

# Annales Universitatis Paedagogicae Cracoviensis

Studia Geographica V (2014)

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## Industrial and commercial suburbanization in post-socialist city: the Kraków Metropolitan Area (Poland)

### Abstract

The subject of this paper is the issue of urban sprawling in the Kraków Metropolitan Area (Poland). Particular attention is paid on the changing role of industry as one of the key elements of development and metropolization of cities in post-socialist, emerging economies. The role of the industry in terms of activation of labor resources has been diminishing, which is connected to the automation of manufacturing processes and relocations of labor-intensive activities to regions with lower production costs. However, the industry, particularly high-tech manufacturing, plays a significant role in stimulating research and development sector and generate innovations as a key component of the knowledge-based economy. The innovative industrial companies are one of the most important elements of the structure of metropolitan cities. The analysis of this process is based on data on employment and the operation of selected industrial companies, with particular emphasis on their shift from the city to the suburbs. The process of decentralization of high-order producer services, cultural services as well as advanced informational services is one of the most important features of modern urban areas and has been identified by many researchers.

**Key words:** industry; Kraków Metropolitan Area; metropolization; Poland; relocation; suburbanization; urban sprawling

### Introduction

Global economy transformations in the process of building a knowledge-based economy and, in Polish conditions, also related to the economic transformation system and EU integration, affect the operation and transformation of economic sectors (farming, industry and service sectors) and enterprises that are the base entities of the economy. In this context, it is important to analyze the impact of the transformations on the operations and changes in the economy structures at different spatial scales (national, regional and local). Actually, we start from the assumption that enterprises – large industrial and commercial enterprises in particular, that demonstrate strong international relations – represent the key elements of the urban and metropolitan area structures and shape their

development. For the sake of analyzing development of metropolises, a diagnosis of transformation in industrial enterprises may be of key importance, in particular when focused on operational aspects of the enterprises that are related to creating technological, product and organizational innovations. Further on, in the light of previous considerations (Rachwał, 2005, 2009) we note that, although the industry-related features of a metropolis are emphasized, a relatively small role is attributed to industrial enterprises paying the role of important elements of the structure of the areas. Still, that role is not insignificant, as evidenced by the data on the share of industrial enterprises in the structure of the employed and revenue of enterprises in metropolitan cities in Poland, as Rachwał (2005, 2009) shows in previous research.

The process of decentralization of manufacturing activities, high-order producer services, cultural services as well as advanced informational services is one of the most important features of modern urban areas and have been identified by many researchers (Gaschet, 2002; Harrington, Campbell, 1997; Hermelin, 2007; Rubalcaba et al., 2013). It should be noted that in the period of socialist economy industrial enterprises were localized within the city or in areas that were later included in the administrative boundaries of the city. These companies quite often occupied attractive areas located in city centers, close to the historic area of "old town". In terms of economic transformation the processes of spatial deglomeration of industry started, i.e. the relocation of activities from the core city to the outskirts of metropolitan areas.

Simultaneously, in parallel to the process of residential suburbanization associated with the migration of the population within the KMA (Rettinger, Wójtowicz, 2009; Zborowski et al., 2011; Winiarczyk-Raźniak, Raźniak, 2012; Wójtowicz et al., 2014), the processes of commercial suburbanization diffused, as a result of the location of new shopping centers and business outside the city, mainly in the neighboring villages. Examples of such new centers were created in the north-western borders of Kraków, including municipalities: Zabierzów and Wielka Wieś. Still, the bulk of hypermarkets and other large commercial buildings were located within the city, which was in line with the strategies adopted by large retail chains operating on the Polish market, which preferred location in the large urban centers (Więclaw, 2000; Wilk, 2005; Gwosdz, Sobala-Gwosdz, 2008).

In the light of the above, the subject of the paper is the process of urban sprawling in the post-socialist city, based on the case of Kraków Metropolitan Area (KMA) in Poland. Particular attention is paid of the changing role of industry as one of the key elements of development and metropolisation of cities in post-socialist, emerging economies. The role of the industry in terms of activation of labor resources has been diminishing, which is connected to the automation of manufacturing processes and relocation of labor-intensive activities to regions with lower production costs (Gierańczyk, Rachwał, 2012; Rachwał, 2009, 2011a, b; Rachwał, Wiedermann, Kilar, 2009). As a consequence of this phenomenon and emergence of the so-called

disadvantage of agglomeration replacing advantages of agglomeration, industrial enterprises are relocated in metropolitan areas. One of the research objectives is to identify transformations of the economic structures of KMA and spatial changes in operating of industrial and commercial enterprises.

The industry, particularly high-tech manufacturing, plays a significant role in stimulating research and development sector and generating innovations, as a key component of the knowledge-based economy (Gierańczyk, 2009; 2010a, b; Gurbala, 2010; Rachwał, 2013; Ziolo, 2012). Effects of functioning and innovation processes in industrial enterprises are visible both in the results of the whole urban economy, affecting the size of the inflow of foreign direct investment, competitiveness of the city, the state of public finances and private companies, but also in functioning of municipal authorities, educational and research and development activities and higher quality of life (Rachwał, 2005, 2009a, 2012).

The analysis covers Kraków Metropolitan Area delimited by Zborowski (2004), to which the resolution of the Government of the Małopolska Region applies for statistical and planning purposes, by municipalities. The data include the working group defined as 'the employed' (in accordance with the public statistics: employees and business owners – self-employed). The analysis covers the period of 1989–2011, but not all data are available within this time section.

The analysis is limited by limitations caused by access to the statistical data and changes in the public statistics in Poland. Since 2004, there have been some serious changes happening in the access to the statistical data. Since 2004, there has been no access to data on employment per sector in municipalities (NUTS-5 European classification level) – this is why the analysis by municipalities starts in 1995 and ends in 2003. More recent data is available for *poviats* only – NUTS-4 level, for this reason, another part of the analysis covers the data for this spatial unit. In consequence, it is not possible to assess further changes in the KMA by municipality. In addition, since 2008 there has been a change in the business classification coding, i.e. transfer from NACE Rev. 1.1 (in Poland: PKD 2004) to NACE Rev. 2.0 (PKD 2007). The data comparable in accordance with NACE 2.0 are available since 2005. Moreover, 2010 was the year of the national agricultural census; as a result, there has been a considerable revaluation of 2011 data for people working in the agricultural sector (in case of some *poviats*, by more than 10%) which affects the share of other sectors (the industrial and service sector) in the employment structure. More about the limitations in the availability of statistical data on economic activity is covered in the works of Rachwał (2008, 2010).

## Location, spatial division and characteristics of KMA



Fig. 1. Location of KMA in the Małopolska Region

Source: authors' elaboration on the basis of data from: *Plan zagospodarowania przestrzennego województwa małopolskiego* (2003)

KMA is located in the central, north-western part of the Małopolska Region, one of 16 regions (NUTS-2 level), located in southern Poland (Fig. 1). Its central city is Kraków, which is also the administrative capital of the region, the former capital of Poland and one of the most important academic centers in Poland, which is also considered the cultural capital in Poland.

Apart from Kraków, KMA includes 50 municipalities of different types (1 urban, 14 urban-rural and 35 rural) (Fig. 2). These municipalities are located on the territory of 8 higher level administrative entities – *land poviats*. Kraków city is also the *urban poviat* and, for this reason, in the public statistics is on the level of a municipality (*gmina*) (NUTS-5), *poviat* (NUTS-4) and a subregion (NUTS-3).





Fig. 2. Spatial division of KMA

Source: authors' elaboration on the basis of the data from: *Plan zagospodarowania przestrzennego województwa małopolskiego* (2003)

The total area of KMA covers more than 4,000 square km, nearly 70% of which is a commuting zone, while about 22% is a suburban zone (Table 1). The area of Kraków represents 8% of KMA. The total population of KMA in 2010 was over 1.4 million, of which approximately half is inhabited in the central city of Kraków. The average population density is 367 persons per square km.

Tab. 1. Area and population of KMA

Area	Area		Number of municipalities	Population in 2012		Population density
	in sq. km	in %		in thous.	in %	
Kraków	326.8	8.0	1	758.3	50.8	2 320
Suburban zone	900.3	22.1	12	273.1	17.8	303
Commuting zone	2 841.4	69.9	38	461.6	30.8	162
<b>Total KMA</b>	<b>4 068.6</b>	<b>100.0</b>	<b>51</b>	<b>1 493.0</b>	<b>100.0</b>	<b>367</b>

Source: authors' elaboration on the basis of data from: Local Data Bank, Central Statistical Office

### Changes in the structure of industrial employment of KMA

The share of industry in the structure of employment (employed person) in 1995 and 2003 indicates that it ranges from several to more than 70% (Fig. 3). The indicator is lower in 2003 in Kraków while it is higher for some other KMA municipalities, in particular for those located south of Kraków. In the north of KMA, there is a belt of rural municipalities with farms, showing a large share of farming in the employment structure and a low share of the industry.

Figure 4 presents the dynamics of the employment changes in the industry, taking the initial year (1995) as 100. Employment in the industry is going down in the central part of KMA, including Kraków. As mentioned at the beginning of the paper, it comes as a consequence of deteriorating role of the industry in activating the work resources. It results from the increasing role of services in the economy as well as mechanization and automation of production. However, note that that was the time of intensive restructuring processes in enterprises in Poland to remove excess employment dating back to the times of the former socialist system. Growths have been observed in some peripheral municipalities of KMA and in Kraków's satellite town of Niepołomice. This area is particularly active in attracting investors and in many studies it is indicated as a successful city, which is largely associated with entrepreneurial attitudes of local authorities and residents (Jarczewski, 2007; Jarczewski, Huculak, 2011). However, generally there is a deteriorating trend in employment in the industry – the growth index for KMA is 70.

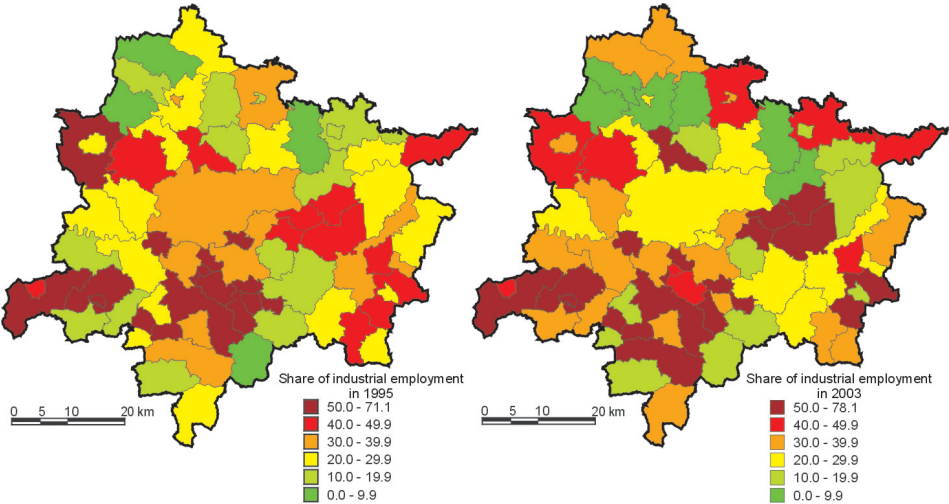


Fig. 3. Share of industry in employment in KMA municipalities in 1995 & 2003

Source: authors' elaboration on the basis of data from: Local Data Bank, Central Statistical Office

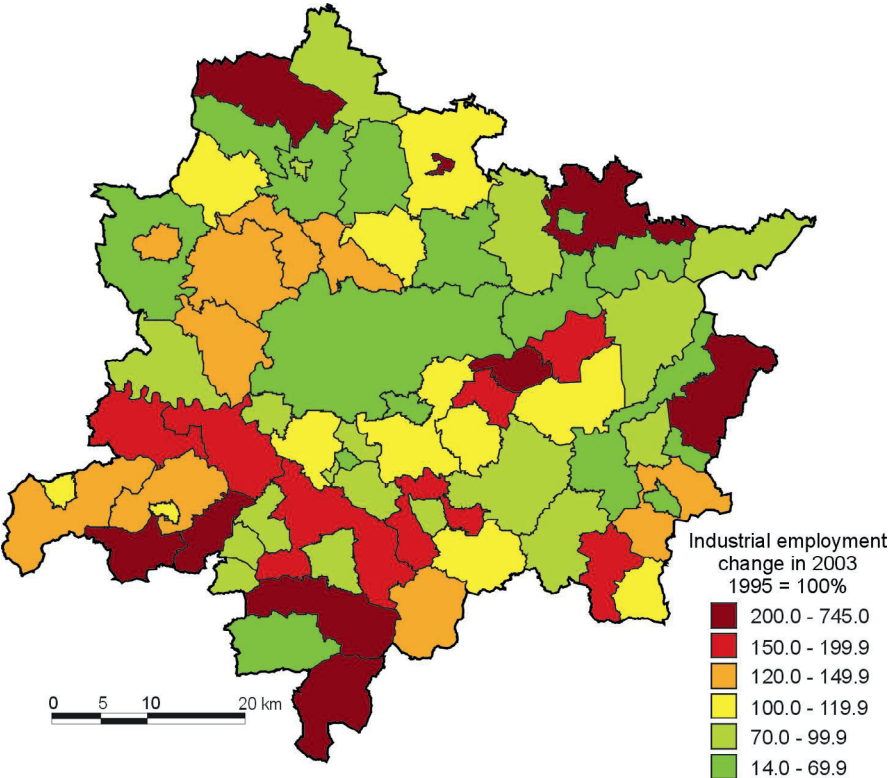


Fig. 4. Industrial employment change in KMA municipalities in 1995–2003

Source: authors' elaboration on the basis of data from: Local Data Bank, Central Statistical Office

As a result of the transformations, there has been a dropping share of industry in employment in many KMA municipalities, including Kraków, in some cases by as much as 24 p.p. (Fig. 5). The drop of the share for entire KMA is – 8 p.p. while it is higher in Kraków and reaches – 11 p.p. Furthermore, many municipalities outside of Kraków city, such as Niepołomice, report significant growths in the share of industry in employment going up to 20 p.p. or higher.

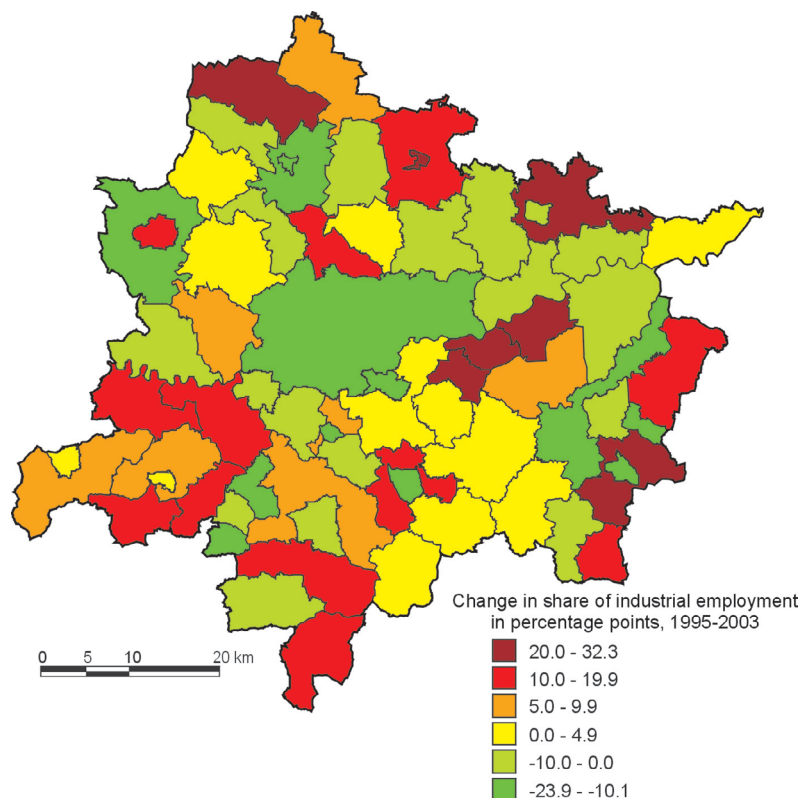
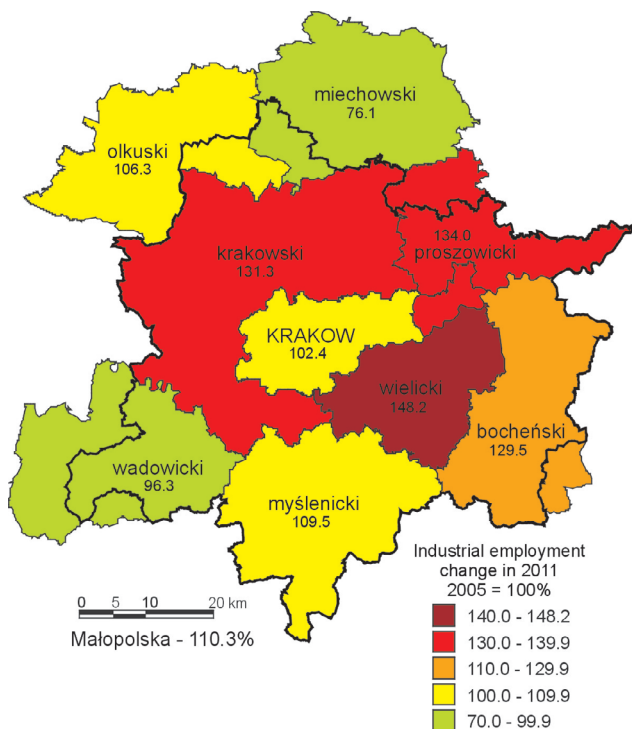


Fig. 5. Change in share of industrial employment in KMA municipalities in 1995–2003

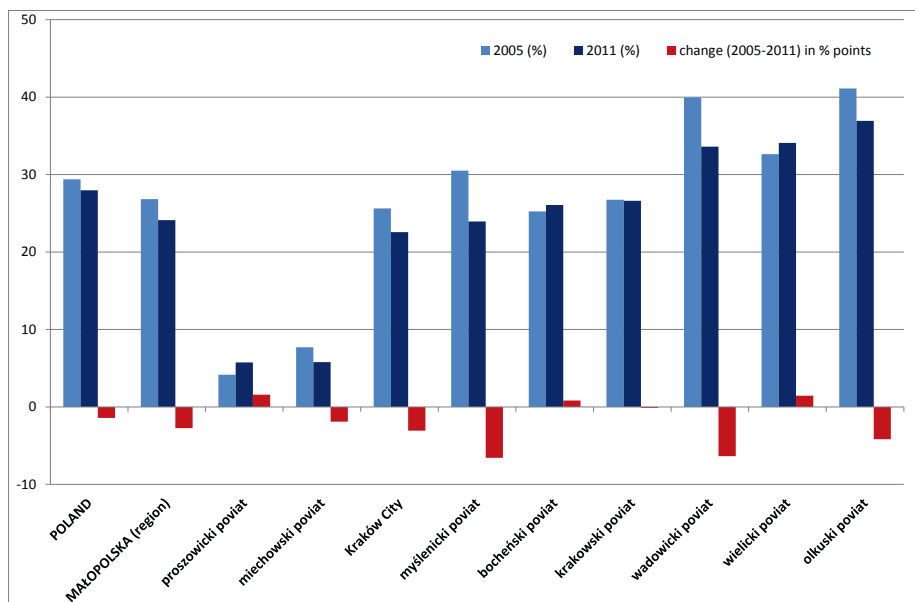
Source: authors' elaboration on the basis of data from: Local Data Bank, Central Statistical Office

Due to the above-mentioned limitations in access to the statistical data and changes in the business classification, the analysis covering following years may be continued by *poviats*. The analysis of data shows a small growth in changes in the industrial employment in Kraków (as low as 102.4%) and in some *poviats* in the northern or southern part of the analysed area and the growth in the *poviats* around Kraków: *krakowski* (land) *powiat*, *proszowski* and *wielicki* *poviats* (Fig. 6).

Changes in employment have brought about changes in the share of the industry in the employment structure. This share in Kraków City and farming *poviats* (*proszowski*, *miechowski*) is significantly lower than the average share reported for Poland and Małopolska Region (Fig. 7).

Fig. 6. Industrial employment change in Kraków City and neighboring *poviats* in 2005–2011

Source: authors' elaboration on the basis of data from: Local Data Bank, Central Statistical Office

Fig. 7. Industrial employment share in Kraków City and neighboring *poviats* in 2005 and 2011

Source: authors' elaboration on the basis of data from: Local Data Bank, Central Statistical Office

The data show a decrease in the share of the industrial sector in most *poviats*, including Kraków (Fig. 7, 8). *Proszowicki*, *wielicki* and *bocheński* *poviats* in the western part of KMA are the exception here, reporting a slight growth of the share of industry in employment. However, note that in some *poviats*, e.g. *wadowicki* and *myślenicki* *powiat*, a substantial drop in the share came as a result of the previous revaluation of employment in the agriculture sector based on the Census. Otherwise, the drop in the share of industry would be much lower.

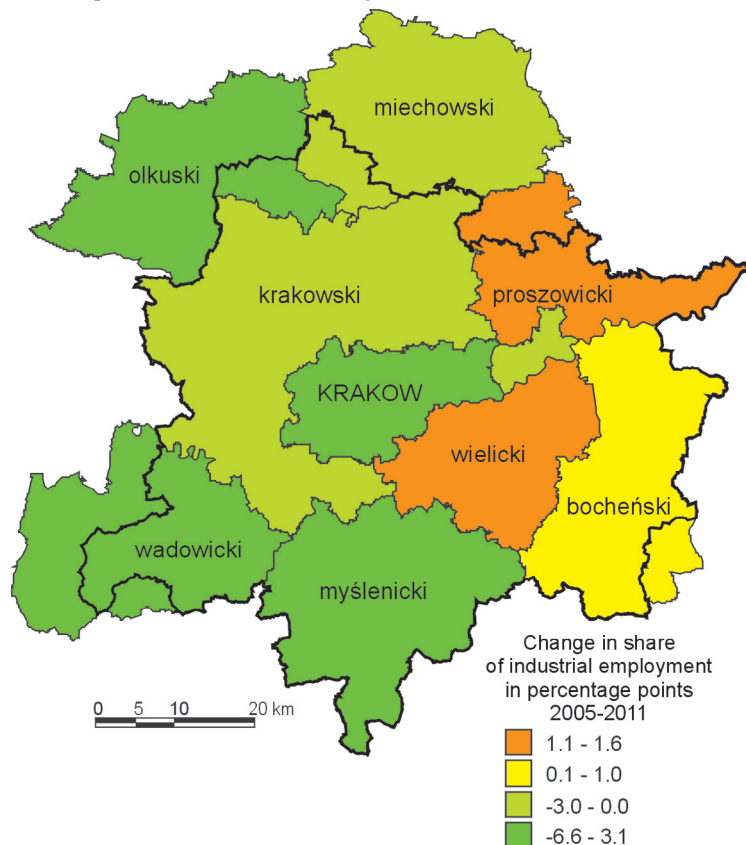


Fig. 8. Changes in industrial employment share in Kraków City and neighboring *poviats* in 2005–2011

Source: authors' elaboration on the basis of data from: Local Data Bank, Central Statistical Office

## The role of economic activity zones and foreign investment in industrial suburbanization

In *poviats* around Kraków, characterized by high dynamics of growth of employment in industry (Fig. 6), many municipalities have embarked on initiatives aimed at creating local economic activity zones or special economic zones and are active in attracting domestic and foreign investors (Fig. 9, 10). In addition, the area benefited considerably from setting up and expanding Kraków Special Economic Zone named “Krakowski Park Technologiczny” (Kraków Technology Park) by the central state authorities in collaboration with the municipalities.

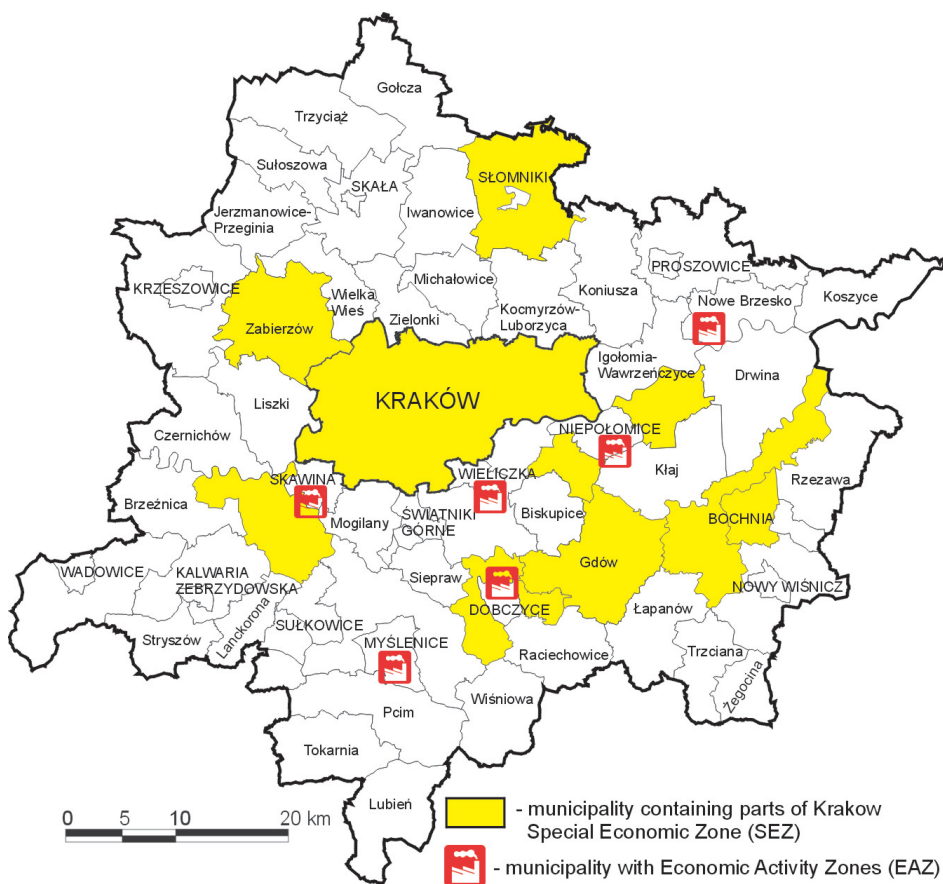


Fig. 9. Special Economic Zone (SEZ) and Economic Activity Zones (EAZ) in KMA in 2012

Source: authors' elaboration on the basis of the data from: *Inwestorzy zagraniczni w Małopolsce w 2011 roku* (2012)



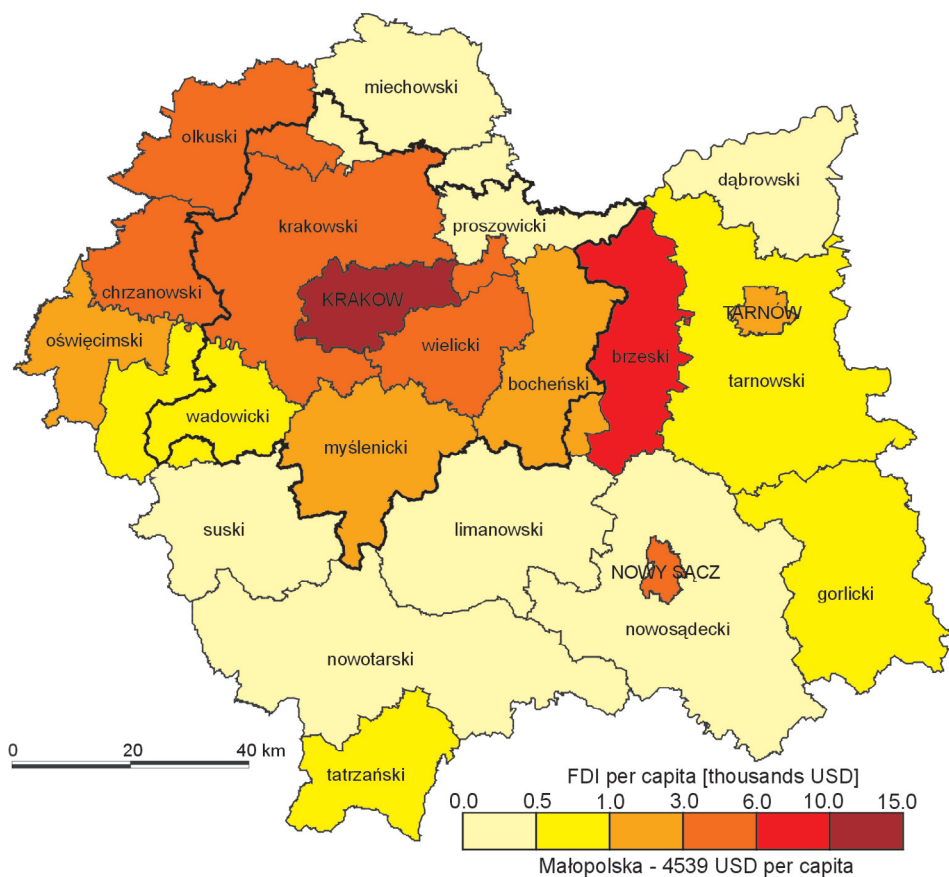


Fig. 10. FDI in the *poviats* of Małopolska Region in 1989–2011

Source: authors' elaboration on the basis of the data from: *Inwestorzy zagraniczni w Małopolsce w 2011 roku* (2012)

The Kraków SEZ, as other SEZes in Poland, offers tax relieves to companies which choose to set up their business there (Bazydło et al., 2002; Kitowski, 2007, 2009; Smętkowski, 2009). The municipalities hosting Economic Activity Zones may also offer some local tax benefits. However, it is not necessary in many cases. It stems from the fact that both KMA and the whole Małopolska Region are investment locations attractive enough for municipalities not to have to offer any relieves of local taxes (mainly of the real estate tax) to attract investors. In return, they offer good investor services and access to land with all the utilities or land for business purposes, and these activities are sufficient. For this reason, the majority of KMA municipalities applies the maximum allowed real property tax rates and does not need to lower them to attract investors. It is also the outcome of good access to highly qualified and relatively inexpensive personnel educated in very good secondary schools and universities of Kraków, which is often one of the most important factors promoting the decision on locating a business, other factors aside.



As a result, Małopolska region, due to its large resources of skilled labor resources and well-educated graduates, and high labor productivity, especially in Kraków and neighboring counties, is one of the four most attractive regions for investment location (Nowicki, 2013). Therefore, KMA is very popular among foreign investors (Figure 8). The highest foreign direct investment (FDI) per capita is observed in Krakow, but it is also high in two neighboring counties – Krakow (rural area) and Wieliczka. They are much higher than in the counties of southern, eastern and northern Lesser Poland.

Total value of FDI inflows to the Małopolska region in the years 1989–2011 amounted to more than \$ 15 billion, more than one third of which were greenfield investments (Table 2). More than three quarters of this value has been invested in the KMA, mainly in Kraków City, but a significant amount also went to other municipalities of KMA.

Tab. 2. FDI in the KMA against the background of Małopolska Region in 1989–2011

Area	FDI 1989–2011		Greenfield FDI 1989–2011		
	mln USD	in %	mln USD	in %	% of total FDI
Małopolska	15 190.3	100.0	5 653.0	100.0	37.2
KMA	12 045.7	79.3	4 273.4	75.6	35.5
Kraków	9 525.1	62.7	2 788.3	49.3	29.3
rest of KMA	3 144.6	20.7	1 379.6	24.4	43.9

Source: authors' elaboration on the basis of the data from: *Inwestorzy zagraniczni w Małopolsce w 2011 roku* (2012), p. 48

Over 7% of the total value of investments in Małopolska in the years 1989–2011 went to Kraków SEZ and economic activity zones in other municipalities (Table 3). The surge of interest in foreign investment in agricultural land has also attracted the Kraków SEZ and Niepołomice EAZ. A detailed analysis of the development of the EAZ in Niepołomice, a good example of pro-investment policies, is shown in the work edited by Jarczewski and Huculak (2011). As Jarczewski (2007) noted, the effective conduct of this type of policy depends on the entrepreneurship of local authorities.

Tab. 3. FDI in the SEZ and EAZ in 1989–2011

SEZ/EAZ	FDI 1989–2011 mln USD	Share of total FDI 1989–2011 in %
Krakow SEZ	553.4	3.6
Niepołomice EAZ	325.0	2.1
Myślenice-Jawornik EAZ	124.0	0.8
Dobczyce EAZ	109.8	0.7
Skawina EAZ	36.8	0.2
Total	1 149.0	7.4

Source: authors' elaboration on the basis of the data from: *Inwestorzy zagraniczni w Małopolsce w 2011 roku* (2012), p. 47

### Industry relocation case studies: *Wawel* and *Vistula*

*Wawel*, one of the largest Polish confectionary producers with its history of more than 100 years (Rachwał 2001) and *Vistula*, one of the largest producers and distributors of high quality menswear and more than 60 years of presence on the market, are excellent examples of transformations in the spatial structure and industry deglomeration processes. These companies held attractive land in the centre of Kraków City, over the Vistula River, in the vicinity of the attractive Jewish District of Kazimierz and within a small distance from the heart of the old Kraków.

In case of *Wawel*, in 2006 the company relocated its production activities to *myślenicki powiat*, Dobczyce municipality. In turn, *Vistula* closed its production plant in Kraków in 2008 and transferred its production to a production plant in Myślenice, which it had been using and expanded. Due to the change in *Vistula*'s business strategy, which transformed from a clothing manufacturer into a brand operator (a trade company ordering goods from suppliers - external producers); the plant was sold to an external investor in 2011.

The old manufacturing facilities have been torn down to be replaced with apartment buildings (*Vistula*) and office and commercial buildings (*Wawel*). These are cases of classical deglomeration of active industrial business – thanks to funds generated from selling attractive area in the city center, a new production facility can be set up on the outskirts of KMA.

In 2006, the production plant of *Wawel* was moved to the town of Dobczyce near Kraków (*myślenicki powiat*) – photo 1. Some buildings have been pulled down in the sold areas (leaving only the historical buildings which had been used for administrative purposes) to be replaced with a new office and residential building with an avant-garde design (resembling a slithering snake), designed by famous Polish architects from Ingarden & Ewy Design Studio (photo 2).

The former Kraków production facilities of *Vistula* will be replaced with luxury apartment buildings (photo 3). The economic crisis does not impact many investors interested in buying property in the excellent location, overlooking the Jewish district of Kazimierz and the Old Town of Kraków. Next to the investment project, Tadeusz Kantor Museum<sup>1</sup>, commemorating his works and achievements, is under construction.

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<sup>1</sup> Tadeusz Kantor was a well-known Polish theatrical performer (theatre director, costume and stage designer, the founder of Cricot 2 Theatre in Kraków, a painter and graphic).



Photo 1. A new production plant in Dobczyce EAZ of Wawel Confectionary Producer

Source: UMiG Dobczyce, <http://dobczyce.pl/dla-przedsiębiorców/strefa-przemys%C5%82owa-w-dobczycach.html> (19.07.2013)



Photo 2. Post-industrial area of former Wawel plant and visualisation of new apartment buildings

Source: authors' elaboration based on Google Maps (left) and Ingarden & Ewy Design Studio (right) (19.07.2013)



Photo 3. Visualisation of Tadeusz Kantor Museum and luxury apartment buildings in the place of former Vistula plant

Source: Atal S.A. – [http://www.nadwislanska11.pl/#/pl/galeria/widoki\\_osiedla/](http://www.nadwislanska11.pl/#/pl/galeria/widoki_osiedla/) (19.07.2013)

## **Commercial suburbanization in city and municipalities of the Krakow Metropolitan Area**

In the main central European cities residential and commercial suburbanization quickly developed in their outer parts becoming the most important process of urban change during the last two decades. The fast growing shopping centers, hypermarkets, warehousing and industrial properties even preceded the residential deconcentration what is different from the process of suburbanization in the cities of Western Europe (Wilk, Lisowski, 2002; Nuissl, Rink, 2003; Sýkora, Ouředníček, 2007).

In the early 2000s we observed an acceleration of residential suburbanization in KMA which were accompanied also by sprawling shopping centers, warehouses, beauty salons, car workshops and dealerships, and industrial properties. These facilities were built mostly on greenfield areas on the border of the built up areas within the city or at the edge of the city and suburban locations. New commercial investments, warehousing and distribution facilities offered a relatively large number of new jobs and substantially influenced the pattern of commuting to work of people employed in retail and services. In the case of KMA, definitely the fastest development was observed among the network of hypermarkets and shopping malls located within the administrative borders of the city, which resulted from the following factors:

- proximity to large housing estates, whose residents were the main clients of this type,
- relatively better-developed transport network within the city than in the suburban area which facilitated access to such objects,
- relatively slower pace of suburbanization, in contrast to other major cities of Central Europe,
- still a strong relationship between the suburban area and the city center associated with daily commuting and making major purchases in facilities located in the town near the main exit routes.

In the case of hypermarkets as much as 91.3% of their total number is located around Kraków and only 2 were located in Bochnia - the second largest city within the KMA. The situation is much better in the case of the distribution of supermarkets, which are much smaller commercial buildings, hence their much more numerous occurrence in the outer zones of KMA. They are particularly visible in small towns, which are local service centers. However, their growth in the years 2008–2012 shows a significantly slower dynamics as compared to the dynamics of Kraków, which indicates that the main city of KMA continues to be much more attractive for the growing trade networks in comparison with the suburbs (Table 4, Fig. 9).

Trends in the commercial suburbanization, although not very strongly evident in the case of migration of hypermarkets and large shopping centers to suburban municipalities, however, they can be clearly observed in the peripheral areas of the city along the main roads connecting the center to the fastest suburbanizing municipalities. Examples of such processes can be clearly seen along the road

7 called “Zakopianka” running towards Zakopane – a popular resort in the Tatra mountains, in the municipality of Mogilany south of Krakow. Another example is the area of exit road 94 towards municipality Wielka Wieś and the junction of roads 94 and 79 with the northern bypass in Zabierzów (Fig. 12).

Tab. 4. Hyper- and supermarkets in KMA against the background of Małopolska Region in 2008–2012

Area	Hypermarkets		Supermarkets		
	2008	2012	2008	2012	Change 2008=100
Małopolska	23 100.0%	37 100.0%	253 100.0%	376 100.0%	148.6
KMA	16 69.6%	23 62.2%	91 36.0%	142 37.8%	156.0
Krakow	15 65.25%	21 56,8%	54 21.3%	88 23.4%	163.0
rest of KMA	1 4.3%	2 5.4%	37 14.6%	54 14.4%	145.9

Source: authors' elaboration on the basis of data from: Local Data Bank, Central Statistical Office

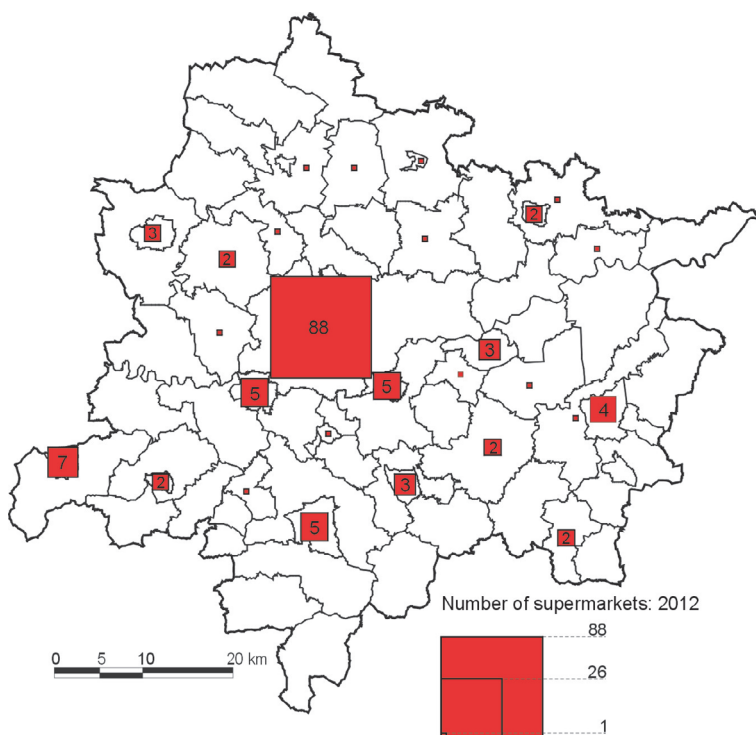


Fig. 11. Supermarkets in KMA in 2012

Source: authors' elaboration on the basis of data from: Local Data Bank, Central Statistical Office



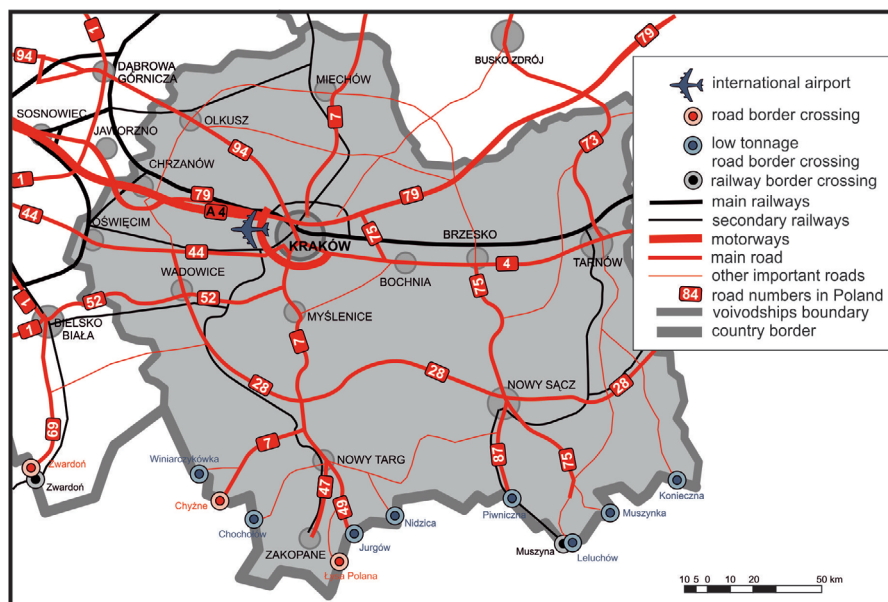


Fig. 12. Major roads network in Małopolska Region

Source: *Plan zagospodarowania przestrzennego województwa małopolskiego* (2003)

## Conclusions

The study showed that a deteriorating role of the industry in activating work resources in KMA is observed, which reflects some general processes occurring in the national economy (Rachwał, 2011a, b). On the other hand, the relocation of industrial activities from Kraków to urban and rural municipalities has been recorded since the 1990s. The post-industrial areas of Kraków witness the development of trade and business related services (BPO service center) and multi-family residential development projects (luxurious apartment buildings, because of high prices of land). It should be noted, however, that the biggest transfers of businesses and human resources (personnel) of the businesses are observed from Kraków to municipalities with production traditions, which actively support of attracting investors, including foreign investors, creating conditions in business activity zones. As a result, there have been major growths of employment in the industrial sector and of the share of employment in the industry in the municipalities. These processes are spontaneous and not coordinated at KMA level due to non-developed structures to manage the area.

Through the empirical study on the Kraków Metropolitan Area, it has become evident that the deteriorating role of industry in the employment structure does not translate into a deteriorating role of industrial enterprises in the economy and development of the metropolitan function. The growing role of industrial enterprises applies, predominantly, to the growth of the sold production and the impact on the R&D and science sector development in the entire KMA.

To the contrary, the suburbanization of retail and warehousing in KMA has been less dynamic and influential than residential deconcentration. Although there has been a shift in the retail (e.g. supermarkets) to municipalities that recorded high population growth and which often are rural areas.

The process of suburbanization in Kraków Metropolitan Area has gained speed in recent years. The growth of manufacturing and service industries in semi-peripheral areas of KMA implies a continuation of the general trend toward decentralization that will tend to favor suburban locations. It seems that continuing residential suburbanization will contribute to further redistribution of industrial activities from the city centre to its hinterland.

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