) animate and inanimate features of nature and fossils of plants and animals; 7) landscape; 8) urban and rural greenery; 9) wooded areas. Article 2.2 provides that the goals of nature conservation are as follows: 1) sustainment of ecological processes and stability of ecosystems; 2) preservation of biological diversity; 3) preservation of geological and paleontological heritage; 4) ensuring of continuity of plant, animal and mushroom species along with their habitats by means of preservation or restoration; 5) protection of urban and rural landscape features and wooded areas; 6) preservation or restoration of habitat site and other nature resources, features of nature and its elements; 7) raising nature awareness through education and promotions.

Local government units, which carry out the national and local policies at the lowest administrative level, are under obligation to follow the above acts of law in performing their duties. One of their top priorities is spatial planning. The subchapters below are devoted to pursuing spatial planning, specifically residential development, with regard to nature conservation in its legal, spatial, and social aspects.

Methods

The article makes use of the following research tools: analysis of law regulations, analysis of domestic and foreign literature, and direct research (survey). First step was achieved through careful examination of data shared by GUS and observations described in the literature. Achieving second was studied the data from the commune of Dywity and the survey data. The data are devoted to pursuing spatial planning, specifically residential development, with regard to nature conservation in its legal, spatial, and social aspects. Another type of research was analyzed Local Spatial Development Plan and Nature Conservation on the rural areas. Takes advantage of local law: Local Spatial Development Plan in terms of protection of the natural environment and landscape. It must be emphasised that apart from the acts of local law, aimed at protecting environmentally valuable areas there are other acts of law, which communes (including the commune of Dywity) must follow in their spatial planning policies. One of these is a document called regulation of the voivode (governor) in nature protection areas. It was on the subject of analysis. Afterwards it was studied decisions on development and spatial management conditions in the commune of Dywity in 2009–2013. Another type of research conducted in the commune of Dywity was the social analysis based on surveys. First, eightenn factors which may be taken into account when considering relocation. The list was made on the basis of the data published by GUS (Central Statistical Office of Poland 2016), and CBOS (Public Opinion Research Centre) and the data described in the literature. Below are the results of analysis of the data on the effect of presence sustainable residential development in rural areas and nature conservation.

Results and discussion

Research into the commune of Dywity – the legal and spatial aspects. Statistics show a continuous increase of developed and urbanised land area in Poland. In 2014, in comparison to 2004, the area increased by 0.69% to 5.75% of the total area of the country. At the same, the area of farm land decreased. In 2014 as much as 80.4% of the total number of land sale transactions concerned land outside town or city borders. Within town or city borders, the rate was a mere 19.6%. Growing interest in acquiring land outside developed areas results primarily from the needs of individual investors. The trend can be seen in Polish cities (Monitoring Indicators for... 2015.) One of the cities where it can be seen is Olsztyn, a voivodeship capital, located in the north-eastern Poland. The (Monitoring Indicators for... 2015) report mentions the impact the city is having on adjoining rural communes of Dywity, Gietrzwałd, Jonkowo, Purda, and Stawiguda. The commune of Dywity was selected as the subject of further analysis, being the most densely populated (68/km²) and the most populous (over 11,000 in 2015) of the rural commune adjacent to Olsztyn. Between 2004 and 2016 ca. 4.6% of the city's total population moved out of the city, most of whom obtained their registered addresses in the commune of Dywity (2,600). The increase in population was followed by the increase in the interest in acquiring land located within short distance from cities. Seeing their chance for development in this process, rural communes started taking actions aimed at converting farm land into developable land (Zysk 2013). The trend was also noticed by other researchers: (Gordon, Richardson 1997; Nelson 1999; Koomen *et al.* 2007) point out that “rural areas which have been used mainly for agricultural purposes for a number of years lose their original functions”. The processes occurring in the rural areas involve transformations of landscape, space, natural environment, and infrastructure (McDonagh 2007; Rosner 2014; Zysk 2013, 2014; Żróbek-Róžańska *et al.* 2016).

The suburban communes, including Dywity, also took that kind of actions, the result being dynamic changes in land use. The highest percentage of developed farmland and developed and urban areas is in the rural commune of

Dywity (6.6%) (Monitoring Indicators for... 2015), which is also confirmed by research (Sobotka 2014). The researcher pointed out that the area of land in development plans in the period from 1997 to 2010 increased from 98.6 ha to 2275.4 ha, most of which was land designated for residential development. The average surface of a local spatial development plan amounted to 78.4 ha. The majority of the plans (65.5%) were for single household residential functions and residential/commercial function. In 2009 spatial development plans for parts of the villages of Bukwałd and Brąswałd, aimed at preserving the historical rural Warmia development, were published. Two spatial development plans were also prepared with the aim of protecting environmentally valuable areas, i.e. the ecological corridor of the Łyna River (2006) and the polder in Różnowo (2009) (Sobotka 2014). The first of them is the Local Spatial Development Plan for the Ecological Corridor of the Łyna River within the Borders of the Commune of Dywity, Resolution No. XXXVI/243/06 of 11 July 2006 of the Council of the Commune of Dywity. The other was the Resolution No. XXV/208/09 of 9 February of the Council of the Commune of Dywity amending that plan. It regulated the following: 1) public services area (marked UP in Polish); 2) public road areas (marked KD, access road category, in Polish); 3) technical infrastructure; 4) development, plot management, and parking facilities for projected investments; 5) protection of cultural heritage, natural environment, and landscape. In terms of protection of the natural environment and landscape the Plan specified the following: 1) the area covered by the plan lies within the Protected Landscape Area of the Middle Łyna River Valley, where executive regulations apply; 2) the ban on other development projects that may have a considerable impact on the environment, development projects requiring the environment impact report, or development projects for which the environment impact report is required pursuant to special regulations, with the exception of projects under the Resolution; 3) the acceptable noise level in the area marked IUP shall be the same as for the built-up areas for permanent or prolonged occupation by children and teenagers; 4) the applicable aquatic law regulations must be followed in the area in question. It must be noted that the plan allowed for construction of technical infrastructure in the area in question (Fig. 1).

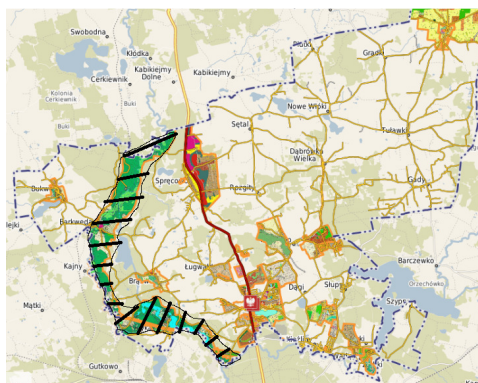


Fig. 1. Distribution of areas specified by spatial development plans for nature protection areas
Source: <http://dywity.e-mapa.net/>

It must be emphasised that apart from the acts of local law, aimed at protecting environmentally valuable areas there are other acts of law, which communes (including the commune of Dywity) must follow in their spatial planning policies. One of these is a document called a “Study of Conditions and Directions of Spatial Management”. The Resolution No. XXXVI/243/06 of the Council of the Commune of Dywity includes the directions of changes in the spatial structure of the commune and land assignment structure. On the basis of the conditions analysis, recent trends, and the directions of development adopted in the commune development strategy, a number of legally protected areas were isolated: the ecological corridor, the Protected Landscape Area of the Middle Łyna River Valley, and the Protected Zone of the Wadąg Water Intake.

Another such document is a regulation of the voivode (governor) in nature protection areas. For Protected Landscape Area of the Middle Łyna River Valley, the Regulation No. 160 of 19 December 2008 of the Warmia-Masuria Voivode specified that the following shall be banned: 1) investment projects that may have a considerable environmental impact within the meaning of the Act of 3 October 2008 on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments (Journal of Laws No. 199, item 1227 2015); 2) earthworks leading to permanent deformation of the terrain, with the exception of flood or landslide protection works, or works connected with conservation, construction, reconstruction, protection or repair of water infrastructure; 3) filling natural reservoirs, oxbows, and marshlands; 4) locating structures within a 100-metre-wide zone from the water line of rivers, lakes and other reservoirs, with the exception of water infrastructure and facilities for reasonable farming, forestry or fishery. The ban does not apply to the following: 1) areas of dense rural or urban development within the boundaries specified in study of conditions and directions of spatial management documents (or equivalent spatial planning documents) and gap-filling of residential and commercial development on the condition of setting a non-extendible development boundary in line with adjoining plots; 2) arrangements being in force on the day a regulation for local spatial development plans becomes effective, and completed designs for plans,

publication of which has already been announced but the proceeding has not been completed by the day the regulation becomes effective.

The area of the commune of Dywity is also the location of Warmińskie Buczyny PLH280033, a Natura 2000 Area (Site of Community Importance, designated by the European Commission in 2011). In 2012 the protective action plan for the area was drawn up. It does not make any recommendations for amendments to planning documents necessary for preservation or restoration of the proper conservation status of habitat sites or plant and animal species for which the Natura 2000 Area was designated (Article 28, section 10, item 5 of the Act on Nature Conservation), which would result in limitations to residential development.

The area of the commune of Dywity is also the location of an ecological site ‘Bagno Bażęgi’ (‘Bażęgi Marshland’) specified in the Journal of Laws of the Warmia-Masuria Voivodeship of 2011, No. 88, item 1533, Journal of Laws of the Warmia-Masuria Voivodeship of 2013, item 163. The bans introduced for the site apply to the following: 1) demolition, damaging or conversion of the terrain; 2) earthworks leading to permanent deformation of the terrain, with the exception of flood or landslide protection works, or works connected with conservation, construction, reconstruction, protection or repair of water infrastructure; 3) damaging and polluting the soil; 4) making changes to hydrographic conditions, if they are not aimed at protection of nature or reasonable farming, forestry, water resource management, or fishery; 5) filling or converting of natural reservoirs, oxbows, and marshlands; 6) spreading liquid manure, with the exception of fertilising farmland; 7) changes to the intended use of land; 8) exploiting of rock, including peat, for commercial purposes, and exploitation of plant and animal fossils, as well as minerals and amber; 9) intentional killing of wildlife, destroying lairs, nests, and spawning grounds, as well as activities connected with reasonable farming, forestry, fishery, and hunting; 10) collecting, destroying, and damaging plants and mushrooms in the area of ecological sites, established with the aim of protecting sites and habitats of legally protected plants and mushrooms; 11) placing of advertising structures.

The above regulation of the voivode is in line with the spatial policy of the commune of Dywity, which, when adopting the local spatial development plans and studies is obliged to take into consideration conditions resulting from these documents.

A major planning instrument shaping space and having an impact on the natural environment, landscape protection, and functional structure is an administrative decision on development and spatial management conditions. Article 4.2 of the Act on Spatial Planning and Development provides that in the event of no local spatial development plan in place, land development and management conditions shall be specified by an appropriate administrative decision. Article 61.1 of the Act specifies that the each and every following condition must be met for the decision to be issued: 1) at least one of the adjoining plots, with access to the same public road, is developed in a manner enabling determination of the conditions to be met for new development with regard to continuation of function, parameters, features and development and land management indices, including dimensions and architectural form of the structures, building alignment, and intensity of area use; 2) the area has access to a public road; 3) the existing or planned technical infrastructure utilities, having regard to item 5, is sufficient for the intended development; 4) the area does not require obtaining permit for changing status of farmland or forestland to non-farming and non-forestry, respectively; 5) the decision complies with separate regulations.

In the commune of Dywity, in the period from 2009 to 2013 the largest number of decisions on development and spatial management conditions were issued in 2010 – 219. In the subsequent years the number dropped considerably – in 2013 only 131 were issued. Fig. 2 below shows the arrangement of the areas specified by the decisions issued.

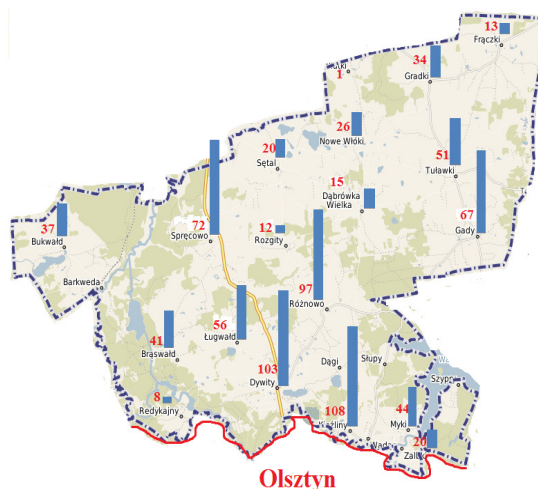


Fig. 2. Arrangement of areas specified by decisions on development and spatial management conditions in the commune of Dywity in 2009–2013

Source: writer's own study based on the data from the commune of Dywity (Budzynski 2015).

The graphic arrangement of the local spatial development plans and of the areas specified by decisions clearly shows only a small number of single decisions on development and spatial management conditions for protected areas. The actions taken by the commune fit in with the protective policies for the environmentally valuable areas. There was no decision on development and spatial management conditions in the village of Barkweda, while in the village of Redykajny there were only 3: one for utilities buildings, one for residential/commercial development; one for converting the attic for residential purposes.

The spatial policy of the commune of Dywity shows that the actions taken with regard to environment protection are taken into consideration when planning areas intended for development. The protected areas do not put constraints on implementation of residential policy of the commune, which complies with national and local environment protection regulations. A conclusion may be made, then, that the forms of nature protection do not have an adverse effect on settlement – the bans are either not restrictive or the protected areas are of a small size.

Research into the commune of Dywity – social aspects

Another type of research conducted in the commune of Dywity was the social analysis based on surveys. First, eightenn factors which may be taken into account when considering relocation. The list was made on the basis of the data published by GUS (Central Statistical Office of Poland), and CBOS (Public Opinion Research Centre) and the data described in the literature (Frenkel 2011; Wolny, Żróbek 2012; Zysk 2013; Rosner 2014; Zysk 2014; Budzynski 2015;) and other relevant literature (Sobotka 2014; Żróbek-Różańska, Zysk 2015). The factors were divided into three categories (Table 1). The chief aim of the analysis was to isolate the features which have the most influence on choosing one's residence. The questions asked were: Which category of the factors (socio-economic, spatial or environmental) will you consider most when making the decision? Will the respondents (people making the decision to relocate to a rural area) have regard to nature conservation? Is nature conservation a major factor for the respondents?

Table 1. Factors divided into three categories: socio-economic, spatial, and environmental

Factors influencing decision		
Socio-economic	Spatial	Environmental
Low real estate price	full utilities infrastructure (water, sewage system, gas, Internet)	Lack of burdensome objects in the neighborhood
Security	Aesthetic buildings in the neighborhood	Exceptional natural environment
Access to public transport	Good communication with the city	Forest in the neighborhood
Access to trade and services		Lake in the neighborhood
Access to primary school		The occurrence of protected areas of nature conservation
Access to preschool		Watering place in the neighborhood
Significant number of municipal investment		
Access to recreational infrastructure		
Neighbors with similar income		

Source: own study

The respondents were a selected group of over 80 from among the individuals who had relocated to a rural area in the previous five years. They were asked to rank the factors influencing the choice of the new residence area on the scale of 0 to 3, where 3 represents the highest importance of the factor. Next, the points given to each of the factors were. Table 2 shows the factors in the order of the points given.

The attractiveness of a residential area is influenced by a large number of factors. From among those analysed in the study, the spatial factors were considered primary by the respondents. The survey showed that respondent also took into account the low real estate price, absence of nuisance (e.g. landfill, sewage treatment facilities, intensive animal farming facilities, etc.), landscape aesthetics, full utilities infrastructure, and convenient road access (Żróbek-Różańska *et al.* 2015). The respondents pointed out that areas with valuable environmental features are more appealing to potential buyers than area where such features were absent. Another factor increasing attractiveness of the location of a land plot was assurance of no future inconvenient investment projects. On the other hand, it may be concluded that individual investors appreciate to the surroundings and the landscape conservation forms, but when choosing a residential

location that factor is of lesser importance. It must also be noted that those areas are legally protected, which entails having regard to rules of nature conservation regulations in the process of developing land.

Table 2. Hierarchy of the area factors

Characteristic	
1	Low real estate price
2	Lack of burdensome objects in the neighborhood
3	full utilities infrastructure (water, sewage system, gas, Internet)
4	Aesthetic buildings in the neighborhood
5	Spatial order
6	Good communication with the city
7	Security
8	Forest in the neighborhood
9	Access to public transport
10	Access to trade and services
11	Lake in the neighborhood
12	Exceptional natural environment
13	Access to primary school
14	Access to preschool
15	Significant number of municipal investment
16	Watering place in the neighborhood
17	Access to recreational infrastructure
18	Neighbors with similar income

Source: own study

Conclusions

Suburban communes of rural function shape space and landscape adjoining cities through their planning policies. Sustainable development of residential function in rural areas depends primarily on unequivocal regulations of local law and observing them consistently when developing and managing the area.

The priority for the communes should be skilful reconciliation of economic and social progress while ensuring adequate nature conservation at the same time. Uncontrolled investment discretion, especially when it comes to protected areas, may lead to irreversible changes to the natural environment.

The communes should make every effort to preserve their natural environment in its possibly most unspoiled condition by means of their legal instruments. If any changes are to be made to rural areas, they should ideally make a harmonious whole in terms of biology, society, and economy.

The commune of Dywity is endeavouring to apply this tactic. The analysis of the act of the local law, the regulations of the voivode, and the spatial analysis of the arrangement of land for which decisions on development and spatial management conditions were issued shows that these instruments are an effective tool in pursuing sustainable development of the residential function in the legally protected nature areas. Nature conservation laws are followed and taken into account in the planning policies of the commune of Dywity. The areas designated for development of the residential function are either those not under legal protection or those where this function can develop not interfering with other functions. On the other hand, the survey results show that decision-makers hardly take into account the factor of nature conservation when choosing the location for their residence. The decision-makers do appreciate beautiful views, but usually if looked at through the windows of their house. It is other factors that are the priority. Newcomers seek reasonably priced real estate, located in an environment free from burdensome objects, equipped with media and surrounded by neat houses built in compliance with the rules of spatial order (Żróbek-Róžańska *et al.* 2016).

In conclusion, sustainable development of residential function and nature conservation in the areas of rural communes are possible. However, it requires responsibility on the part of the councils, awareness among the residents, and foresight on the part of the planners.

Disclosure statement

Authors declare that they have not any competing financial, professional, or personal interests from other parties.

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