

## ESTIMATION OF THE SIZE OF THE EXTERNAL LAND PATCHWORK BASED ON TEST AREAS IN PODKARPACKIE VOIVODSHIP IN POLAND

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### Summary

The article presents the results of estimation of the external land patchwork size in villages Konieczkowa and Lutcza, in the Niebylec commune, in Strzyżów district. The authors analyze the relationship between the number of owners, number of the register plots in relation to the individual farms land area in the outer patchwork of land in analyzed villages. The patchwork of land is one of the major factors that have a negative impact on the organization and the level of agricultural production. It is also alongside the fragmentation and fragmentation of plots, one of the factors slowing down real estate cadastre reforms in Poland. It adversely affects the character of cadastral data. The cause of the fragmentation of land in the analyzed villages and the presence of a large number of external non-resident land owners were the demographic processes such as overpopulation of the countryside. Therefore, a phenomenon commonly observed in the region, have become migrations of people to cities in search of work or emigration from the country.

### Keywords

patchwork of land • non-resident owners land • exchange of land • cadastre

### 1. Introduction

According to many authors [Blohm 1962, Noga 1977] the patchwork of land is one of significant factors which have a negative impact on the organization and the level of agricultural production. Scientists studying this phenomenon found that with increasing number of fields and their distance from the farm the intensity of agricultural production is reduced, production costs increase, and consequently production and farm income decrease.

As is clear from the research [Leń 2012] the presence of the patchwork of land is based on socio-economic factors and impedes development of rural areas. People who own the land (cadastral plots) out of the analyzed village and inhabiting the village are called local non-resident land owners. On the other hand, the owners of

land belonging to the village, but living outside its administrative borders, in terms of research – are called external non-resident owners. So – non-resident owner land may be located in the analysed village, or outside its territory. In most cases, the reason for this situation is the fact of migration of rural residents to the larger cities in search of employment. External non-resident owners are mostly inheritors of parents living in the analyzed villages, or of people who migrated to the cities. It should also be mentioned about the group of non-resident owners who bought plots in rural areas due to their low prices, but they do not have family roots in the village.

The scale of the presence of the patchwork of land in Poland depends on the region of research and it is directly proportional to the population growth in the region. It mainly occurs due to the consequences of the right of inheritance. Its dimension changes every dozens of years, by transferring land from generation to generation. Many municipalities have introduced limitations to the smallest cadastral plot possible to be separated in their area. However, for the dynamics of changes in land belonging to persons residing outside the village, mechanisms, which would stop this growing process can not be established.

The conducted earlier study in the Brzozów district showed [Leń 2009, 2012] that every fourth plot in the area, owned by private individuals, is located in the outer land patchwork. The situation is similar in Olszanica, district Lesko [Leń et al. 2015]. On the other hand, in the village Będziemyśl located in the district ropczycko-sędziszowski every fifth plot is owned by external non-resident owners [Leń et al. 2015]. Estimates indicate that there are about 3 million hectares of agricultural land in the patchwork land in Poland.

In turn, the study of non-resident owners land size in central Poland [Leń and Mika 2016a, b], showed very large deficiencies. The size of the external patchwork, in central Poland, in terms of occupied area, the number of owners and parcels are significant. In the villages of the Sławno municipality, external patchwork land occupies 4146.45 hectares, what represents 40.9% of the total individual farms area. This area is divided into 10,299 registry plots, which represent 43.1% of the total number of private sector plots. These plots are owned by 3716 owners [Leń and Mika 2016a]. And in the village Brzustowiec, as shown by the study, 516 of registry plots are owned external non-resident owners, what represents 26.9% of the total number of plots in individual land farms. Their area is 145.4 hectares, or 23.8% of the private land area [Leń and Mika 2016b].

This publication is intended to estimate the size of the external land patchwork individual farms in villages located in the south-eastern Poland. The case study covers the area of the villages Konieczkowa and Lutcza, in Strzyżów District, in Podkarpackie Voivodship. The analysis can be a complement to picture of the state of the cadastre (EGiB) presented by Mika and Siejka [Mika and Siejka 2014] in the context of cadastral data in the same region.

## 2. The size of external patchwork of land in the Konieczkowa village

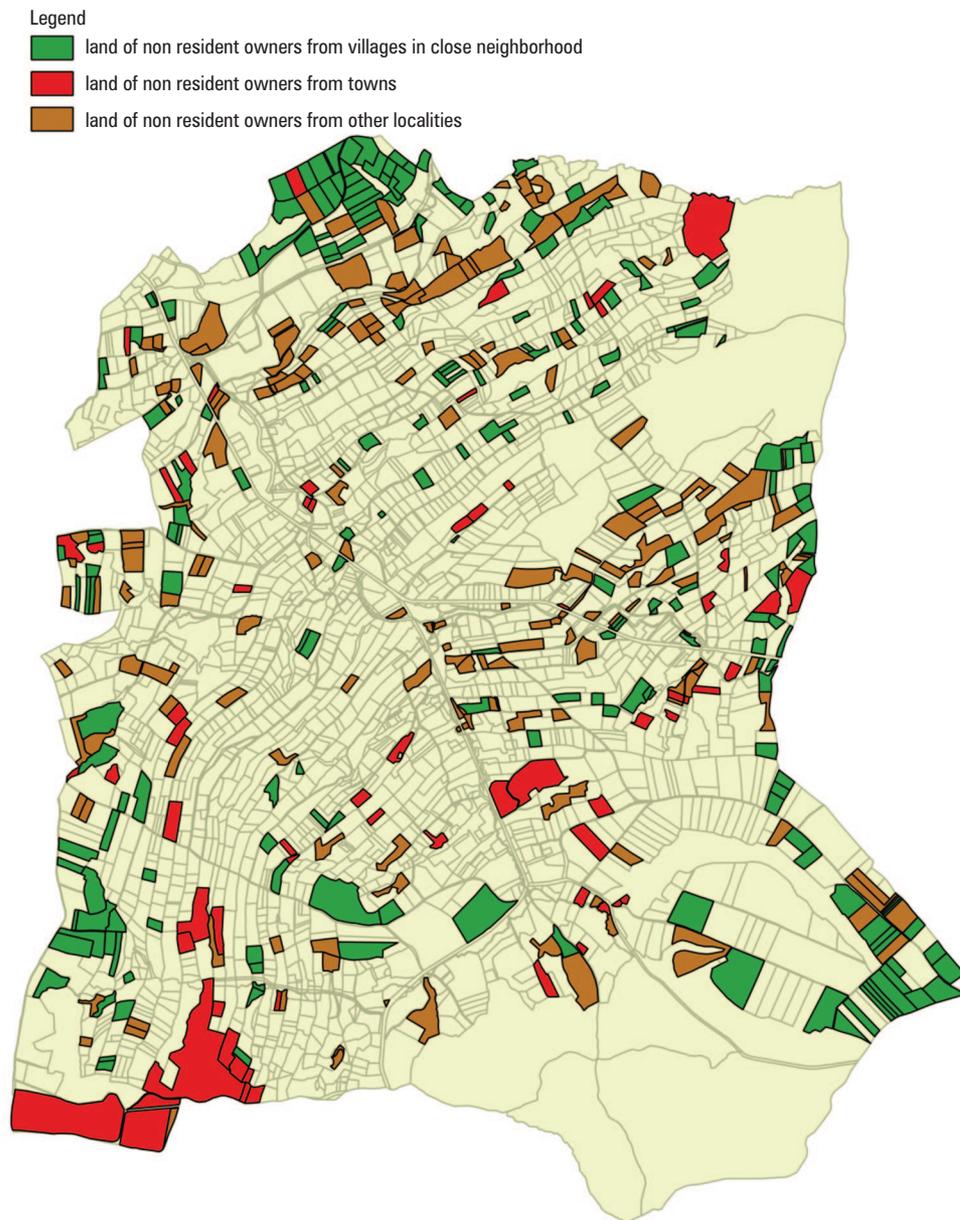
The study showed (Table 1), that from 3057 of registry plots, covering an area of 1097.79 ha, the largest area occupy lands of non-resident owners from the villages located in close proximity to the study village.

**Table 1.** Specification of external non-resident owners land for the Konieczkowa village

Non-resident owners land	Name of the village	Number of owners	Number of plots	Number of plots in the total number of plots in the village [%]	Area [ha]	Share of the total area of land in rural area [%]
Villages located in close proximity	Niebylec	30	56	1.83	20.90	1.90
	Gwoźnica Dolna	16	44	1.44	16.20	1.48
	Małówka	10	34	1.11	12.42	1.13
	Gwoźnica Górna	10	12	0.39	9.49	0.86
	Blizianka	13	21	0.69	6.80	0.62
	Jawornik	13	24	0.79	6.13	0.56
	Baryczka	5	17	0.56	5.04	0.46
	Lutcza	10	12	0.39	3.87	0.35
	Total	107	220	7.20	80.85	7.37
From towns	Rzeszów	21	61	2.00	40.71	3.71
	Strzyżów	6	9	0.29	3.18	0.29
	Total	27	70	2.29	43.89	4.00
From other localities	Other	88	193	6.31	70.46	6.42
Total		222	483	15.80	195.20	17.78

Source: authors' study based on data from EGİB

These lands occupy 80.85 hectares which is 7.37% of the total area of the Konieczkowa village (1097.79 ha). In terms of the number of plots (220) it represents 7.20% of the total number of plots (3057) in the studied the village. The largest group in terms of the number of owned plots are non-resident owners from the Niebylec locality, who own 56 plots representing 1.83% of the total number of plots in the village. They occupy an area of 20.90 hectares which gives 1.90% of the studied village area. The next largest village in terms of area occupied by external non-resident owners is Gwoźnica Dolna, occupied area 16.20 hectares amounts to 1.48% of the village area. The owners from the village Małówka are in possession of 34 plots with total area of 12.42 ha, what represents 1.13% of the area of studied village. 13 land owners from the village Blizianka having in possession of 21 plots of land cover an area of 6.80 hectares, it represents 0.62% of the total area of the village.



Source: Szewczyk 2016

Fig. 1. The structure of fragmentation in Konieczkowa

While the land of external non resident owners from Jawornik occupy 0.67 hectares less surface area of the land occupied by the land owners from Blizianki. Różniczanie from the Jawornik village have 24 plots what is 0.79% of all plots in studied villages. Land of external non resident owners from Gwoźnica Górna occupies 12 plots with the total area of 9.49 ha, while the land of external non resident owners from Lutcza occupies 12 plots with a total area of 3.87 ha, representing only 0.35% of analyzed area. The smallest is the number of owners from the village Baryczka who have 17 plots giving 0.56% of all plots of the village, having area of 5.04 ha (0,46% of Konieczkowa area).

As shown in Table 1 inhabitants of the district city Strzyżów and residents of Rzeszów have their land in Konieczkowa. They are the owners of 70 registry plots with an area of 43.89 hectares, which represents 4.0% of the total area of the village. The biggest impact on the analyzed village has Rzeszów city from where 21 owners have in possession 61 plots with a total area of 40.71 hectares.

Land owned by 88 external non resident owners from other villages occupies 193 plots, representing 6.31% of the total number of plots, and their area is 70.46 hectares, what represents 6.42% of the total area of the Konieczkowa village. Spatial image of land of external non resident owners fragmentation illustrates the Figure 1.

### 3. The size of external patchwork of land in the Lutcza village

The analysis of external patchwork of plots carried out in Lutcza village showed that among 6838 register plots, covering area of 2815,71 ha, the smallest area occupies the land of non-resident owners from the villages in close proximity to the analyzed village. This land belongs to 163 owners who are in possession of 322 plots, representing 4.71% of the total number of plots, with a total area 99.31 hectares representing 3.53% of the total area of Lutcza.

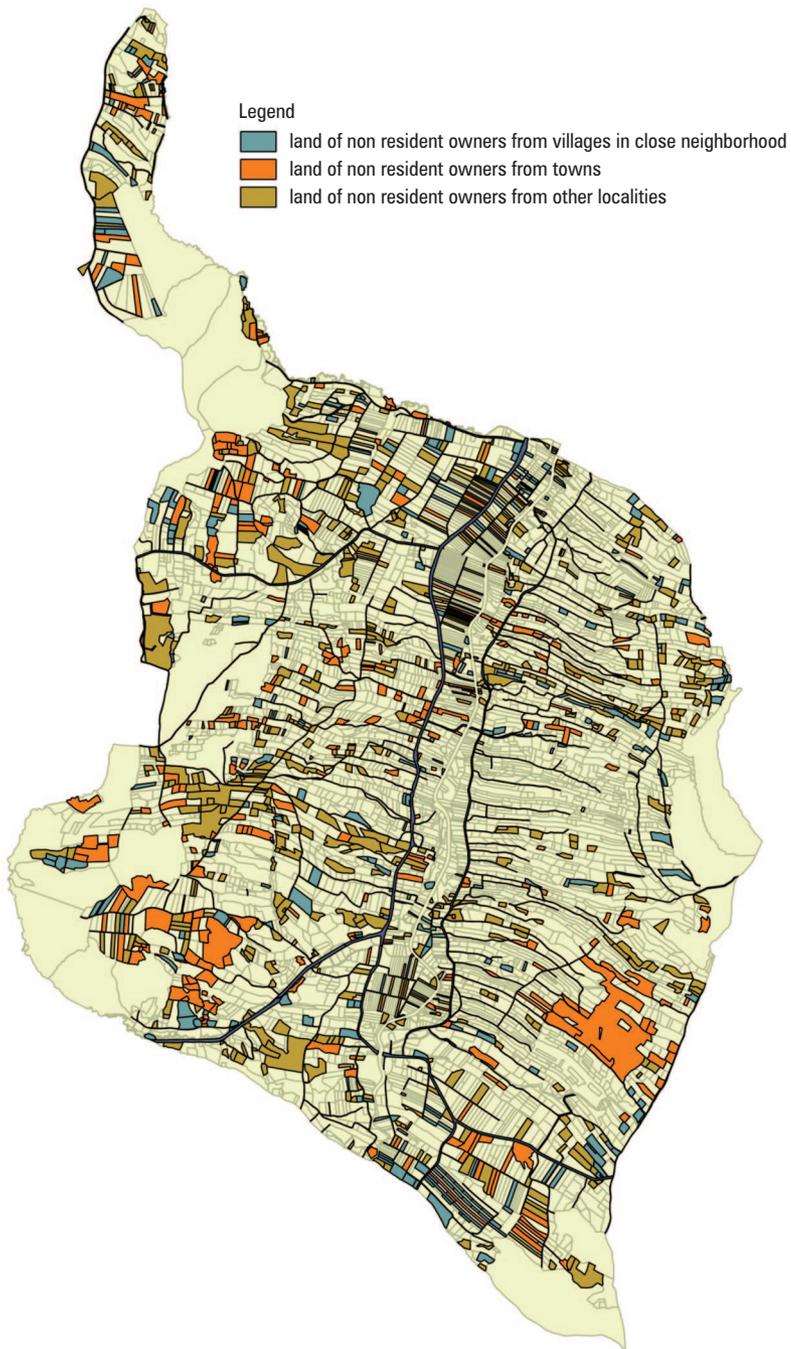
The greatest area of land in Lutcza possess the owners from the Domaradz village. They are 104 plots representing 1.52% of all plots with a total area of 28.85 hectares. They cover 1.02% of the total area of the village. The reason for the severity of the phenomenon is the fact that Lutcza directly borders the village Domaradz, which belongs to the Brzozów district. Land possessed by 35 owners of the Żyżnów village includes 77 plots, occupying an area of 24.10 hectares, covering 0.86% of the total area of the village. Landowners from Konieczkowa have 34 plots representing 0.5% of the total number of plots, and not much less are the plots of the owners from Krasna – 33 plots occupy 0.48% of the total number of plots. Non-resident owners from Golcowa have 14 plots with a total area of 3.97 hectares, while from Jawornik have 23 plots covering 6.36 ha. Land belonging to the owners from Gwoźnica Górna occupies 4.69 hectares, which is 0.17% of the total area of analyzed village. The owners from the village Gwoźnica Dolna are in possession of 11 plots with a total area of 4.37 hectares. The smallest amount of land belongs to non-resident owners from Niebylec; 8 plots are only 0.12% of the total number of plots with a total area of 4.55 hectares.

**Table 2.** Specification of external non-resident owners land for the Lutcza village

Non-resident owners land	Name of the village	Number of owners	Number of plots	Number of plots in the total number of plots in the village [%]	Area [ha]	Share of the total area of land in rural area [%]
Villages located in close proximity	Domaradz	47	104	1.52	28.85	1.02
	Żyżnów	35	77	1.13	24.10	0.86
	Konieczkowa	18	34	0.50	11.76	0.42
	Krasna	14	33	0.48	10.66	0.38
	Golcowa	8	14	0.20	3.97	0.14
	Jawornik	16	23	0.34	6.36	0.23
	Gwoźnica Górna	12	18	0.26	4.69	0.17
	Niebylec	7	8	0.12	4.55	0.16
	Gwoźnica Dolna	6	11	0.16	4.37	0.16
	Total	163	322	4.71	99.31	3.53
From towns	Rzeszów	82	231	3.38	122.97	4.37
	Strzyżów	21	71	1.04	39.71	1.41
	Krosno	16	29	0.42	9.59	0.34
	Brzozów	12	22	0.32	5.86	0.21
	Total	131	353	5.16	178.13	6.33
From other localities	Other	254	686	10.03	254.49	9.04
Total		548	1361	19.90	531.93	18.89

Source: authors' study based on data from EGİB

As shown in Table 2, for the studied village, there are also external non-resident owners from the following cities: Brzozów, Krosno, Strzyżów i Rzeszów. Land of non-resident owners from these cities include in total 353 plots with an area of 178.13 hectares. This represents 6.33% of the total area of Lutcza. Among those mentioned cities, the greatest impact on the development of external patchwork of land in Lutcza is the Rzeszów city. This land belongs to 82 owners possessing 231 plots with a total area of 122.97 hectares representing 4.37% of the total village area. On the other hand, landowners with Strzyżów have 71 plots in Lutcza. This represents 1.04% of the total number of plots with a total area of 39.71 hectares of the studied village. A comparable number of plots in the Lutcza village have the owners living in Krosno and Brzozów. Land of owners from Krosno occupies 9.59 hectares, divided into 29 plots, while the land of non-resident owners from Brzozów occupies 5.86 hectares divided into 22 plots.



Source: Szewczyk 2016

Fig. 2. The structure of fragmentation in Lutcza

The land of non-resident owners from other localities is in the possession of 254 owners, who own 686 plots what represents 10.03% of the total number of plots. They cover the total area of 254.49 hectares, representing 9.04% of the total area of Lutcza (Figure 2).

**Table 3.** Percentage of land of non-resident owners in analyzed villages

Analyzed village	Area of the village	The area of individual farms land		The total number of plots	Number of plots in individual farms		Land of external non-resident owners					
		[ha]	[%]		number	[%]	Owners	Number of plots		Area of plots		
							number	number	[%]	[ha]	[%]	
Lutcza	2815.71	1514.23	53.78	6838	4213	61.61	548	1361	19.9	531.93	18.89	
Konieczkowa	1097.79	630.73	57.45	3057	2212	72.36	222	483	15.8	195.2	17.78	

Source: authors' study based on data from EGİB

The area belonging to 548 external non-resident owners in the Lutcza village, or else persons who have their land in this village and live outside its borders, covers 531.93 ha, what represents 18.89% of the total area. Those owners are in possession of 1361 plots, which represents 19.90% of the total number of plots. Land of individual farms is divided into 4213 plots and covers 1514.23 hectares which represents 53.78% of the village area.

The area belonging to 222 external non-resident owners in the Konieczkowa village, consists of 483 plots which represents 15.80% of the total number of plots, with total area of 195.20 hectares (17.78% of the village area). Number of plots in individual farms amounts to 2212, which represents 72.36% of the total number of plots in the village. The area of these farms covers 630.73 hectares, which is 57.45% of the total area of the village.

The analysis of the fragmentation of land in both villages showed a relatively large amount of non-resident owners land. The large number of non-resident owners in Lutcza undoubtedly is caused by the position of the village and good communication connections with the major cities. These are: Brzozów, Krosno, Strzyżów and Rzeszów. In the case of Konieczkowa the best communication is with Rzeszów and Strzyżów.

The historical processes, closely linked with a form of registration of land in the cadastre, affected the large number of non-resident owners in both villages. The agrarian structure of the area was affected sequentially by: enfranchisement of the peasants in 1848, the period of autonomy of Galicia, parceling out of farm estates in the interwar period (land reform in Poland in 1944), political and economic transformations in the 90s of the last century (the fall of the Agricultural Enterprise "Iglopol" in Lutcza). The cause of the fragmentation of land and at the same time

a large number of non-resident owners were the demographic processes such as overpopulation village. Therefore, a phenomenon commonly observed in the region, have become a migration of people to cities in search of work or emigration out of the country.

#### 4. Conclusions

The analysis of the fragmentation of land in the analyzed It revealed a relatively high amount of land of external non-resident owners. Detailed estimates of the size of the patchwork of land were based on reliable materials coming from the District Office, directly from the EGiB registers. In the Konieczkowa village 222 owners have 483 register plots, what represents 15.8% of the total number of plots. Non-resident owners land area covers 195.20 hectares, what represents 17.78% of the total area of the village. While, in the Lutcza village 548 owners are in the possession of 1361 plots, what represents nearly 20.0% of the total number of plots. The area of external non-resident owners land is 531.93 hectares, what represents 18.8% of the total area of the village.

The analysis also showed, a significant percentage of non-resident owners agricultural land in the villages in close proximity of the villages Lutcza and Konieczkowa. For Konieczkowa the percentage amounts to 7.37% of the total area, while for Lutcza is 3.71%. Land of non-resident owners from the locations in close proximity of Lutcza and Konieczkowa often occur near the boundaries of the villages being the place of residence of their owners.

In the study area, a strong influence of the city of Rzeszow on the size of the land patchwork can be observed. In addition also a moderate impact on the development of the analyzed phenomena was found for such cities as Strzyżów, Brzozów and Krosno, especially in relation to the village Lutcza. Undoubtedly the development of these cities after World War II contributed to this. Probably a large part of the land of non-resident owners from towns and other localities is the result of aware land trade. A significant number of these plots is in fact situated on land belonging to the fallen Industrial and Agricultural Group "Igloopol" Dębica, liquidated in 1991 division of Agricultural Enterprise "Igloopol" in Lutcza. This enterprise occupied the largest area of land in the analyzed villages (the head office was located on the border between Lutcza and Konieczkowa). Inhabitants of cities today eagerly acquire land situated on the territory of the former "Igloopol". Some of them with the intention of settling in a rural location, others for recreation or capital investment. For non-resident owners from the cities and other localities the purchase of plots in the area of the bankrupt agricultural plant was probably dictated by the desire to investment their own capital eg. in the context of the presented in 2008 situational plan of the alternative courses of the route S-19 in the Niebylec commune or the purchase of land for business activities.

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