

**Hanna Borucińska –Bieñkowska**

*Faculty of Building, Architecture and Environmental Engineering, Department of Architecture and Urban Planning, University of Zielona Gora, Poland*

## **SOCIAL AND ECONOMIC URBANIZATION PROCESSES IN COMMUNES IN A METROPOLITAN AREA AND DEVELOPMENT OF ENERGY EFFICIENT TECHNOLOGIES. CASE STUDY: POZNAŃ METROPOLLITAN AREA**

***Abstract.** The article discusses selected social and economic changes taking place in communes of a metropolitan area following a political transformation period in Poland, Central and Eastern Europe.*

*Dynamic urbanization of communes of Polish metropolitan areas was one of numerous results of socio-economic transformation of the country after 1989. The process played an important part in shaping both functional-spatial systems and awareness of self-governmental authorities and local communities in terms of the values of development of integrated systems of technical infrastructure. Rapid changes taking place during the first years of the social and economic transformation caused a few negative functional-spatial phenomena in the communes bordering the central city. The analysis covered processes taking place in communes of the Poznań county (Wielkopolskie province), which constitute a considerable part of the Poznań Metropolitan Area (Polish POM). Monitoring processes which promote increased electricity demand (of both social and economic nature, including migration and increase in the number of economic operators in years 2000-2010 and 2010-2016) taking place in areas of communes within the impact area of the central city may enable self-governments to implement sustainable development rules and facilitate both controlled urbanization of communes of Polish metropolitan areas and correct sustainable development of technical infrastructure.*

***Keywords:** urbanization; metropolitan area; central city; revitalization*

### **Introduction**

The development of Polish metropolitan areas intensified after the political transformation period in 1989. Social and economic transformation commenced rapid urbanization of the communes adjacent to the central city. The phenomenon was caused by various aspects, one of which was economic. The development of technical infrastructure, convenient public transport services and labour supply gave rise to transformations of communes neighbouring the central city.

The demise of large-scale State-Owned Farms (Polish PGR) and collective farms seriously affected the transformation of agricultural production environment into housing areas or business activation areas. The transformation process intensified along with human migration from the central city into the communes within the impact zone of the central city, and it considerably affected further urbanization of rural areas.

The interest in the communes adjacent to the central city and the issues of degraded areas were two among other reasons that justified introduction of changes in the spatial planning and management act<sup>1</sup>

and creation of the revitalization act<sup>2</sup>. It should be highlighted that pro-development actions (including revitalization) require reference to numerous programming documents at local, regional, national and European levels.

A series of studies on the European metropolitan area was carried out in an ESPON (European Spatial Planning Observation Network) research programme. In the four-level MEGA (Metropolitan European Growth Area) scale, Poznań, along with Kraków, Łódź, the Upper Silesian Conurbation, Szczecin, Tricity and Wrocław fell into the fourth level category [after: G.Gorzela, M. Smętkowski *Metropolia i jej region w gospodarce informacyjnej*, University of Warsaw, Warsaw, 2005].

The article presents results of an analysis of selected socio-economic issues concerning 17 communes of the county of Poznań. They are: 2 urban communes, 8 urban-rural communes and 7 rural communes, all of which are situated within the impact zone of the central city of Poznań.

<sup>1</sup> Currently in force: the Act of 27 March, 2003 on Spatial Planning and Management (Journal of Laws 2003, no 80, item 717 as amended).

<sup>2</sup> Currently in force: the Act of 9 October, 2015 (Journal of Laws 2015, item 1777).



**Key:**

-  borders of countries
-  central city (Poznań Metropolitan Area)
-  cities of european Pentagon (London, Hamburg, Munchen, Milan, Paris)
-  capitals of European countries

**Figure 1.** Capitals of European countries, european Pentagon, Poznań Metropolitan Area  
 Source: author's study based on data from: G. Gorzelak, M. Smętkowski, *Metropolia i jej region w gospodarce informacyjnej*, University of Warsaw, Warsaw 2005.

**2. Human migration**

Social resources of communes of the metropolitan area constitute its greatest value. Investigation of human migration processes renders it possible to establish tendencies and directions of the socio-economic changes, and they influence functional-spatial transformation of communes. It should be highlighted that urbanization of rural communes bordering the

central city has affected the shape and size of the Poznań Metropolitan Area (Polish POM). The borders of POM do not overlap with borders of counties of the Wielkopolskie province; therefore, the article analyzes the communes which are within the impact zone of the central city and which constitute the county of Poznań

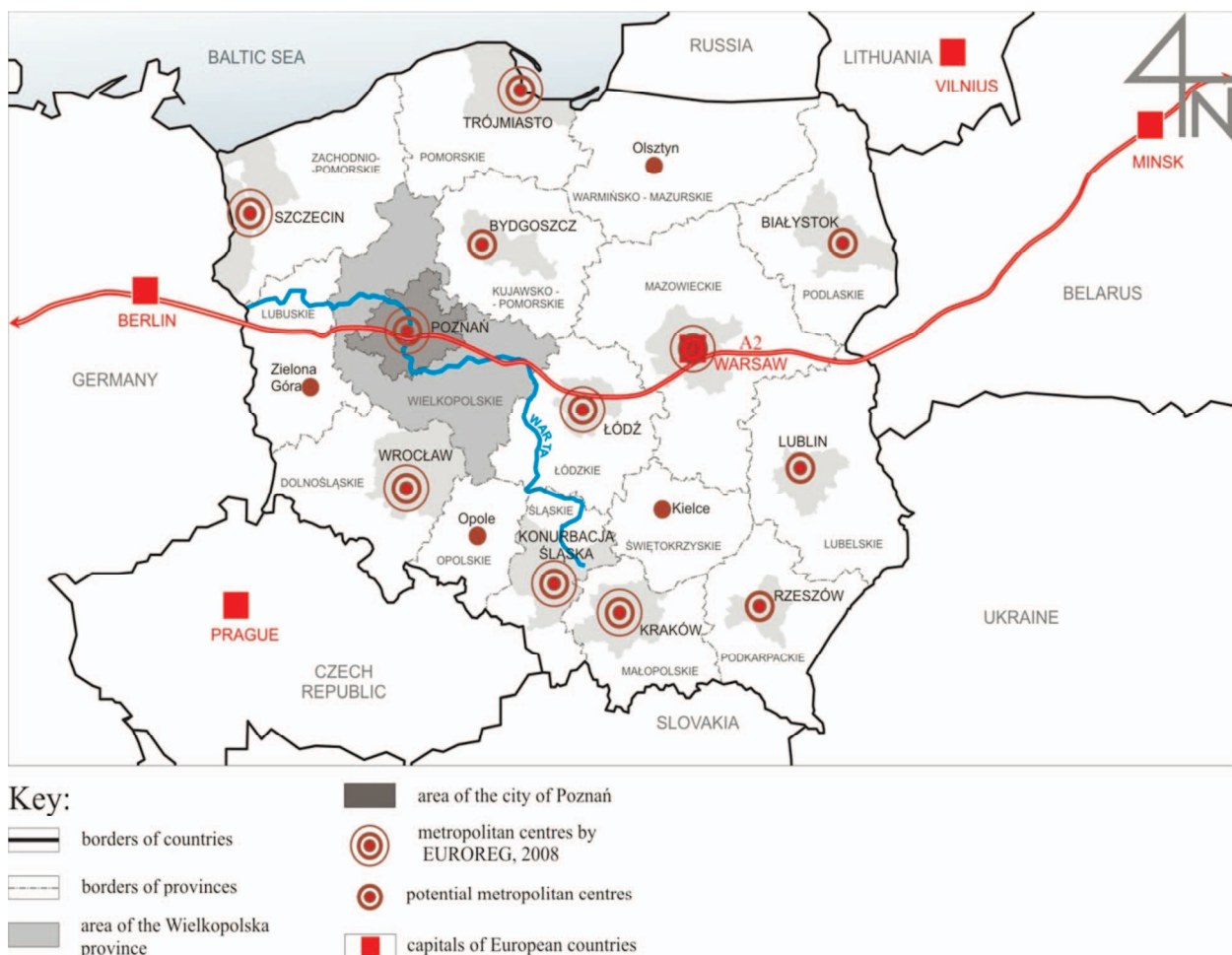
The dynamics and extent of the above-mentioned processes reflect tendencies of the ongoing transformations. In years 2000-2010, 26,640 people left

the central city, which constituted 4,6% of the population of Poznań in 2000. In contrast, in years 2010-2015, the number totalled 13,266, i.e. 2,4 % of the population of Poznań in 2010. If we take it into consideration that the former figures span 10 years (2000-2010) and the latter span 5 years (2010-2015), it can be concluded that although the migration pace is on the decline, it is a continuous process and that depopulation of the central city is in progress. People living in the adjacent communes form a new social and economic quality. New residential areas are being created while the old ones are evolving, and as new businesses start up, the economic zone develops, which generates new jobs, ensures more money for the

commune's needs, and activates local trade and service market thus boosting electricity demand. Well-educated

staff employed in the new businesses affect the development of local communities, and are both a provider and recipient of services, including sports and recreation. The wide spectrum of influence affected transformation of technical infrastructure of the communes.

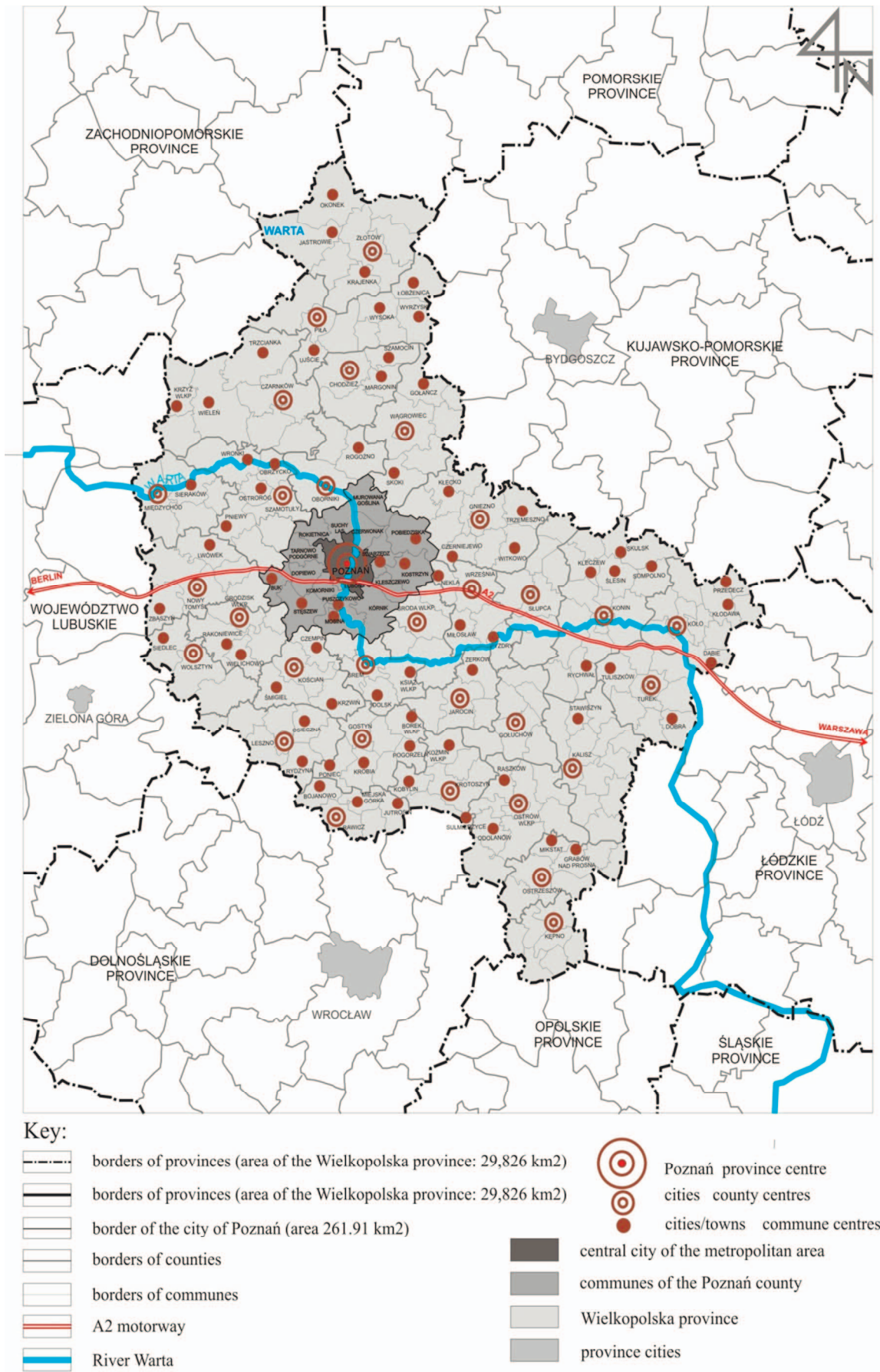
Self-governmental authorities and local communities take decisions to create and direct the ongoing changes onto the sphere of sustainable development. They also need to live up to the increased electricity demand; new technologies and the development of information society render it possible to apply integrated efficient technologies in architecture and building construction as early at the spatial planning and management stage.



**Figure 2.** Polish cities forming metropolitan areas

Source: author's study based on data from: *Terytorialne zróżnicowanie sytuacji społeczno-gospodarczej w województwie wielkopolskim w latach 1990 -2003*. Statistical Office in Poznań, Poznań 2005, *Obszary meropolitalne w Polsce problemy rozwojowe i delimitacja*. EUROREG, Warszawa, May 2008.





**Figure 3.** Communes of the county of Poznań in the administrative system of the Wielkopolska province  
 Source: author's study based on data from: *WOJEWÓDZTWO WIELKOPOLSKIE Podregiony, Powiaty, Gminy*, Statistical Office in Poznań, Poznań 2011.

*Table 1. - Population in communes of the county of Poznań in years 2000-2010*  
*urban communes – U, rural communes – R, urban-rural communes – U-R*

No.	Commune	Type of commune	2000	2010	Balance	%
1	City of Poznań	U	582,254	555,614	-26,640	-4,6
<b>COUNTY OF POZNAŃ</b>						
2	Suchy Las	R	10,129	14,822	4,693	46,3
3	Czerwonak	R	21,522	25,995	4,473	20,8
4	Swarzędz	U-R	36,513	44,521	8,008	21,9
5	Kleszczewo	R	4,689	6,166	1,477	31,5
6	Kórnik	U-R	14,955	20,973	6,018	40,2
7	Kostrzyn	U-R	15,139	17,067	1,928	12,7
8	Puszczykowo	U	8,983	9,734	751	8,4
9	Luboń	U	23,589	29,762	6,173	26,2
10	Mosina	U-R	23,570	27,778	4,208	17,9
11	Stęszew	U-R	13,414	14,453	1,039	7,7
12	Komorniki	R	11,677	19,732	8,055	69,0
13	Dopiewo	R	10,702	18,290	7,588	70,9
14	Buk	U-R	11,622	12,215	593	5,1
15	Tarnowo Podgórne	R	16,140	21,677	5,537	34,3
16	Rokietnica	R	7,729	12,528	4,799	62,1
17	Murowana Goślina	U-R	15,107	16,417	1,310	8,7
18	Pobiedziska	U-R	15,038	18,115	3,077	20,5
	<b>Total</b>		842,772	885,859	43,087	5,1

Source: author's study. Data from publications: *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2001*. Statistical Office in Poznań, Poznań, 2001, *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2011*. Statistical Office in Poznań, Poznań, 2011.

*Table 2. - Population in communes of the county of Poznań in years 2010 – 2015*  
*urban communes – U, rural communes – R, urban-rural communes – U-R*

No.	Commune	Type of commune	2010	2015	Balance	%
1	City of Poznań	U	555,614	542,348	-13,266	-2,4
<b>COUNTY OF POZNAŃ</b>						
2	Suchy Las	R	14,822	16,510	1,688	11,4
3	Czerwonak	R	25,995	27,094	1,099	4,2
4	Swarzędz	U-R	44,521	47,947	3,426	7,7
5	Kleszczewo	R	6,166	7,500	1,334	21,6
6	Kórnik	U-R	20,973	24,774	3,801	18,1
7	Kostrzyn	U-R	17,067	17,741	674	3,9
8	Puszczykowo	U	9,734	9,753	19	0,2
9	Luboń	U	29,762	31,067	1,305	4,4
10	Mosina	U-R	27,778	31,088	3,310	11,9
11	Stęszew	U-R	14,453	14,910	457	3,2
12	Komorniki	R	19,732	25,572	5,840	29,6

Table 2.

No.	Commune	Type of commune	2010	2015	Balance	%
13	Dopiewo	R	18,290	23,453	5,163	28,2
14	Buk	U-R	12,215	12,389	174	1,4
15	Tarnowo Podgórne	R	21,677	24,694	3,017	13,9
16	Rokietnica	R	12,528	15,679	3,151	25,2
17	Murowana Goślina	U-R	15,107	16,760	1,653	10,9
18	Pobiedziska	U-R	15,038	19,106	4,068	27,1
	<b>Total</b>		881,472	908,385	26,913	3,1

Source: author's study. Data from publications: *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2011*. Statistical Office in Poznań, Poznań, 2011, *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2016*. Statistical Office in Poznań, Poznań, 2016.

### Business activity

The growing number of residents of the communes adjacent to the central city has boosted development of numerous business areas, and to meet the growing need for changes, local self-governments introduced far reaching functional-spatial modifications. The current strategic and spatial planning documents (a study of conditions and directions of spatial management and a study of local spatial management plan respectively)

include provisions which render it possible to develop farmland into residential areas or areas of business activation. The changes allow numerous business entities to be situated in the communes within the impact zone of the central city (Tables 3 and 4). Provisions obliging investors to apply integrated efficient energy systems and pro-ecological technologies should be introduced as early as at the stage of planning solutions.

Table 3. - National economy entities in communes of the county of Poznan in years 2000-2010 in the national business registers: KRUPGN-REGON (2000) and REGON (2010) urban communes – U, rural communes – R, urban-rural communes – U-R

No.	Commune	Type of commune	2000	2010	Balance	%
1	City of Poznań	U	80,53	98,092	17,566	21.8
<b>COUNTY OF POZNAN</b>						
2	Suchy Las	R	1,543	2,932	1,389	90.0
3	Czerwonak	R	1,990	3,143	1,153	57.9
4	Swarzędz	U-R	1,108	6,684	5,576	503.2
5	Kleszczewo	R	240	611	371	154.6
6	Kórnik	U-R	1,525	3,019	1,494	98.0
7	Kostrzyn	U-R	1,186	1,755	569	48.0
8	Puszczykowo	U	1,262	1,825	563	44.6
9	Luboń	U	2,970	4,229	1,259	42.4
10	Mosina	U-R	2,508	3,561	1,053	42.0
11	Stęszew	U-R	1,108	1,630	522	47.1
12	Komorniki	R	1,339	3,090	1,751	130.8
13	Dopiewo	R	938	2,586	1,648	175.7
14	Buk	U-R	1,123	1,630	507	45.1
15	Tarnowo Podgórne	R	2,453	4,172	1,719	70,1
16	Rokietnica	R	770	1,698	928	120.5

Table 3.

No.	Commune	Type of commune	2000	2010	Balance	%
17	Murowana Goślina	U-R	1,588	2,314	726	45.7
18	Pobiedziska	U-R	1,408	2,251	843	59.9
	<b>Total</b>		105,585	145,222	39,637	37,5

Source: author's study. Data from publications: *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2001.* Statistical Office in Poznań, Poznań, 2001. *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2011.* Statistical Office in Poznań, Poznań, 2011.

Table 4. - National economy entities in communes of the county of Poznan in years 2010-2015 in the national business registers REGON  
urban communes – U, rural communes – R, urban-rural communes – U-R

No.	County	Type of commune	2010	2015	Balance	%
1	City of Poznań	U	98,092	108,821	10,729	10,9
	<b>COUNTY OF POZNAŃ</b>					
2	Suchy Las	R	2,932	3,608	676	23,1
3	Czerwonak	R	3,143	3,346	203	6,5
4	Swarzędz	U-R	6,684	7,327	643	9,6
5	Kleszczewo	R	611	914	303	49,6
6	Kórnik	U-R	3,019	3,736	717	23,7
7	Kostrzyn	U-R	1,755	2,001	246	14,0
8	Puszczykowo	U	1,825	1,947	122	6,7
9	Luboń	U	4,229	4,752	523	12,4
10	Mosina	U-R	3,561	4,178	617	17,3
11	Stęszew	U-R	1,630	1,802	172	10,6
12	Komorniki	R	3,090	4,412	1,322	42,8
13	Dopiewo	R	2,586	3,810	1,224	47,3
14	Buk	U-R	1,630	1,738	108	6,6
15	Tarnowo Podgórne	R	4,172	5,193	1,021	24,5
16	Rokietnica	R	1,698	2,359	661	38,9
17	Murowana Goślina	U-R	2,314	2,303	-11	-0,5
18	Pobiedziska	U-R	2,251	2,491	240	10,7
	<b>Total</b>		145,222	164,738	19,516	13,4

Source: author's study. Data from publications: *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2011.* Statistical Office in Poznań, Poznań, 2011. *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2015.* Statistical Office in Poznań, Poznań, 2016.

The extent and quality of the ongoing changes in the development of the economic sector directly influences functional-spatial development of communes adjacent to the central city. The dynamic increase in the number of business entities is proof of high social activation. The range of this process in years 2000-2010, which saw an increase in the number of business entities by 37,5%, and years 2010-2015, when the increase amounted to 11,6%, shows that the trend continues. The increase in the number of business entities occurred both

in the central city (despite the negative balance of population) and in the communes of the county of Poznań. Likewise, human migration processes and the growing number of business entities reflect the continuous tendencies of transformations in those Polish cities which, along with the adjacent communes, form metropolitan areas.



---

---

## Conclusion

Tendencies of transformations of Polish metropolitan areas and dynamic development of technical infrastructure are affected by social and economic processes. The dynamics of these phenomena can be easily observed in communes within the impact zone of the central city, whose expansion caused many adjacent communes to lose their original agricultural character. Farmland was transformed into residential areas or areas of business activation. The functional-spatial changes contributed to modernization, build and development of technical infrastructure, and they improved economic conditions of local communities. Development of technical infrastructure and public transport network boosted and strengthened metropolitanization processes. The example of the analyzed selected issues concerning transformations of those

Poznań county communes (which are part of the Poznań Metropolitan Area) renders it possible to conclude that the transformation is a dynamic process and it gives rise to further urbanization of the communes within the impact zone of the central city.

The pace and extent of the ongoing socio-economic and functional-spatial processes require continuous monitoring and analysis of the processes concerning development of technical infrastructure and energy management. This is possible through application of integrated energy efficient technologies in architecture and building construction, which should involve not only local self-governments of the communes which constitute a metropolitan area long with the central city, but also scientific communities.

---

## References

1. Borucińska-Bieñkowska H., *Wpływ transformacji społeczno-gospodarczej aglomeracji na kierunki rozwoju gmin*, Oficyna Wydawnicza Uniwersytetu Zielonogórskiego, Zielona Góra 2013.
2. Borucińska-Bieñkowska H., *Proces urbanizacji terenów wiejskich gmin powiatu poznańskiego*, Politechnika Śląska, Gliwice 2016.
3. Gorzelak G., Smętkowski M., *Metropolia i jej region w gospodarce informacyjnej*, Uniwersytet Warszawski, Warszawa 2005.
4. Gorzelak G., *Polska lokalna 2007*, Uniwersytet Warszawski, Centrum Europejskich Studiów Regionalnych i Lokalnych, Wydawnictwo Naukowe SCHOLAR, Warszawa 2008.
5. Smętkowski M., *Nowe relacje między metropolią i regionem w gospodarce informacyjnej*, *Studia Regionalne i Lokalne*, nr 4, Warszawa 2001.
6. *Strategia rozwoju województwa wielkopolskiego do 2020 roku*, Zarząd Województwa Wielkopolskiego, Poznań 2005.
7. *Terytorialne Zróżnicowanie Sytuacji Społeczno - Gospodarczej w Województwie Wielkopolskim w latach 1999-2003*, Urząd Statystyczny w Poznaniu, Poznań 2005.
8. *Ustawa z 27.03.2003 o planowaniu i zagospodarowaniu przestrzennym*. Dz.U. Nr 80, poz. 717.
9. *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2011*. Urząd Statystyczny w Poznaniu, Poznań 2011.
10. *Województwo Wielkopolskie. Podregiony, Powiaty, Gminy 2015*. Urząd Statystyczny w Poznaniu, Poznań 2015.

Стаття надійшла в редакцію 17.03.2017

**Рецензент:** д.т.н., проф. В.О. Плоский, Київський національний університет будівництва і архітектури, Київ

---

**Hanna Borucińska –Bieñkowska**

*Faculty of Building, Architecture and Environmental Engineering, Department of Architecture and Urban Planning, University of Zielona Gora, Poland*

### ZWIĄZKI SPOŁECZNYCH I EKONOMICZNYCH PROCESÓW URBANIZACJI GMIN OBSZARU METROPOLITALNEGO Z ROZWOJEM TECHNOLOGII ENERGETYCZNYCH. STUDIUM PRZYPADKU: POZNAŃSKIM OBSZAR METROPOLITALNY

**Streszczenie.** Artykuł omawia wybrane zagadnienia społeczne i ekonomiczne zachodzące w gminach obszaru metropolitalnego po transformacji ustrojowej w Centralno-wschodniej Europie w Polsce. Dynamiczna urbanizacja gmin polskich obszarów metropolitalnych była jednym z efektów transformacji społeczno-gospodarczej kraju po roku 1989. Odegrała także znaczącą rolę w kształtowaniu zarówno układów funkcjonalno-przestrzennych jak i świadomości władz samorządowych oraz lokalnych społeczności dotyczącej wartości zasobów kultury materialnej minionych lat w tym także założeń urbanistycznych. Gwałtowność zmian zachodzących w pierwszych latach transformacji społecznej i ekonomicznej spowodowało między innymi także pewne negatywne zjawiska funkcjonalno-przestrzenne na terenach gmin graniczących z miastem centralnym. Analizowano procesy zachodzące w gminach powiatu poznańskiego (województwo wielkopolskie), które stanowią istotną część Poznańskiego Obszaru Metropolitalnego (POM). Monitorowanie procesów zarówno społecznych, w tym migracji ludności jak i ekonomicznych – wzrostu liczby podmiotów gospodarczych (lata 2000-2010 oraz lata 2010-2014), zachodzących na terenach gmin będących w strefie oddziaływania miasta centralnego może wpłynąć na prowadzenie przez władze samorządowe prawidłowej polityki równoważenia rozwoju i przyczynić się kontrolowanej urbanizacji gmin polskich obszarów metropolitalnych.

**Key words:** *urbanizacja; obszar metropolitalny; miasto centralne; rewitalizacja;*