FUNCTIONAL CHANGES IN RURAL AREAS IN NORTH-EASTERN POLAND

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Abstract
Rural areas in Poland are characterized by great diversity in their functional spatial structure. Throughout history, their distinct features have been shaped by natural, historical and socio-economic factors. The aim of this study was to analyze the changes in the functional spatial structure of North-Eastern Poland. The analysis involved a comparison of data for 1988 and 2012. Research data was supplied mainly by the Central Statistical Office in Poland. The key drivers of change in the investigated region are agriculture, tourism, forestry and environmentally-friendly industrial processes. The results of the economic and social development are constantly changing in rural areas. Based on analysis, the functional structure of rural areas in North-Eastern Poland between 1988 and 2012 shows that they are more diversified. Over the years, rural areas in North-Eastern Poland were identified with agriculture but now they have multifunctional character.

Key words: Region of Warmia and Mazury, rural areas, functional structure.

Introduction
Rural areas in North-Eastern Poland are characterized by growing levels of functional diversity. The observed changes are stimulated both by external factors, including European integration, and internal factors, mostly natural conditions that play a key role in rural transformation processes. The level of economic development, the availability of technical and social infrastructure and standards of living are also important change drivers in rural areas. An in-depth knowledge of factors and conditions that influence rural development supports the identification of local potential and contributes to rural growth. According to Bański and Stola (2002), ineffective spatial management poses a barrier to local growth and development. For this reason, efforts should be made to implement rational spatial policies that promote sustainable development, economic competitiveness, social and territorial cohesion and environmental protection. This study analyses functional changes in rural areas of North-Eastern Poland between 1988 and 2012. The aim of the analysis was to determine directions for the future development of the evaluated rural areas. The assessment covered rural municipalities in the Region of Warmia and Mazury and the Region of Podlasie. The level of functional development in rural areas in north-eastern Poland in 1988 was determined based on the results of a functional and spatial classification proposed by Stola (1993). The functional and spatial structure of rural areas in North-Eastern Poland in 2012 was assessed in view of the data supplied by the Central Statistical Office. Functional areas within municipalities were identified by using a set of diagnostic features based on which municipalities were divided into five functional types recognized in the 1988 classification system. The results of the analysis will support the identification of the direction of changes in the functional and spatial structure of rural areas in North-Eastern Poland. In line with a general trend, rural areas in Poland are increasingly often transformed into multifunctional areas where farming activities co-exist with non-agricultural activities. The rate and character of functional changes in rural areas have to be identified to ensure that multifunctional development improves living conditions for members of the local community and contributes to the protection of the natural and cultural landscape.

Materials and Methods
Characteristic features of rural areas in North-Eastern Poland
North-Eastern Poland occupies the area of 44360 km² and comprises the Region of Warmia and Mazury and the Region of Podlasie. The investigated area borders the Kaliningrad Region, Lithuania and Belarus, and it marks the easternmost boundary of the European Union. North-Eastern Poland is characterized by a high degree of naturalness, diverse relief, an abundance of lakes, extensive forests and rich flora and fauna (Bera, 2013). With the exception of one constituent municipality, North-Eastern Poland is part of the area referred to as the Green Lungs of Poland that covers the most attractive natural sites in the country (Stanny and Czarnecki, 2010; Gwiazdzinska-Goraj and Goraj, 2013).

North-Eastern Poland is renowned for its unique natural features, including:

in the Region of Podlasie:
- Europe’s largest swamp complex of unique ecological value in the valleys of rivers Narew and Biebrza and in Narew and Biebrza National Parks,
- valleys of the Bug River with its tributary of Nurzec, the Narew River with its tributary of Supraśl, the Biebrza River with its tributary Pisa, rivers Czarna Hańcza, Rospuda and Szczupia,
Suwałki-Augustów Lakeland with the Wigry National Park, the Suwałki Landscape Park and lakes in the area of Raigrod,
− Białowieża Forest with the Białowieża National Park, Knyśyn Forest with the Knyszyn Landscape Park, and the Augustów Primeval Forest,
in the Region of Warmia and Mazury:
− rivers Pasłęka and Lyka and their tributaries that create valleys with steep fluvial terraces,
− dense forest complexes, including the Piska Forest and the Napiwodzko-Ramucka Forest,
− an abundance of lakes in the northern part of the Region of Warmia and Mazury with the largest lakes of Śniardwy, Mamry and Niegocin. The region also features two waterway systems connecting the Great Masurian Lake system and the Warmia Lake system.

Conservation areas account for approximately 40% of the region's territory. The natural features of North-Eastern Poland are recognized for their uniqueness not only in Poland, but also across Europe (Jongman et al., 2004). The Białowieża Forest has been designated a UNESCO Biosphere Reserve. Rural areas in North-Eastern Poland occupy 42830 km², they account for 97% of its territory and have a 40% share of the national population. In Warmia and Mazury and as well as in Podlasie, agriculture and food production continue to be the main economic drivers, but the share of non-agricultural activities is expanding steadily. This region is characterized by weak growth dynamics and the occurrence of adverse social consequences of the transformation which is characteristic for problem areas (Bański, 1999; Churski, 2002; Roszkowska-Mądra, 2005). The discussed regions are characterized by low levels of socio-economic development, mainly due to their peripheral location relative to Poland’s key economic hubs as well as their location on the outskirts of the European Union. The establishment of a cross-border traffic zone would significantly contribute to those regions’ development.

**Functional spatial structure of Poland**

Functional spatial structure is determined by both external factors, such as globalization and European integration, and internal factors of historical, natural, cultural, social, economic, legal and political nature. The extent to which those factors contribute to functional spatial structure depends on a region’s development potential. The present functional spatial structure of Poland was largely determined by historical events. In the interwar period, the main aim of spatial planning policies was to shift strategic industries to the central part of the country and away from state borders. Poland’s spatial structure relied heavily on a network of transport corridors between the key urban areas and two main axes of industrial development intersecting Lower Silesia. The area characterized by the highest level of industrial development and highest capital intensity had the shape of a triangle with vertices in the area of the Tricity, Wrocław and Rzeszów. This scheme led to significant differences in investment levels across the country, and the smallest amounts of capital were channelled to eastern Poland (Bański, 2007). Although various measures had been undertaken to distribute industrial sites more evenly and to promote the development of cities and the settlement network, considerable disproportions still exist between central and western Poland and eastern parts of the country. Poland’s spatial planning policies were largely influenced by its EU membership and processes related to European integration, economic cooperation and the EU’s foreign policy towards Eastern Europe, South-Eastern Europe and the Middle East. The latter can be attributed to the fact that Poland’s eastern border constitutes the external border of the European Union. Economic cooperation between the EU and Eastern Europe offers vast growth opportunities for Poland’s eastern regions, and it could give rise to the development of transit infrastructure and large urban centers in Eastern Poland. According to the National Spatial Development Concept 2030, the polycentric character of Poland’s metropolitan network with a regular distribution of cities of similar size and a tiered hierarchy structure is the key contributor to the development. A polycentric settlement pattern supports sustainable development, economic competitiveness, social and territorial cohesion and environmental protection. The achievement of the above goals requires measures that support the development of regions situated along Poland’s eastern border.

Throughout its history, Poland was a largely agricultural state, and non-agricultural activities involved rudimentary mining, simple processing of extracted minerals and crafts (Stola, 1987; Bański, 2003; Gwiazdzińska, 2004). Rural areas had a monofunctional spatial structure, and most inhabitants performed farm work. Qualitative and quantitative changes in farm management and working and living conditions led to gradual diversification of rural areas. According to Stola (1993), in the 1980s, the leading rural activities that catered to external needs were agriculture and forestry in the bioproductivity category, industry in the technological category, tourism, recreation and housing in the service category. An analysis of the functional structure of Poland’s rural areas points to a predominance of bioproductive activities and services in north-eastern and north-western parts of the country, excluding rural municipalities situated on the outskirts of large urban areas.
and industrial centers. Central, southern and southwestern Poland is characterized by a more complex functional structure where technological activities play an equally important or a more important role than bioproduction and service functions, subject to the level of social and economic development in a given region. The social and political transformations initiated in 1989 set new directions for the development of rural areas (Kluvankova-Oravska, 2004). The main focus was shifted to non-agricultural activities at the expense of traditional farming functions. The transformation process necessitated various reforms, including modernization of agriculture and reduction of employment in the farming sector. The relevant measures require greater support, and they have been delineated in the National Spatial Development Concept 2030. Rural areas are characterized by growing functional diversity, and they effectively contribute to sustainable development in Poland (National Spatial Development Concept 2030). Environmental protection and landscape preservation measures will contribute to the spatial and functional cohesion of diverse rural areas. It should be noted, however, that multifunctional development requires rational spatial planning policies.

**Methods**

Functional spatial changes in Polish rural areas were analyzed based on data covering 1989, the year which marks the beginning of economic and political transformations, and 2012, which illustrates the progress made after Poland’s accession to the European Union. Functional spatial changes in North-Eastern Poland were evaluated over a long period of time in between the selected years. The level of functional development that had been attained by rural areas in North-Eastern Poland in 1988 was determined with the use of a functional spatial classification method proposed by Stola (1993). The proposed approach was used to identify 14 functional categories that were combined to produce 5 large groups with a predominance of one or several functions:

1) group with a predominance of agricultural functions;
2) group with an even share of various functions;
3) group with a predominance of forestry functions;
4) group with a predominance of tourist and recreational functions;
5) group with a predominance of industrial functions or highly urbanized areas (Bański, 2003; Goraj and Gwiazdżinska-Goraj, 2010).

Functional spatial changes in rural areas of North-Eastern Poland were analyzed in view of 2012 data supplied by the Central Statistical Office. Functional areas in municipalities were identified based on diagnostic features that classified the municipality into one of the five functional categories relevant to the 1988 classification system. The following diagnostic features were adopted on the basis of the literature and our own research:

- area of municipality, 2012;
- population in municipality, 2012;
- working-age population in municipality, 2012;
- number of businesses registered in the REGON system, 2012;
- farmland area, 2010;
- number of farms conducting strictly agricultural activities, 2010;
- number of beds in tourist accommodation establishments, 2012;
- total number of tourist accommodation establishments, 2012;
- forest area in municipality, 2012.


- functional group with a predominance of non-agricultural functions: industrial, residential and services:
  - population density, 2012,
  - number of businesses registered in the REGON system per 1000 working-age residents, 2012;
- functional group with a predominance of agricultural functions:
  - share of farmland in total area, 2012,
  - share of farms conducting strictly agricultural activities, 2010;
- functional group with a predominance of tourist and recreational functions:
  - number of beds in tourist accommodation establishments per 1000 residents, 2012,
  - number of tourism accommodation establishments per 100 km², 2012;
- functional groups with a predominance of forestry functions:
  - share of forests in the total area of municipality, 2012;
- group with an equal share of various functions: when more than one functional group in a municipality satisfied threshold values.

**Results and Discussion**

*Functional transformations in rural areas of North-Eastern Poland*

Throughout its history, Poland was a largely agricultural state, but the socio-economic transformations initiated in 1989 necessitated...
the development of non-agricultural functions (Gwiaździńska-Goraj and Jezierska-Thole, 2013).

In 1988, bioproduction functions were the prevalent forms of economic activity in nearly 70% of rural areas in North-Eastern Poland. Agricultural functions were predominant in the Region of Warmia and Mazury (50%) and the Region of Podlasie (54%). Those municipalities were situated in the northern, eastern and western parts of the Region of Warmia and Mazury and the central part of the Region of Podlasie with the most favorable farming conditions. Those areas are characterized by a high share of farmland in total land area and a high number of livestock per 100 ha of farm area. The forestry function was prevalent in rural areas situated in the forest complexes of Borecka Forest, Napiwodzko-Ramucka Forest, Augustów Primeval Forest, Białowieża Forest and Knyszyń Forest. A predominance of non-agricultural activities, including industrial, residential and service functions, was noted in 10% of rural municipalities in North-Eastern Poland, of which more than 60% are situated in the Region of Warmia and Mazury, mainly in its central part. The smallest group with a predominance of tourist and recreational functions covered only 9%

Table 1

<table>
<thead>
<tr>
<th>Group</th>
<th>Functional groups</th>
<th>1988</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number of municipalities</td>
<td>Number of municipalities</td>
</tr>
<tr>
<td>1</td>
<td>with a predominance of agriculture</td>
<td>109</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>with an equal share of different functions</td>
<td>36</td>
<td>87</td>
</tr>
<tr>
<td>3</td>
<td>with a predominance of forestry functions</td>
<td>25</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>with a predominance of tourist and recreational functions</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>with a predominance of non-agricultural functions: industrial, residential and services</td>
<td>21</td>
<td>11</td>
</tr>
</tbody>
</table>

of municipalities in the Masurian Lake District and the Suwałki-Augustów Lakeland. Different functions were distributed evenly in more than 17% of the analyzed municipalities.

The results of the classification conducted in 1988 and 2012 reveal changes in the functional structure of rural areas in North-Eastern Poland. The highest decrease in the number of municipalities was noted in groups with a predominance of forestry, tourist, recreational and non-agricultural functions. The smallest drop in the number of municipalities was reported in the group with a predominance of agricultural functions, although the significance of agricultural municipalities continues to be high (48%) relative to the remaining functional groups. The number of municipalities with an equal share of various functions increased more than twofold. The reported results are consistent with general trends, and they are indicative of progressive diversification of rural areas in North-Eastern Poland. Social and economic processes were the main drivers of diversity in the functional spatial structure of rural areas in 2012.

An analysis of the distribution of different functions in North-Eastern Poland reveals changes in the classification status of municipalities situated in the central part of the Region of Warmia and Mazury and in northern and western parts of the Region of Podlasie. The noted processes could contribute to growing levels of functional diversification in rural areas due to equal significance of two or more functional groups in a single municipality. The number of municipalities with predominantly agricultural functions decreased from 109 in 1988 to 100 in 2012, i.e. by only 9%. The above results testify to strong correlations between favorable farming conditions and the prevalence of agricultural functions. Agricultural development should be linked with food production and processing without generating negative consequences for the environment.

**Conclusions**

The functional spatial structure of rural areas in North-Eastern Poland and in all of Poland is characterized by growing diversification. Rural areas that were classified as monofunctional in the 1980s are increasingly often transformed into multifunctional areas where non-agricultural activities complement farming practices. In 1988 agriculture was the predominant function in North-Eastern Poland, including in the Region of Warmia and Mazury and the Region of Podlasie. Forestry, non-agricultural activities of equivalent type, tourist and recreational services played a less important role in the functional structure. A comparison of classification results for 1988 and 2012 reveals changes in the functional structure of rural areas in North-Eastern Poland. The number of municipalities with equal proportions of

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Figure 2. Functional classification of rural areas in North-Eastern Poland in 2012.
Source: Own elaboration.
various functions increased more than twofold. This observation is consistent with a more general trend, and it points to growing functional diversity of rural areas in North-Eastern Poland. The differences in the spatial and functional structure of rural areas in 2012 can be attributed to social and economic changes. Despite the above, farming practices continue to play an important role in the analyzed regions, in particular in areas characterized by the most supportive conditions for agricultural production. The agricultural function could significantly benefit from the development of organic farming and food processing. Non-farming activities associated with agricultural production could delineate new directions for growth in the evaluated regions. Protection of the natural and cultural landscape should always be an important consideration in the process of proposing new directions for the development of rural areas (Vos and Meekes, 1999).

The relevant measures contribute to changes in the functional structure of rural areas, and they have been included in the National Spatial Development Concept 2030. Special efforts should be made to ensure that multifunctional development does not eradicate the distinct features of rural areas that contribute to their unique character in Poland and the European Union.

References


