Territorial diagnosis of competitiveness of urban areas in Poland

Case study: Wielkopolska

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1. Introduction

1.1. General objective of the study

The enlargement of the European Union to 27 Member States has had important consequences for the dynamics of European urban areas. The establishment of the Single Market, by facilitating the flows of goods, capital, services and citizens within a common economic space, had already made a significant impact on the process of urban change, stimulating growth in economically buoyant areas, but also accelerating contraction and decline in others.

The prosperous cities are high-productivity service platforms capable of retaining and attracting human capital and firms. However, it is reasonable to assume that rapidly developing cities in Western Europe can have a negative influence on the sustainability – economic, environmental and social – of the new EU member states' cities and their settlement pattern.

The Polish settlement system as a part of the EU system is also exposed to the negative effects of imbalanced development of urban areas. The risk of marginalization of the metropolitan regions of Poland reflects the demographic projections[1] for the country, which envisage a considerable decline in the population. Detailed results of the population analyses include a significant decrease in the working-age population, an increase in the population over 65 years old, a low fertility rate, and a continuous outflow of population (Poland is a country with net emigration).

The possible negative scenarios for Polish urban areas are confirmed in the *Concept of Spatial Development of the Country* (2006) from the Ministry of Regional Development and Committee for Spatial Economy and Regional Planning at the Polish Academy of Sciences, National Strategic Reference Framework 2007–2013 (NSRF)**,** as well as other documents created by governmental bodies (e.g. National Development Strategy 2007–2015 (NDS), the Concept of National Spatial Development (CNSD), and National Strategy of Regional Development for 2010–2020: Regions, Cities, Rural areas (NSRD). These studies model the spatial structure of Poland over a long time period. The basic elements of the development of the country's space are the system of technical infrastructure, the Warsaw metropolitan region, potential poles of development (the largest cities and their metropolitan regions), areas of innovations and actions, and the network of cities which play a significant role at international and national level.

The above-mentioned strategic documents predict that there will be a stronger bias (polarization) between the metropolitan regions and their peripheries in the near future. This means the existence of developed agglomerations – the centre (pole) of development – and

[1]Anna Matysiak, Beata Nowok, Max Planck Institute for Demographic Research, *Stochastic forecast of the population of Poland, 2005 – 2050*, 20.11.2007, Vol. 17, Art. 11, p. 301–338; Konstantinos Giannakouris, *Ageing characterises the demographic perspectives of the European societies*, Eurostat, 72/2008

areas of poverty at the peripheries (the former socialist collective farming areas in the north-west and eastern parts of the country).

These types of scenarios are characteristic for the Central and Eastern European economies that are catching up with the general patterns of the Western European countries after fifty years of centrally planned economy. One should answer the following questions in order to find a solution for the distribution of European Union financial aid (e.g. from European Investment Bank funds):

1. What is the demographic situation of urban areas in Poland?
2. What will influence the population increase/decrease in Poland and its urban areas? Natural birth rate or migration rates?
3. What are the migration trends between urban and rural areas?
4. What are the possible future demographic scenarios for urban areas?
5. What are the regional differences in the socio-economic development of the urban areas?
6. How do the peripheral/surrounding areas support the growth of the main cities/metropolitan areas in Poland?
7. How economically, socially and politically competitive are the regions and their urban centres?
8. What are the scenarios and possible trends of future development for urban areas in Poland?
9. What are the supply of and demand for urban assets and services in relation to demographic and human capital problems and urban infrastructure?
10. What is the socio-economic situation of the urban areas in a particular region – the case of Wielkopolska voivodeship?

The answers to these questions and in-depth analysis of the problems can help anticipate the future development of Polish urban areas and assist the management of the urban development funds (e.g. JESSICA) – funds which are EU financial instruments for the renewal and/or regeneration of the urban areas affected by negative demographic and socio-economic trends.

The overall emphasis of the study is on characterising demographic and city growth and decline, with a view to assessing their impact on risks and opportunities for long-term investment. The territorial scope of the study is the Polish urban system; however it is also concentrated on a regional level – on the Wielkopolska region. This is a pilot region for the study of urban system dynamics and the implications for risks and opportunities for long-term investors. Wielkopolska is the first region in Poland (and one of the first in the EU) to implement JESSICA and establish Urban Development Funds.

The study consists of five chapters. The first one, the introduction, presents the aim of the study and describes content and methodology. The second chapter concerns the demographic situation of Poland and its urban areas. In particular, it includes information about the conditions of the population changes in Poland and its urban areas. It refers to external and

internal migration flows. The third chapter includes territorial diagnostics, preceded by the development path of the settlement system in Poland. The diagnostics rely on various socio-economic indicators related to the Polish regions (voivodeships) as well as the urban areas, and in particular the nine delimited metropolitan areas. There are also future prognoses of demographic change as well as attempts to estimate economic trends for some urban areas. The chapter also includes an evaluation of existing urban assets in nine urban areas and of urban demand in the analysed areas. Various multi-variable analyses are performed which make it possible to classify regions, areas and cities. The fourth chapter includes a case study of Wielkopolska – one of the first regions in Poland to introduce the JESSICA financial instrument to improve urban assets. In this chapter indices relating to the socio-economic development of the region's urban areas are applied. The chapter also includes socio-economic analysis of a centre of growth – the Poznań metropolitan region. It also contains some recommendations for future investment in urban development. The final chapter summarizes the report.

1.2. Methodology

Urban areas in Poland are an important issue for geographical and economic studies. The existing literature on the problem presents different methodological approaches (e.g. Markowski T. et al., 2010; Parysek J., 2004; Parysek J., 2005; Parysek J, Mierzejewska L., 2005; Węcławowicz G., 2010). The methodology of the report reflects the main objectives of the study: to examine the medium to long-term impacts of the change in economic and demographic factors on demand for urban services and characterize the likely scenarios for demographic and city growth and decline in Poland. From the methodological point of view the report is divided into four main parts, each one related to different levels of spatial analysis and statistical methods (Fig. 1). The higher-level analyses are less detailed and provide a background for the more detailed examination of urban areas at the lowest (local) level.

The first part of the report relates to a review of the literature and statistical data. The most important publications, papers and statistical reports were collected and were used to provide a background for the more detailed analyses that appear in the next parts of the report. The process of literature review took place at all stages of the analysis.

The second part presents the demographic situation at national level in Poland. It is based mainly on the relevant statistical indicators generated by the Central Statistical Office in Poland (GUS) as well as by the Organisation for Economic Development and Cooperation (OECD). The first part of the report also includes projections and future demographic development scenarios. The future projections for the whole country are based on, among others, the reports and policy documents of GUS (Demographic Prognosis for 2007–2013), OECD (2010, Polish Background Report for OECD National Urban Policy Reviews in Poland, Part I and II) and the Polish Ministry for Regional Development (2000 – National Spatial Development Policy, and 2008 – Experts' Project of the Concept of the Spatial

Development of the Country by 2033). Indices presented include the natural increase per 1000 population and the number of migrants per 1000 population.

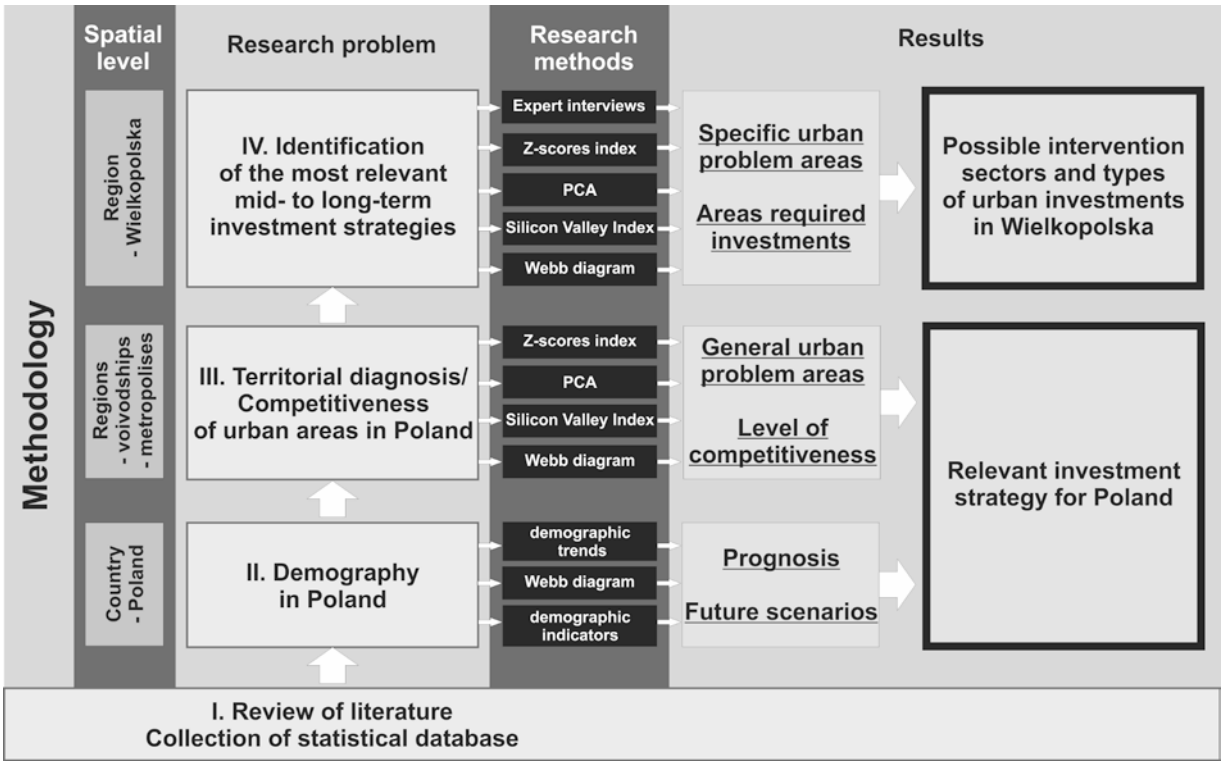


Fig. 1. Methodology of the report

Source: own compilation

The third part of the report relates to the territorial diagnosis of the demographic and socio-economic situation in the Polish voivodeships. This part of the report is also based on statistical analysis. The analysis has a dynamic character, and presents changes in the demographic indices in Poland and its urban areas over ten years (1998–2008). The Webb diagram method was used to evaluate the demographic situation of the Polish voivodeships and to present the regions of population growth and decline. The method is described in more detail in section 1.2.1. The use of selected socio-economic indices enabled a presentation of the regional differences in development in Poland. The analysis was based mainly on the methodology of the Silicon Valley Index, which is also described in section 1.2.1. In the next step of the analysis, the collection of socio-economic indices was used as a database for Principal Component Analysis (PCA) to compare the situation in the Polish regions. A detailed description of the method is also presented in the next chapter. The regional analysis provided a background for the evaluation of the competiveness and sustainability of the main urban areas/metropolitan regions in Poland. The regions surrounding urban areas constitute the peripheries of the cities and have an impact on their socio-economic development. The comparison and categorization of the urban areas' development was also based on the PCA and the Z-scores index (see the section on research methods). Statistical tools were also applied to determine the level of competitiveness of the urban areas. Also carried out was delimitation of those areas which may be possible targets for urban investment. Additionally,

the information obtained helped to produce urban investment strategies for Poland and for its regions.

In the fourth part of the report, which is related to the Wielkopolska region, urban areas in the region and the Poznań metropolitan region, apart from the above-mentioned quantitative methods a qualitative method was also used – an interview questionnaire. Interviews were conducted with regional development experts, such as local government representatives and revitalization experts. The interviewing method is described in more detail in the next chapter. The possibility of interviewing regional experts provided information which was combined with the results of the quantitative methods (statistical analysis). This type of analysis helped to identify specific urban problem areas in Wielkopolska which require investment.

For the subsequent analysis it is important to define the meanings of key terms. Internal migration (according to the Central Statistical Office) should be interpreted as a change of place of residence (permanent or temporary) within the territory of Poland, involving crossing the administrative border of a district *(gmina)*, including – in the case of urban-rural districts – changes of the place of residence within a district from rural to urban or vice versa. Arrival (i.e. registration) in a given administrative unit with the purpose of residing there is called migration inflow, whilst departure with the purpose of residing in another administrative unit is called migration outflow.

The following types of migration can be distinguished as components of internal migration:

- inter-voivodeship – movements of people from one voivodeship (province) to another;
- intra-voivodeship – change of place of residence within the same voivodeship;
- inter-powiat – movements of people from one powiat (county) to another;
- intra-powiat – change of place of residence within the same powiat.

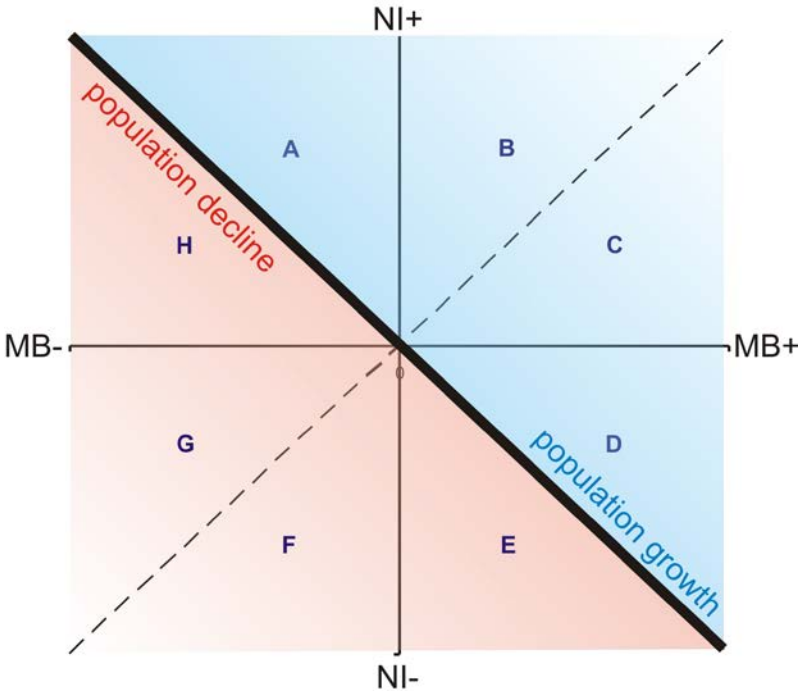
When classifying internal migration according to the administrative character of the areas between which the migration took place, the migration directions are also distinguished: from rural to urban areas, urban to rural areas, urban to urban areas, and rural to rural areas (this refers to the rural areas of different districts, not different named villages).

1.2.1. Quantitative research methods

a) typology of population growth/decline – Webb diagram

An important task in this report is to identify the demographic structure and dynamics in the investigated unit. This enables a better understanding of the origin of changes in urban structures in Poland. Citizens' behaviours and decisions are often strongly connected with their age, sex, material status, educational background and so on. Consequently, many processes in urban areas could be easily predicted by planners and investigators.

One of the most important demographic characteristics in a city is the size of the population and its changes. These characteristics show in a simple way the condition of the urban area (stagnation, evolution, collapse). But in fact the conditions of population decline or growth could be different. One of the methods which is used in the report to find out these conditions is the Webb diagram. Webb's survey was based on the natural and migrational components of population changes in England and Wales in 1921–1931. Based on the method he classified territorial units and identified centres of demographic growth, new and old industrial centres, towns with retired inhabitants, and towns located in the vicinity of large cities.



NI+/- – positive/negative natural increase per 1000 population
MB+/- – positive/negative migration balance per 1000 population
A, B, C… - categories of population growth/decline scenarios

Types of population growth:
type A: $\mathbf{NI}_+ > |\mathbf{MB}_-|$ **–** positive natural increase compensates negative migration balance
type B: $\mathbf{NI}_+ > \mathbf{MB}_+$ – positive natural increase is higher than positive migration balance
type C: $\mathbf{NI}_+ < \mathbf{MB}_+$ **–** positive natural increase is lower than positive migration balance
type D: $|\mathbf{NI}_-| < \mathbf{MB}_+$ **–** positive migration balance compensates negative natural increase

Types of population decline:
type E: $|\mathbf{NI}_-| > \mathbf{MB}_+$ _ positive migration balance fails to compensate negative natural increase
type F: $|\mathbf{NI}_-| > |\mathbf{MB}_-|$ **–** negative natural increase is higher than negative migration balance
type G: $|\mathbf{NI}_-| < |\mathbf{MB}_-|$ **–** negative migration balance is higher than negative natural increase
type H: $\mathbf{NI}_+ < |\mathbf{MB}_-|$ **–** positive natural increase fails to compensate negative migration balance

Fig. 2. Webb diagram – typology of territorial units (population growth/decline scenarios)
Source: own compilation

The Webb diagram is a method of evaluating changes in a population (Webb 1963). It has been used in numerous publications related to the analysis of demographic structure and population changes (Hobcraft, Rees 1977; Coll, Stillwell 2000; Kupiszewski, Borgegard, et al. 2001). It enables identification of conditions of population changes in territorial units on the

basis of two indicators (compounds): natural increase and migration balance; and the classification of territorial units in terms of population growth or decline.

The Webb diagram was also used to assess the dynamics of changes in population number in a territorial unit (Hobcraft, Rees 1977). The plot of the values of compounds (natural increase and migration balance) of population growth/decline in a territorial unit/units in previous years can also help to estimate the future demographic growth or decline. This method was also used in the report to predict the demographic scenario for urban areas in Poland and Wielkopolska in the coming years.

b) socio-economic index – Silicon Valley Index

Territorial diagnostics and estimation of the demand for urban assets in regions and cities in Poland and Wielkopolska is one of the objectives of the report. Besides demographic analysis, this is also one of the first steps taken to determine the level of competitiveness of the urban areas. Territorial diagnostics and assessment of demand were performed with the use of socio-economic indicators characterising urban and regional development in Poland. The indicators were collected for the three spatial levels of analysis:

1. Regional – voivodeships in Poland,
2. Metropolitan – metropolitan areas in Poland
3. Voivodeship – powiats and urban areas

The methodology of collecting statistical data was mainly based on the *Silicon Valley Index*. This publication presents the situation in the Silicon Valley and has been released every year since 1995. It includes indicators that measure the strength of the local economy and the health of the community, highlighting challenges and providing an analytical foundation for leadership and decision making (Index of Silicon Valley 2009).

The Silicon Valley Index consists of 5 areas of interest:
- People – talent flows;
- Economy – employment, income, innovations;
- Society – preparing for economic success, early education, arts and culture, quality of health, safety;
- Place – environment, transportation, land use, housing, commercial space;
- Governance – civic engagement, revenue.

The *Silicon Valley Index* is complex and it considers all aspects of the social and economic situation of regions, and also focuses on the fields and elements which could ensure their fast development in the near future. The Index has also been used in various US states to measure the level of their development. It has never been adapted to European conditions.

The implementation of the Silicon Valley Index methodology in the report is the first attempt to use it in a country other than the USA. This requires alteration of the statistical indices initially collected, due to the lack of some statistical data in the other countries that reflect their socio-economic situation. This lack of data has a crucial effect in the case of Poland, especially in the smallest territorial units. Although the Polish Central Statistical Office aggregates and collects most of the statistical data following the directives of EuroStat, there are problems with obtaining them at all administrative levels. Table 1 presents the statistical indicators available from the Polish Statistical Office at the spatial levels aggregated according to the Silicon Valley Index categories.

Table 1. Characteristics in socio-economic analyses in 2008

Selected characteristics	Regions	Regional centres of growth	Powiats	Urban areas in WLKP	PMA
People					
population dynamics in 1998–2008	+	+	+	+	+
natural increase per 1000 population	+	+	+	+	+
migration balance per 1000 population	+	+	+	+	+
number of people of working age per total population	+	+	+	+	+
number of people of post-working age per total population				+	+
number of people per household	+	+	+		
high school graduates per 1000 population	+	+			
Economy					
number of working people per total population	+	+	+	+	+
daily migration to work – balance	+	+	+	+	+
number of new enterprises per 1000 population	+	+	+	+	+
number of enterprises per 1000 population	+	+	+	+	
unemployment rate	+	+	+		+
GDP per capita	+				
income per capita (in zloty)	+	+	+		
number of people working in the service sector per total population				+	+
number of enterprises in the finance and insurance sector per total number of enterprises				+	
Innovativeness					
innovation financing per capita	+				
employment in R&D (% of working population)	+				
R&D financing per capita	+				
number of students of technology (% of total)	+				
number of patents per 10 000 population	+				
Society					
number of libraries per 1000 population	+	+	+	+	+
number of people per 1 pharmacy				+	+
number of medical consultations per 1000 population				+	+
number of health care facilities per 1000 population				+	+
number of enterprises active in culture per 1000 population				+	
the number of pupils with the access to computer and Internet per the total number of pupils				+	
number of cinemas per 10 000 population	+	+	+		
number of visitors to cinemas per 100 population	+	+	+		
number of arts exhibitions per 10 000 population	+	+	+		
number of crimes per 100 population	+	+	+		
crime detection rate (%)	+	+	+		
beds in general hospitals per 10 000 population	+	+	+		
number of infant deaths per 10 000 births	+	+	+		
number of places in social welfare homes and facilities per 10 000 population				+	+
Place					
number of new buildings per 1000 population	+	+	+	+	+
number of new homes per 1000 population	+	+	+	+	+
square metres in homes per 1 person	+	+	+	+	+
percent of people with access to sewerage system				+	+
percent of people with access to water supply				+	+
percent of people with access to gas system				+	+
legally protected areas due to unique environmental value (%)	+	+	+		+
number of lodgings (for tourists) per 10 000 population	+	+	+		+
number of public transport lines per 10 000 population	+	+	+		
the number of people per 1 retail	+	+	+		
Governance					
number of non-profit organizations per 1000 population	+	+	+	+	+
turnout in last local government elections	+			+	
dynamics of local budget income in last 10 years				+	
administrative district expenditure per 1 person	+	+	+		+
administrative district income per 1 person	+	+	+		+
dynamics of investment expenditure in local budget in last 5 years				+	

+ available data
PMA: Poznań Metropolitan Area, WLKP: Wielkopolska voivodeship
Source: own compilation

c) Principal Component Analysis (PCA)

Another objective of the report was to assess the level of competiveness of the urban areas in Poland and Wielkopolska. Principal Component Analysis (PCA) was used to perform this task. A detailed description of the statistical calculations of Principal Component Analysis has been presented in several research papers (detailed analysis can be found in Joliffe 1986, Kossowski 2006). It also is used to detect structure in the relationships between variables and in effect to classify them (Jolliffe 1986, Kramer 1998). This method (proposed by Hotelling in 1933) is often presented in papers focusing on spatial analysis to compare the socio-economic situation in different territorial units (King 1966, Herbert 1968, Racine, Reymond 1973, Gwatkin, Rutstein at al. 2007). PCA was used for a similar purpose in the present research, to help assess the level of socio-economic growth in territorial units. The method is applied in the report at the following spatial levels of analysis:

- Polish regions;
- metropolitan areas;
- urban areas in Wielkopolska region;
- the Poznań Metropolitan Region.

PCA is a statistical method that makes it possible to reduce the number of initial variables. It also is used to detect the structure of relationships between variables and in effect to classify them. The socio-economic indices were collected by the Silicon Valley Index methodology and adapted to the objectives of the report. They became variables in the PCA method.

The main results of the analysis were a classification of territorial units according to their economical, social and demographical situation, the standard of existing social and technical infrastructure, and the level of innovativeness and governance policy.

The PCA calculation procedure is as follows[2]:

1. Construction of a matrix with *k* variables and *n* units (in the following research five matrices were constructed):

I. at the regional level; matrix with 16 units (n=16) and 37 variables divided into six groups (k=37) – n x k (16 x 37);
II. at the level of metropolitan areas in Poland; matrix with 9 units and 30 variables divided into five groups (k=30) – n x k (9 x 30);
III. at the subregional level; matrix with 35 units (n=35) and 25 variables divided into five groups (k=25) – n x k (35 x 25);
IV. at the local level, to compare urban areas in Wielkopolska; matrix with 109 units (n=109) and 29 variables divided into five groups (k=29) – n x k (109 x 29);
V. at the local level, to compare Poznań and surrounding local units (districts in the Poznań Metropolitan Area); matrix with 18 units (n=18) and 26 variables divided into five groups (k=26) – n x k (18 x 26).

[2] *Statistica 8 .0* software will be used to simplify this procedure; the results will be presented as maps in *ArcGIS 9.3* software.

2. Evaluation of the correlation between variables (construction of a *k* x *k* matrix). At this stage the correlation between all chosen variables (*k*) was assessed. Consequently, five square matrices were constructed (one for each spatial level).
3. Estimation of the eigenvalues of the correlation matrices. Eigenvalues of correlation matrices are evaluated as the variances of the new extracted factors. The sum of these values equals the number of variables (for each matrix there will be k eigenvalues and their sum will equal k).
4. Ordering of the eigenvalues (from the highest value to the lowest).
5. Selection of the number of variables (*Kaiser criterion* and *scree test*).
The main problem in reducing the number of variables is how many of them should be dropped. Kaiser (1960) proposed to retain only variables with eigenvalues greater than 1. The other method – the scree test – is graphical and was introduced by Cattell in 1966. In this paper both methods will be considered.
6. Evaluation of the eigenvectors of the correlation matrixes.
7. Construction of the gamma matrix with reduced number of variables (*m* columns and *k* rows).
8. Multiplication of the matrixes *n* x *k* and *k* x *m* – the result is a matrix with the values of the principal components.

The use of Principal Component Analysis makes it possible to reduce a great number of input values to distinguish some relevant factors influencing socio-economic development. Calculation of the principal component values for particular cases also allows us to compare the level of these fields in selected spatial units (Parysek, Ratajczak 2002).

The principal component values obtained for particular units were divided into five groups and interpreted. Depending on the sign of the correlation between input characteristics and the principal components obtained, the stimulant and destimulant factor values were selected (Table 2). They were named based on correlated characteristics. In some cases interpretation of the obtained factors was difficult, because many aspects were integrated together and presented as one value. The authors then propose the name of the principal component which contains the most highly correlated characteristics. Other correlated characteristics, which were not suitable for the chosen factor name, are described in the text.

Table 2. Interpretation of principal component results

	Interpretation	**Value factor for particular cases**
1	Very good/high	-0.75 and less (more than 0.75)
2	Good/high	-0.74 to -0.25 (0.26 to 0.75)
3	Average	-0.24 to 0.25
4	Bad/low	0.26 to 0.75 (-0.74 to -0.25)
5	Very bad/low	more than 0.75 (-0.75 and less)

Source: own compilation

In later parts of the report which describe the results of PCA analysis, some symbols require explanation:

- r – the correlation coefficient,
- w – the contribution of the variable in the principal component.

d) Synthetic index of socio-economic growth (z-scores/Perkal index)

Another objective of the report is to evaluate the level of socio-economic development of Polish urban areas. The Perkal index was used to achieve this aim. This is a synthetic measure, which is used to estimate socio-economic growth in regions. It was proposed by Julian Perkal – a Polish mathematician – in the mid 20th century (1958, 1963). The main advantages of the index are the comparability of results and the simple construction. In Anglophone literature it is known as the Z-scores index (Smith 1972), and it has often been used in economic and demographic analysis.

The main principles of construction of the index are presented below:

a) selection of attributes which reflect the level of socio-economic growth;
b) data standardization:

- for stimulants (e.g. GDP):

$$y_{ij} = \frac{x_{ij} - \bar{x}}{S_j}$$

- for destimulants (e.g. unemployment rate):

$$y_{ij} = \frac{\bar{x} - x_{ij}}{S_j}$$

S_j – standard deviation for attribute j

x_{ij} – value of attribute j in unit i

$\bar{x}$ – arithmetic mean

y_{ij} – standardized value of attribute j in unit i

c) construction of the synthetic index:

$$W_S = \frac{\sum_{j=1}^{p} y_{ij}}{p}$$

p – number of selected attributes

y_{ij} – standardized value of attribute j in unit i

W_S – synthetic index

Table 3. Interpretation of Z-scores index results

	Interpretation	Value factor for particular cases
1	Very high	-0.50 and less
2	High	-0.50 to -0.15
3	Average	-0.14 to 0.15
4	Low	0.16 to 0.50
5	Very low	more than 0.50

Source: own compilation

The values obtained were classified into 5 classes (Table 3).

In the report the Z-scores index was used to evaluate the level of socio-economic development of the metropolitan regions in Poland and the urban areas in the Wielkopolska region. It was constructed with the help of statistical indicators related to the Silicon Valley Index.

1.2.2. Qualitative research methods – expert interviews

Quantitative methods are not always sufficient to obtain a comprehensive view of the analysed problems. In studies on urban policy evaluation and prospects of urban areas, qualitative methods can be very helpful. In order to obtain qualitative information, the individual in-depth interview method was used (see Appendix 1). This is a typical method of collecting qualitative data to get an insight into matters that would elude examination by a standardised instrument, e.g. a questionnaire (Kotus 2001, pp. 103-105). When talking to a person, one can devote more time to issues that are more interesting from the research point of view. An advantage of this approach is that the interviewee himself can raise matters that the interviewer did not anticipate. The course of the interview can be imposed by the researcher, following a list of issues to be dealt with, but it can also be chosen by the interviewee. Then the interviewer merely stimulates the conversation and allows the interviewee to develop its various threads.

In the interviews conducted for the present research, a list of issues (in the form of general questions) was employed. They were put to the interviewee, and then as the situation developed several additional questions were asked, or the interviewee himself elaborated on other aspects of an issue.

The interviews were conducted in five selected urban areas in Wielkopolska, with nine experts working in the Municipal Offices (Table 4). The data obtained are qualitative in nature, which excludes the quantification of, for example, the frequency with which specified problems occurred. However, they do illustrate the prospects for development of the local unit. As a result, they provide an insight into the matter being studied. In-depth interviewing

as a data generation method is “the hallmark of qualitative research” (Rossman, Rallis 2003, p. 180). It is also a way to obtain rich and detailed data about how people view their worlds. For the purposes of this study, interviews could be considered conversations with a purpose (cf. Rossman, Rallis 2003). Daniels and Cannice (2004) suggest that interview-based studies are particularly well-suited when there is a small population of possible respondents and when there is a wish to acquire rich information from each respondent and a need to develop a deeper rapport with the informants. To obtain the desired data for the purposes of this study, a quantitative research approach was unsuitable. To select the companies to be contacted, purposive sampling (also called theoretical sampling) was employed (cf. Mason 1996; Denzin, Lincoln 2000). In purposive sampling the parameters of the population are considered critically before choosing the sample. In this study the selection of interviewees was made on the basis of the relative importance and uniqueness of the spatial unit in the regional settlement structure. Therefore interviews were conducted in Poznań, in cities in the metropolitan region and in cities located further from Poznań. The interviews were conducted in Polish, recorded and then transcribed. Significant parts of the transcribed interviews were translated into English.

Table 4. Interviewed experts

Interviewee’s function	Unit
▪ Mayor of Murowana Goślina	Murowana Goślina
▪ Vice-mayor of Luboń	Luboń
▪ Vice-mayor of Kościan	Kościan
▪ Director in the Department of City Development	Swarzędz
▪ Vice-director in the Department of City Development	Poznań
▪ Manager of the Department of Revitalization	Poznań
▪ Secretary of the Community Office in Murowana Goślina	Murowana Goślina
▪ Specialist in the Department of Spatial Development	Kościan
▪ Specialist in the Office of Revitalization Processes Management	Murowana Goślina

Source: own compilation

The interview themes and open-ended questions were sketched out, but leaving room for flexibility and the discretion of the individual interviewer. The interview themes were the same for all interviewed persons. They consisted of (1) general background information on the unit and the interviewee; (2) the importance of the unit on the local, regional and national scale; (3) assessment of demographic phenomena and trends; (4) assessment of the level of socio-economic development; (5) evaluation of development plans and strategies; (6) perspectives and challenges for the unit; (7) identification of the most problematic areas in the city; (8) assessment of opportunities and prospects for the revitalization processes in the unit; and (9) comments and remarks related to the JESSICA program.

To analyse the generated data, we employed the techniques of coding and of category and theme generation (cf. Rossman, Rallis 2003). The analysis was performed by humans, not software. Coding was found useful for tracing tendencies, since exact figures were not an

objective. Findings which deviated from the norm were handled with care and explanations for them were sought.

1.3. Review of the literature and statistical data

The literature analysed in the preparation of the report can be divided into three categories. The first of them contains Polish historical literature which describes the socio-economic and demographic conditions of the country from the Middle Ages up to the post-1989 transitional period (i.e. Gawryszewski 2005, Korcelli, Gawryszewski, Potrykowska 1992, Malicka 1978, Smith 1972, Turowski 1978, Wendt 2001). The second category consists of literature focused on the contemporary situation of Poland. This group of sources is the largest, and it contains, among other things, reports, surveys and statistical studies prepared by Polish and European institutions and experts (i.e. Churski 2005, Heffner 2008, Parysek 2004, 2005, Polish background report for OECD. National urban policy reviews in Poland 2010, Runge 2007, Stenning 2005, Stryjakiewicz et al. 2007, 2009, Węcławowicz 2010). The third category contains analyses relating to the future – i.e. projections and strategies. The most important documents for the study are:

- At European level:
  - Territorial Future (2007)
  - Interim Territorial Cohesion Report (2004)
  - Scenarios on the territorial future of Europe (2010)
- At national level:
  - Concept of Regional Planning Policy 2030 (2010)
  - Concept of Spatial Development of the Country (2006)
  - National Strategy of Regional Development (2010)
  - National Development Strategy 2007-2015 (2007)
  - Concept of National Spatial Development up to 2030 (2010)
- At regional and local level:
  - Metropolis Poznań – Green Paper (2010)
  - Spatial development Plan of Wielkopolska voivodeship (2010)
  - Development Strategy of Wielkopolska voivodeship up to 2020 (2005)
  - Development strategy for the city of Poznań to 2030 (2010)

These publications may help determine the risks and opportunities for the future and prepare recommendations for future urban policy.

An important part of the study is the statistical analysis, which is based on statistical data. These data were collected from:

- the Central Statistical Office in Warsaw;
- the Regional Statistical Office in Poznań;
- other institutions, e.g. Centre of Metropolitan Research, National Electoral Commission, city councils, etc.

Sources of data on mobility

The extent of the research on foreign migration from and to Poland is determined by the amount of available data, its quality and usefulness. Migration data that is available generally comprises two categories of information (Grabowska-Lusińska, Okólski, 2008):

- The first category consists of data on movement (foreign influx and departure, its dynamics and intensity).

- The other category contains data on the number of foreigners at a particular moment in time. Considering the above division, it must be stressed that in order to analyse the phenomenon of migration, one cannot combine data on movement with data on the number of foreigners. The most important sources of data on foreign migration of Polish inhabitants include:

  1. Register data – this comes from the system of population registration and is supplied by the Central Statistical Office (GUS). The data refers to immigrants who have registered a permanent or temporary change of address (registered for permanent or temporary residence after arriving from abroad, notified the relevant authorities of change of address because of going abroad permanently or temporarily).

  2. Census – this type of data is widely regarded as the best source of information on demographic processes in a given country, including information on migration. The advantage of a census is that it is an extensive study; however censuses do not take place often and regularly in Poland, which means that they do not provide information on current migration processes. The latest censuses were conducted in 2002 and 1989 (in 1995 there was only a census based on a representative sample, the so-called Micro-census). The 2002 National Population and Housing Census covered persons who lived permanently or stayed temporarily in flats, buildings, premises and rooms and people with no place of residence. The census research consisted of two parts. The first part aimed to collect information on people who had migrated between 1989 and 2002 and who had been away from their current place of residence, i.e. in another town at home or abroad, for at least 12 months. The second part of the census survey was designed to obtain information on each home or building, and to record all persons in a flat, persons living in a room which was not a flat, persons in collective accommodation, as well as homeless people. Within the same census, an additional survey was carried out on long-term migration.

  3. Data collected and made available (at least to some extent) by government departments and public administration offices – the Ministry of Labour and Social Policy, the Ministry of Economy, the Ministry of Foreign Affairs, to name just a few sources. For example, there is data from the Ministry of Labour and Social Policy on the number of work permits issued to Poles to take up employment in other countries (Central Statistical Office 2008).

2. The demographic situation in Poland

Poland was, in 2008, Europe's ninth largest country in terms of area (312 679 km^2) and seventh in terms of population (38 135 876 inhabitants; GUS 2009). The current demographic situation of the country is a result of historic events and processes from the past. Owing to the political and economic stabilization of the country and its accession to the European Union in 2004, adoption of a Western lifestyle has become visible, making demographic processes in Poland resemble those taking place in the developed countries. However, the situation of this post-socialist country retains rather a unique character (Churski 2005). This chapter presents factors which influence the current demographic situation (number of population, its structure, natural increase, immigration and emigration, and internal migration between urban and rural areas) as well as future demographic scenarios for Poland and its urban areas. It is based on existing documents of the Central Statistical Office in Warsaw, the Polish Ministry for Regional Development, the Committee for Spatial Economy and Regional Planning at the Polish Academy of Sciences, as well as many expert analyses and papers.

2.1. Population number

Poland's population number was increasing from 1946 (23.6m) until 1996 (38.6m; Fig. 3). In 2008 the number of inhabitants was slightly more than 38 million, of which more than 23.3m lived in urban areas (61.1%; GUS 2009).

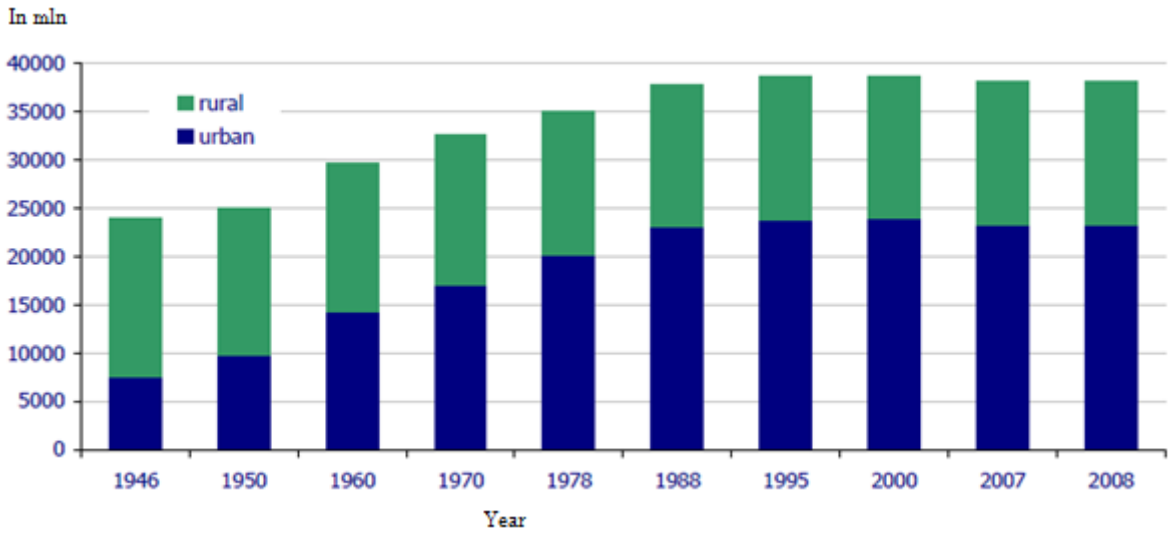


Fig. 3. Polish population figures in 1946–2008
Source: Demographic Yearbook of Poland, 2009

The population growth rate in Poland began to decrease after 1990 along with the political changes and socio-economic transition (Gawryszewski 2005). In 1997 for the first time the country's population was smaller than in the previous year. This resulted mainly from a negative migration balance, because the birth rate was still positive. In subsequent years the population continued to decrease (Fig. 3, Table 5).

Table 5. Population numbers in Poland in 1946–2008

Year	Population			Yearly population growth rate	Urban migration balance
	total	in cities			
	thous.	*thous.*	*%*	*per1000 inhabitants*	*per1000 inhabitants*
1946	23.640	8.043	34.0	16.0	39.8
1950	25.035	9.243	36.9	19.1	16.3
1960	29.795	14.401	48.3	15.0	4.1
1970	32.658	17.088	52.3	8.5	9.0
1980	35,735	20.979	58.7	9.6	8.6
1990	38.073	23.546	61.8	4.1	4.3
2000	38.254	23.670	61.9	0.3	–0.9
2008	38.136	23.288	61.1	0.9	–2.1

Source: Own compilation based on Demographic Yearbook of Poland 2009

During the transition the demographic situation of the urban areas became substantially different from that of the rural areas (Table 6). The dynamics of the rural population growth reflects an upward trend since 1999, and at the same time an outflow from the urban areas.

Table 6. Population of Poland in 1990–2008

Year	Population in thousands		
	total	in urban areas	in rural areas
1990	38,073	23,546	14,527
1991	38,144	23,648	14,496
1992	38,203	23,568	14,635
1993	38,239	23,644	14,595
1994	38,265	23,672	14,593
1995	38,284	23,675	14,609
1996	38,294	23,690	14,604
1997	38,290	23,696	14,594
1998	38,277	23,682	14,595
1999	38,263	23,701	14,562
2000	38,254	23,670	14,584
2001	38,242	23,627	14,615
2002	38,219	23,571	14,648
2003	38,191	23,514	14,677
2004	38,174	23,470	14,704
2005	38,157	23,424	14,733
2006	38,125	23,369	14,756
2007	38,116	23,317	14,799
2008	38,136	23,288	14,848

Source: Central Statistical Office

As the population in Poland and its urban areas is affected both by the natural increase and inward and outward migration flows, the next sections will evaluate these two issues.

2.2. Natural increase

One of the factors which has an influence on the natural increase is the birth rate. Until the mid-1980s Poland was experiencing very high birth rates, while in the majority of European countries as early as the 1970s the birth rate began to drop significantly. Even the political and economic crisis in Poland in 1980–82 did not stop this phenomenon (Korcelli 1995). A more important effect on the birth rate indicator was brought by the transformation of the economic system in 1989. 1990 was the last year when the number of births was relatively high (14.3 per 1000 people). In subsequent years this number began to drop significantly. The lowest value of the birth rate was between 2001 and 2005 (less than 9.6 births per 1000 people). However, since 2002 the number of births has been on a slow increase, after a rapid drop in the period 1990–2003. The drop during the transformation period applied both to rural and urban areas. Consequently, at the end of 2008 the natural increase was slightly above 0, after more than ten years (since 1997) of being below zero (Fig. 5).

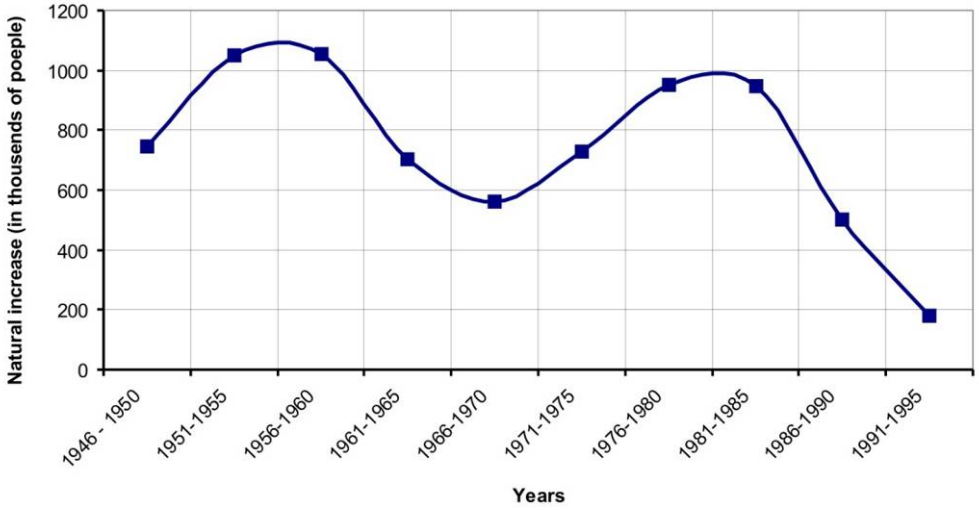


Fig. 4. Natural increase in Poland in 1946–1995
Source: Own compilation based Statistical Office data

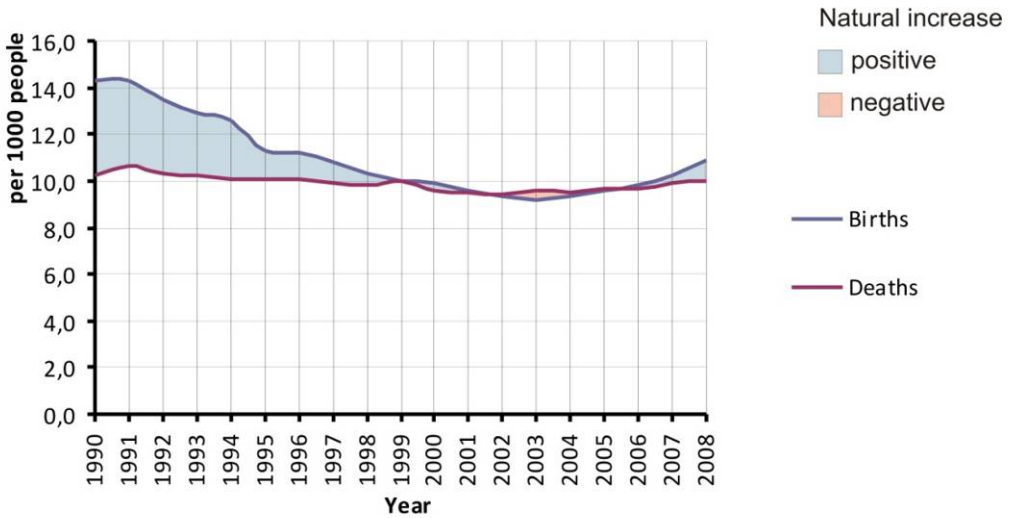


Fig. 5. Natural increase in Poland in 1990–2008
Source: own compilation based on Statistical Office data

The demographic situation in 2008 in Poland was a consequence of the post-war baby boom (and thereby a surplus of people of post-working age) and a low level of births in the period of political transformation (Fig. 4). The level of the fertility rate, i.e. average number of births per woman aged 15–45, decreased in Poland from the beginning of the transformation up to 2003. The drop occurred very rapidly.

Table 7. Demography in urban areas in Poland

Year	Births	Deaths	Natural increase	Births	Deaths	Natural increase
	in thousands			per 1000 people		
1990	292.5	223.8	68.7	12.4	9.5	2.9
1991	289.3	234.1	55.2	12.2	9.9	2.3
1992	271.7	228.6	43.1	11.5	9.7	1.8
1993	262.7	226.0	36.7	11.1	9.5	1.6
1994	258.0	223.4	34.6	10.9	9.4	1.5
1995	232.7	223.3	9.4	9.8	9.4	0.4
1996	229.8	222.0	7.8	9.7	9.4	0.3
1997	221.1	220.9	0.2	9.3	9.3	0.0
1998	214.1	219.3	-5.2	9.1	9.3	-0.2
1999	208.2	223.6	-15.4	8.8	9.5	-0.7
2000	208.3	218.2	-9.9	8.9	9.3	-0.4
2001	205.7	215.6	-9.9	8.7	9.1	-0.4
2002	197.5	213.6	-16.1	8.4	9.1	-0.7
2003	199.6	216.3	-16.7	8.5	9.2	-0.7
2004	204.9	216.5	-11.6	8.8	9.3	-0.5
2005	211.2	219.4	-8.2	9.0	9.4	-0.4
2006	218.0	222.2	-4.2	9.3	9.5	-0.2
2007	225.6	226.5	-0.9	9.7	9.7	-0.0
2008	241.3	228.7	12.6	10.4	9.9	0.5

Source: Central Statistical Office

Since 1946, significant differences in the demographic indicators were typical of the areas newly incorporated into Poland in the north and west. After the war the authorities organized a wide-ranging migration campaign which resulted in an increase in the population of these areas by 6 million (Malisz 1978). Korcelli, Gawryszewski and Potrykowska (1992, pp. 10–11) noted that in following years, these areas had "higher birth rates and population growth, and lower death rates, a greater share of younger age groups in age structure and greater mobility." These differences, though less clear, were visible until the end of the twentieth century. They resulted from the different age structure of the inhabitants coming from the east and partly from their different mentality and lifestyle.

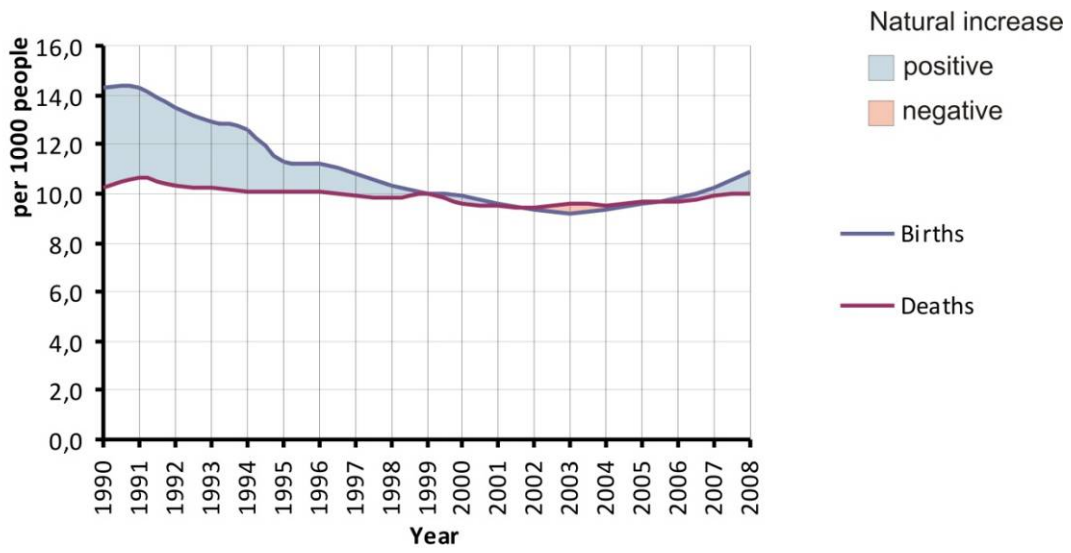


Fig. 6. Natural increase in urban areas in years 1990–2008
Source: own compilation based on Statistical Office data

A difference in the value of the natural increase indicator and its components is also recognised between urban and rural areas. The birth rate in rural areas indicates a downward tendency similarly to the national indicator. It is significantly smaller, however (in 2008 the difference amounted to 0.4 $^{o}/_{oo}$). Already in 1998 the number of deaths in cities was higher than births, and this continued up to 2007 (Fig. 6). This situation results from a smaller number of births in cities, which is only to a minor extent balanced by a slightly lower number of deaths. This is a consequence of cultural changes – in urban areas the ""2+2'' and "2+1'' family models are becoming more and more popular, while in rural areas (although not that strongly anymore) the traditional model of a large family is dominant. Moreover, access to healthcare is constantly improving in rural areas, contributing to fewer deaths.

The number of births was mostly influenced by a decrease in fertility among the youngest women, those who have not yet reached 25 years of age. In 1990–2006 the birth rates per 1,000 women dropped by 65% in the 20–24 age group and this was a common trend noted both in urban and rural areas. As for the older age groups, different tendencies were visible in the cities and in the rural areas; the fertility of women living in the cities dropped more slowly than the fertility of women living in the rural areas. Hence for women aged 25–29 the birth rates per 1,000 women decreased by 20% in the cities and by 30% in the rural areas; for women aged 30–34 and 35–39 it increased in the cities by respectively 19% and 9%, while in rural areas it dropped by 28% and 33%. As a result within the 1990–2005 period the Total Fertility Rate (TFR) dropped in the cities by an average of 33% (and in the 2000–2005 period by 4%) (Fig. 7), and in rural areas by an average of 46% (in 2000–2005 by 15%). The decrease in the TFR was greater in rural areas than in the cities because the initial fertility level in rural areas was higher (Fig. 8) and because of the tendency towards gradual approximation of the initial fertility level in rural and urban areas.

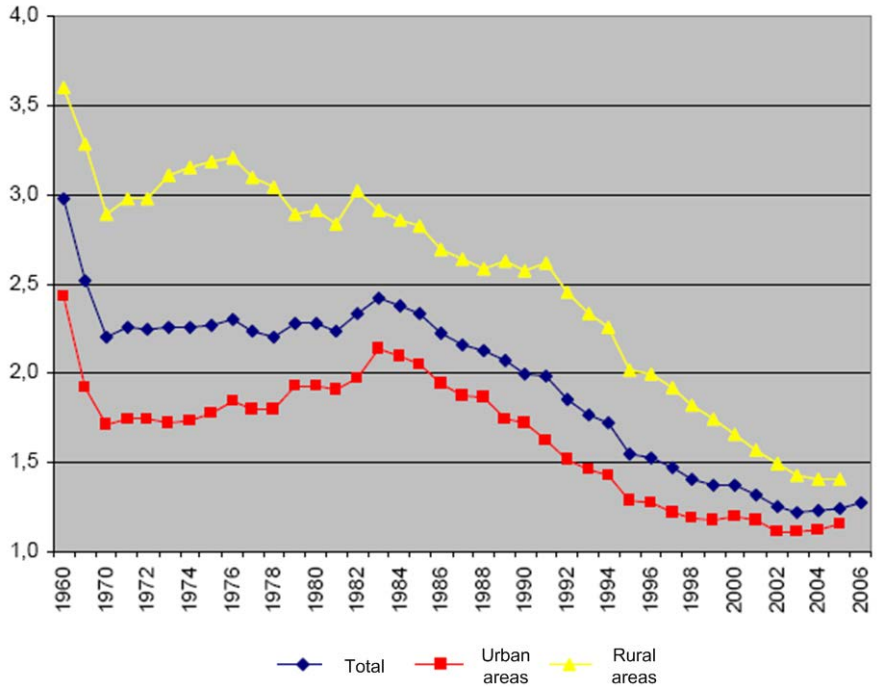


Fig. 7. Drop in the Total Fertility Rate – TFR in Poland by place of residence, 1960–2006
Source: Voivodeship Cities, Basic statistical data, 2009

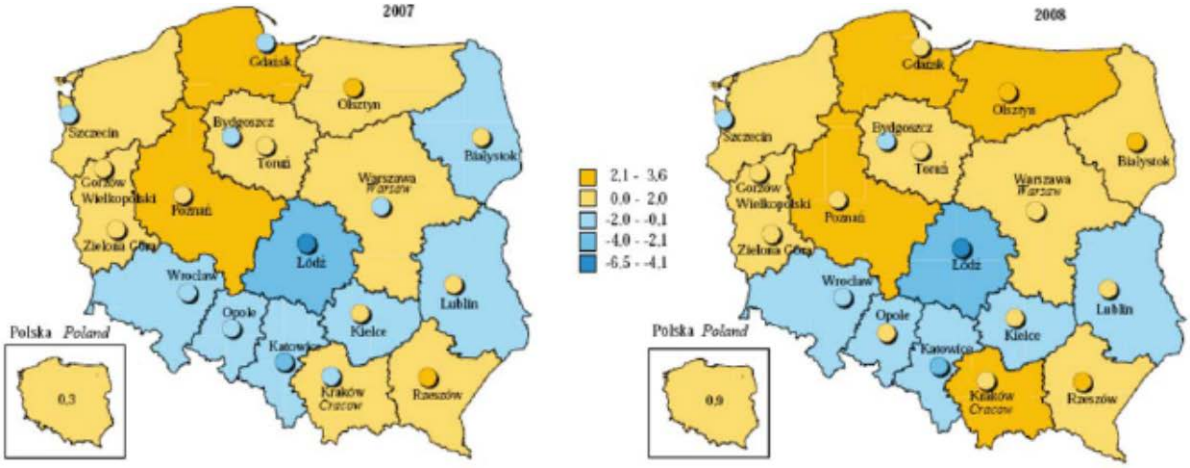


Fig. 8. Drop in the Total Fertility Rate – TFR (%) in 2000–2005 in urban and rural areas
Source: Voivodeship Cities, Basic statistical data, 2009

In 2007 the country as a whole witnessed a growth in the value of natural increase, which has translated into a growth of this indicator in all administrative units. On average, a higher natural increase occurs in urban and urban-rural gminas. A positive natural increase was noted in cities with from 10 to 100 thousand inhabitants. The lowest natural increase was recorded in the largest cities with over 200 thousand inhabitants, though within the last years this negative situation has visibly improved. This is shown in Table 8 and Fig. 9. Analysis of the values of natural increase in 2003–2007 shows that there are significantly more deaths than

births in large cities, such as: Łódź, Warsaw, Wrocław and Katowice. The highest natural increase was noted in Białystok, Żory and Rzeszów (Fig. 9).

Table 8. Value of the rate of natural increase by the demographic criterion of territorial unit size in 2003–2007

Population in gminas	Average value of the rate of natural increase (‰)				
	2003	2004	2005	2006	2007
URBAN AND URBAN-RURAL GMINAS					
up to 10,000	-0.71	-0.54	-0.52	-0.30	-0.10
10,000 – 20,000	0.22	0.32	0.39	0.55	0.81
20,000 – 50,000	0.43	0.67	0.73	0.94	1.02
50,000 – 100,000	0.07	0.30	0.51	0.45	0.72
100,000 – 200,000	-0.63	-0.56	-0.69	-0.26	-0.37
more than 200,000	-1.53	-1.39	-1.21	-0.99	-0.95
all gminas	-0.08	0.08	0.14	0.32	0.51
RURAL GMINAS					
up to 4,000	-1.44	-1.69	-1.68	-1.53	-1.64
4,000 – 6,000	-1.26	-0.90	-1.12	-0.68	-0.66
6,000 – 8,000	0.05	-0.02	0.01	0.10	0.23
8,000 – 12,000	0.71	0.89	0.98	1.05	1.40
12,000 – 16,000	1.46	1.51	1.49	1.93	2.29
more than 16,000	3.16	3.07	3.15	3.42	3.44
all gminas	-0.38	-0.28	-0.33	-0.10	0.01

Source: Paweł Krawczyk, Demographic processes in Poland in 1995-2007 (Procesy demograficzne w Polsce w latach 1995-2007) (on the basis of CSO)

Source: Krawczyk (2008)

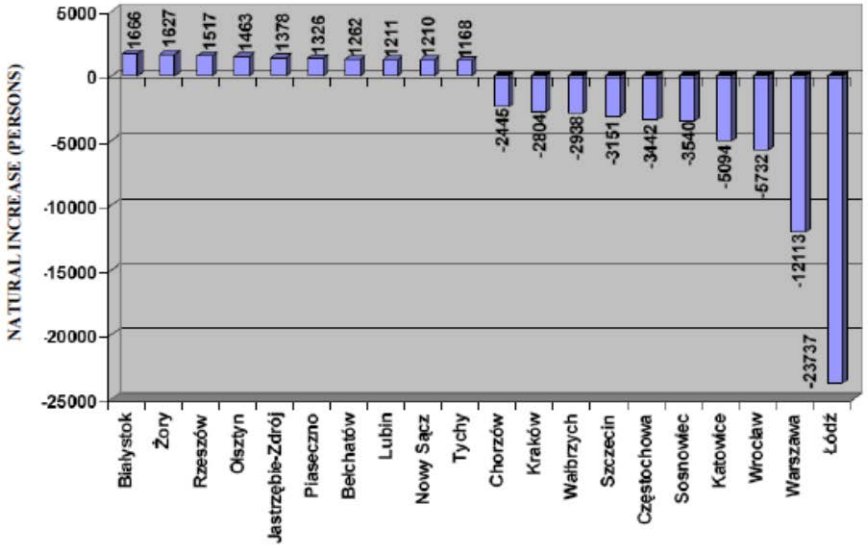


Fig. 9. Gminas with the highest and the lowest absolute natural increase in 2003–2007
Source: Krawczyk (2008)

The age structure in Poland is still in some ways affected by the events of World War II (when approximately 6 million Poles, mainly young, lost their lives). Periods of population decline and 'baby booms' are clearly visible, distinctly showing the differences in population between the war and pre-war generation. Consequently, the age pyramid has changed shape from a more expanding type in 1998 to a more contracting type in 2008 (Fig. 10).

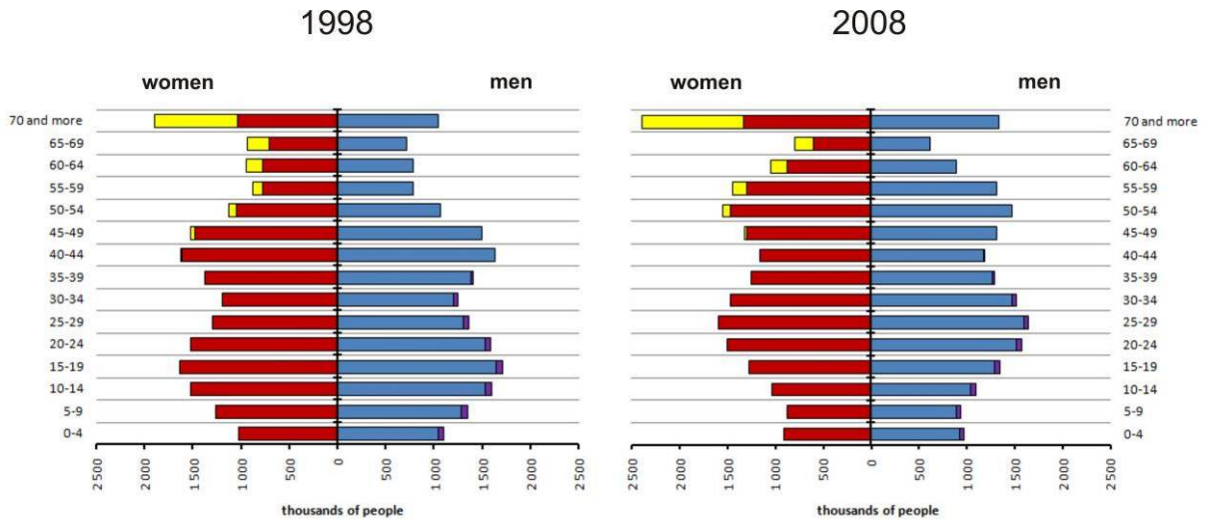


Fig. 10. Age structure in Poland in 1998 and 2008
Source: own compilation based on Statistical Office data

Analysis of the age structure in Poland shows that the 'baby boom' from the beginning of the 80s was not as large as that in the 50s. In 2008 the number of people in the age group 50–54 was only slightly higher than those in the age group 25–29, despite the high death rate in the first group. The number of people above 70 was steadily growing, mainly owing to increase in average life expectancy (75.7 years in Poland; GUS 2010). As a result, there is a growing economic and social burden which may lead to economic and social problems in the future.

2.3. Migration

Researchers have always been interested in the complexity of the phenomenon of migration. They have stressed its demographic, economic, psychological, sociological or cultural aspects. The first theory on migration was formulated as early as at the end of the 19th century by Ravenstein. Most of his "migration laws" as later updated and extended by Lee (1966) form an axiomatic basis for contemporary studies on migration. The 'push-pull theory' developed by Lee stresses the importance of the so-called 'push' factors (within a source population) and 'pull' factors (within a receiver population; Stryjakiewicz et. al, 2009). The migration process is strongly affected by historical facts, therefore in the report the analysis is conducted from 1945 onwards and is divided into two stages: 1) 1945–1989 and 2) after 1989. One must also distinguish between temporary and temporary migration. Accordingly, this chapter includes analysis of different types of inward and outward migration flows in Poland.

2.3.1. Foreign migration after 1945

A phenomenon that has appeared in all post-communist countries after the 'old' EU states opened their labour markets to the new members is a heavy outflow of well-educated and talented young people. Up to 2008 this outflow was not balanced by an influx of well-educated and skilled immigrants. Hence one can speak of a 'brain drain'. It is too early to predict whether this 'brain drain' will turn into 'brain circulation' (Stryjakiewicz et. al., 2009). This may happen if highly skilled emigrants come back after they have gained new experience in more developed countries, and if upon their return they find comparable

economic and social conditions. The building of such conditions, on the one hand attracting new talents and on the other preventing an outflow of resident ones, is perhaps the biggest challenge facing both state and urban policy-makers. The results of the present study should help to identify and better understand these conditions. The following chapter contains sections which focus on the conditions of inward and outward migration (e.g. migration policy in Poland) as well as statistical analysis of the migration and its structure.

Poland's rich migration experience needs to be analysed not from the perspective of the country's migration policy but in fact from the perspective of emigration policy. Although it is easy to identify factors conducive to emigration from Poland (the so-called "push factors"), above all economic ones, the country still lacks important factors that would attract potential immigrants (the so called "pull factors"). Poland, unlike other European countries, has one of the lowest proportions of immigrant population – 0.1 per cent, while in other countries the figure stands at several percent or higher. Apart from immigrants who commonly come from Ukraine and, to a lesser extent, from Russia and Belarus, the only significant new immigrant population consists of Armenians and Vietnamese – several tens of thousands of people.

Migrations, and foreign migrations in particular, are inextricably linked with the demographic situation of a particular country. On the one hand, they influence demographic processes; on the other it is the demographic situation that can stimulate individual migration streams. The examples of the USA, Canada and Australia show that accepting a planned number of immigrants is a demographic necessity and a way of providing the economy with young, healthy, educated people who know the language and more often than not have large financial resources (Sytuacja demograficzna …, 2006).

One consequence of the socio-economic changes that have taken place in the last year in Poland is a halt in demographic growth. A negative balance of foreign migration, apart from a decline of birth rate (or natural wastage), will make the situation worse in the future. It also has to be remembered that the population is ageing very rapidly, so the labour force is growing old too, therefore the shaping of an adequate demographic structure through migration will also be an important objective of the country's future migration policy.

As a consequence of the systemic transformation and changes in the education system, Polish vocational education has broken down and higher education has developed rapidly. Nowadays having a university degree does not guarantee that its holder will find employment (Zahorska, Walczak 2005), which means that there are a lot of graduates among emigrants who have found their first jobs only outside Poland. This problem shows clearly that regardless of the so-called 'brain drain', the Polish system of education should be brought closer in line with an employment policy, and in addition it should consider the medium- and long-term prospects of the labour market (Wiśniewski, Duszczyk 2006).

A very prominent feature of permanent foreign migrations after 1945 was their constant negative balance, i.e. there were more emigrants than immigrants in Poland (Fig. 11).

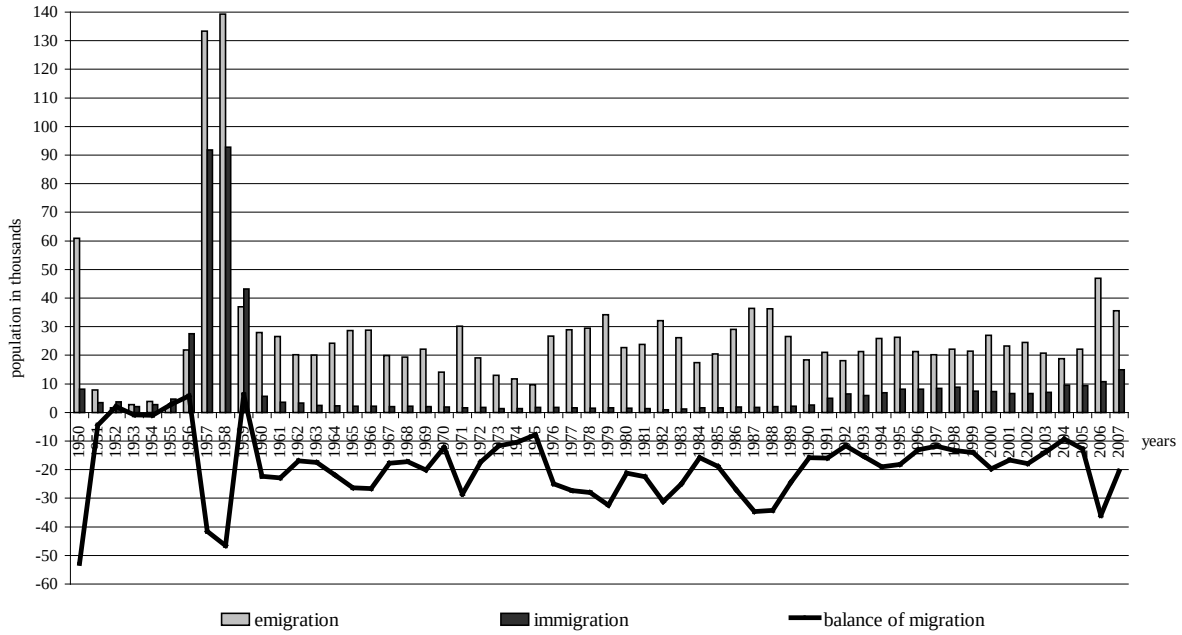


Fig. 11. Permanent foreign migrations in Poland between 1950 and 2007
Source: own compilation based on data provided by the Central Statistical Office (Demographic Yearbook 2008)

Migration between 1946 and 1947 was a direct consequences of the events of the Second World War, and involved displacement of populations of non-Polish origin to outside the country on the basis of international agreements, as well as the case of Poles who stayed abroad and did not decide to return to their country once the war ended.

It is difficult to determine in a reliable way the extent of foreign migration up to 1948. The Central Statistical Office says that permanent migration between 1946 and 1949 affected a total of 2.5 million people, and immigration (repatriation) was the reality for almost 1.5 million people (Demographic Yearbook 2008). It was only in 1948 that the balance of foreign migration was positive (20,000 people). People immigrated to Germany (flight and displacement that took place between 1945 and 1950), to the Soviet Union (expatriation of Ukrainians, Belarusians and Lithuanians between 1945 and 1946) and to Israel (emigration of Jews).

By 1950 the post-war displacements and repatriations of Polish people from the Soviet Union and of German people from the Polish "Recovered Territories" were over, as a result of change of border lines. The period from 1951 and 1955 can be considered important, because it was then that external migration was almost completely stopped. External migrations between 1956 and 1970 were mainly conditioned by further repatriations of Poles from the Soviet Union as well as Jews and Germans leaving the country (joining families). The period from 1958 to 1959 saw a dramatic increase in emigration, because the authorities enabled people of German nationality and with the right to two citizenships to leave Poland. This shows that the phenomenon changed in qualitative terms (Kaczmarczyk 2008, p. 15).

Under the 1949 Act on Passports that amended that of 1936, the only document that authorised its holder to cross the border of Poland was a passport (Gawryszewski 2005, p. 459). Between 1955 and 1959 as many as 257 000 people were repatriated, with 75 per cent returning from former Polish territories within the USSR between 1956 and 1957. Poles repatriated from Belarus and Ukraine were the overwhelming majority (70.9 per cent) (A. Gawryszewski 2005, p. 463). Repatriates were settled in the Western and Northern Territories, which were then being left by people of German descent (Latuch 1994).

Since the early 1960s it is emigrations that have been prevalent as far as the mobility of Poles is concerned. In the 1960s the number of departures abroad fluctuated between 20,000 and 30,000 a year. In the next decade (the 1970s), the number of permanent emigrants initially fell dramatically to 10,000 in 1975, but when regulations on cross-border movement were liberalised (formalities were simplified and foreign currency exchange was made possible, for example), there was a considerable rise in emigration (to a level of 30,000 people from 1976). It was a period of not only gradual increase in permanent migration, but also of temporary migration, mainly economic and touristic, but also due to political reasons. Many migrants left for touristic or commercial reasons, which, as was confirmed by subsequent research, shaped patterns of migration behaviour in the decades to come (Kaczmarczyk 2007).

The 1980s was a period which saw the gradual abolition of constraints (liberalising of passport regulations), but also a political and economic crisis and very bad living conditions, which resulted in greater numbers of people who were willing to move and, consequently, in mass mobility. In 1984 there were 588 000 departures to Western countries registered, in 1985 there were 1.1 million, in 1988 2.8 million, and in 1989 as many as 1.9 million people (Stola 2001). Okólski (1994) using available data estimated the total quantity of foreign migration at 2.2 and 2.35 million people between 1980 and 1989. The years 1987 and 1988 saw the highest figures for emigration from Poland. In the Federal Republic of Germany alone about 250,000 people “displaced” from Poland were registered (Kaczmarczyk 2007, p. 16). To compare, official data published by the Central Statistical Office (Fig. 1) shows that between 1980 and 1989 about 270,000 people left Poland to settle abroad.

For the period of 30 years (1960–1989) the rate of permanent immigration was very low – less than 5,000 people coming into the country – and had no significant impact on the balance of foreign migration.

1.1. 2.3.2. Foreign migration after 1989

The 1990s saw a breakthrough in migration processes in Poland and in other Central and Eastern European countries. Democratic transformation opened borders and removed many constraints concerning travelling to and from the country both for Polish citizens and foreigners. This resulted in a qualitatively new sort of migration in Poland. Before 1989 the number of people incoming and outgoing, both Polish and foreign, rocketed, which gave rise to the formerly unknown problem of refugees, asylum seekers and foreigners attempting to cross the border illegally to move forward to Western Europe. The labour market opened to foreigners too, and trade in open markets and bazaars began to thrive. Foreigners who came to

Poland for longer became an inherent part of the social landscape in many Polish cities. Political changes that took place in countries of the former Soviet Union made the Polish authorities think about the problems of Polish people living there and about their possible repatriation to the country. In the late 1990s repatriates began to return to Poland on the basis of a repatriation procedure which started in 1998.

Contemporary migrations abroad include both Poles' departures and returns to the country, as well as a more and more noticeable number of foreigners in Poland (especially in big cities).

Since the beginning of the transformation in Poland one can observe a new quality of different types of foreign migration, which undoubtedly results from the liberalisation of passport regulations and the development of non-visa movement. New laws and regulations concern foreign migration in Poland, and their harmonization with EU legislation has contributed to an increased movement of people to other regions. When a liberal emigration policy was adopted at the end of 1989, all citizens were guaranteed the right to free access to passports and the right to free border crossing. A symbol of these transformations was that in 1989 border-crossing cards were abolished – these were documents which allowed the authorities to monitor a person's departures, returns and length of stay abroad. That meant that a source of information, so valuable in the 1980s, which registered Poles' permanent departures and returns to Western countries ceased to exist. With free movement and lack of repercussions from the Polish administration if a stay abroad was prolonged (as happened a lot in the 1980s), such as refusal to issue a passport or permit for another trip, the term 'illegal migration' ceased to exist from the point of view of Polish passport regulations (Sytuacja demograficzna Polski … 2006/Poland's demographic situation …).

After 1989 the foreign migration balance was still negative (Figure 4.1, Table 4.1), but since 1990 it has decreased and remained steady at the level of minus 10,000 to 20,000 people a year. This was mainly a consequence of a larger immigration wave which reached much higher levels in the early 1990s compared with the years 1960–1990. This resulted from changes in the Polish labour market, which stopped being a strictly internal market from 1990 onwards. A new phenomenon arose of legal and illegal (unregistered) employment of foreigners. As a result, Poland turned from an emigration country to an emigration-immigration country in the 1990s. After Poland joined the European Union in 2004, the influx of foreign people doubled compared with 1991, and reached a level of about 10,000 people, reaching a peak of 15,000 in 2007.

In the 1990s emigrants were usually inhabitants of towns and cities – more than 80 per cent (Table 4.1). However, after 1999 we can observe a gradual increase in the proportion of emigrants from rural areas (from 15 per cent in 1999 to 30 per cent in 2007). A similar trend applied to immigrants. In the early 1990s immigrations to towns and cities constituted about 85 per cent of the total (10 percentage points more than in the case of emigrations), but 1999 they reached the same level as emigrations and accounted for only about 70 per cent of immigrants.

According to Kaczmarczyk (2006, 2007, 2008) the systemic transformation which started in 1989 has not drastically changed the scale of Poles' mobility, but merely influenced its form and structure. After 1989, in contrast to the trend observed in the 1980s, departures from Poland have turned from long-term permanent migrations into short-term migrations or seasonal employment (lasting for a few months). Determining the scales of particular types of migrations is difficult, however, due to their diversified character and the lack of reliable sources of information.

In the 1990s Poland has become an attractive labour market for immigrants from poorer countries. However, from 2002 there was a decline in the number of work permits issued to foreigners, which was mainly caused by an extremely high rate of unemployment (about 20 per cent). On the other hand, after 2004 (when Poland joined the EU) countries which opened their markets to Polish employees now have full access to the Polish labour market, which means that work permits are no longer necessary[3], and former Soviet Union citizens' access to the labour market had to be restricted[4]. One can still observe an increased number of foreigners who come to Poland temporarily, and increased transit movement. This sometimes results in foreign citizens' staying longer in Poland, which means that the extent of unregistered immigration is expanding.

According to registered data, which is official statistical data on Polish migrations, between 1989 and 2007, 462,000 people emigrated from the country, including 368,000 people from cities and towns and 94,000 from rural areas (Table 9). Between 1990 and 2005 the amount of permanent foreign migration decreased to about 20,000 people a year (Fig. 12). The Central Statistical Office's data (Table 9) does not show a dramatic increase in mobility in 2004 and 2005, after Poland's joining the EU. However, in 2006 the scale of migration reached the highest value since 1960 (almost 47,000 people), and thus contributed to increasing the negative balance of migration to a level of minus 36,000, a trend not observed since the 1980s. The year 2007 saw a dynamic change in migrations – the number of emigrants fell to 35,000, which decreased the negative balance by almost a half (to the level of 20.5 per cent), because at the same time the number of immigrants rose to a level of 15,000 people. Kaczmarczyk (2006) points out that a two-fold increase in permanent migration in 2006 over the previous year was not directly related to Poland's joining the European Union, but was a result of confusion over the so-called double taxation, which caused a large group of people to change their permanent residence officially (see Współczesne migracje zagraniczne … 2008/Contemporary foreign migration, p. 24).

[3] On 10 January 2007 Poland opened its labour market to citizens of all EU countries, and since that time no work permit has been required from them.

[4] Only in July 2007 the Ministry of Labour and Social Policy's announced the amendment of directive, which allows employment of citizens of three countries – Ukraine, Russia and Belarus – without them having to hold work permits (the directive was a response to a rapid fall in workforce in Poland and employers' demand related to this). The only requirement that has to be met is notification of the county employment office. Under the directive employers have the possibility of employing a foreigner without a work permit for a period of six months during a year.

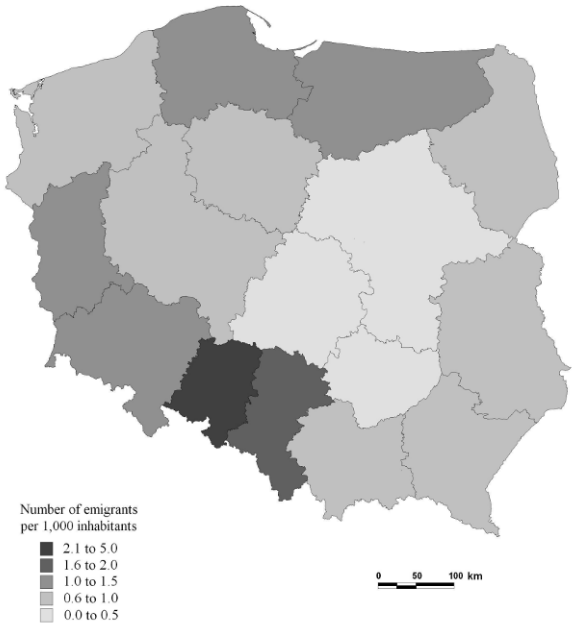


Fig. 12. Permanent emigration from Poland in 2007
Source: own compilation based on data provided by the Central Statistical Office

Tab. 9 - Permanent foreign migration in Poland between 1989 and 2007

Year	Total			Urban areas					Rural areas				
	immigration	emigration	balance	immigration		emigration		balance	immigration		emigration		balance
	in thous. of people	in thous. of people	in thous. of people	in thous. of people	in per cent	in thous. of people	in per cent	in thous. of people	in thous. of people	in per cent	in thous. of people	in per cent	in thous. of people
1989	2.2	26.6	-24.4	1.9	86.4	20.3	76.3	-18.4	0.3	13.6	6.3	23.7	-6.0
1990	2.6	18.4	-15.8	2.2	84.6	14.8	80.4	-12.6	0.4	15.4	3.6	19.6	-3.2
1991	5.0	21.0	-16.0	4.3	86.0	18.5	88.1	-14.2	0.7	14.0	2.5	11.9	-1.8
1992	6.5	18.1	-11.6	5.5	84.6	16.3	90.1	-10.8	1.0	15.4	1.8	9.9	-0.8
1993	5.9	21.3	-15.4	4.8	81.4	18.1	85.0	-13.3	1.1	18.6	3.2	15.0	-2.1
1994	6.9	25.9	-19.0	5.4	78.3	22.1	85.3	-16.7	1.5	21.7	3.8	14.7	-2.3
1995	8.1	26.3	-18.2	6.3	77.8	22.0	83.7	-15.7	1.8	22.2	4.3	16.3	-2.5
1996	8.2	21.3	-13.1	6.1	74.4	18.1	85.0	-12.0	2.1	25.6	3.2	15.0	-1.1
1997	8.4	20.2	-11.8	6.2	73.8	16.9	83.7	-10.7	2.2	26.2	3.3	16.3	-1,1
1998	8.9	22.2	-13.3	6.5	73.0	19.0	85.6	-12.5	2.4	27.0	3.2	14.4	-0.8
1999	7.5	21.5	-14.0	5.5	73.3	18.2	84.7	-12.7	2.0	26.7	3.3	15.3	-1.3
2000	7.3	27.0	-19.7	5.1	69.9	21.5	79.6	-16.4	2.2	30.1	5.5	20.4	-3.3
2001	6.6	23.3	-16.7	4.7	71.2	18.1	77.7	-13.4	1.9	28.8	5.2	22.3	-3.3
2002	6.6	24.5	-17.9	4.6	69.7	18.9	77.1	-14.3	2.0	30.3	5.5	22.4	-3.5
2003	7.0	20.8	-13.8	4.9	70.0	15.6	75.0	-10.7	2.1	30.0	5.2	25.0	-3,1
2004	9.5	18.8	-9.3	6.7	70.5	13.9	73.9	-7.2	2.8	29.5	5.0	26.6	-2.2
2005	9.4	22.2	-12.8	6.6	70.2	17.1	77.0	-10.5	2.7	28.7	5.2	23.4	-2.5
2006	10.8	46.9	-36.1	7.9	73.1	34.1	72.7	-26.2	2.9	26.9	12.8	27.3	-9.9
2007	15.0	35.5	-20.5	10.6	70.7	24.8	69.9	-14.2	4.4	29.3	10.7	30.1	-6.3

Source: own compilation based on data provided by the Central Statistical Office (Demographic Yearbook 2008)

Regions from which the most people left to settle permanently abroad in 2007 include the south-western voivodeships of Opolskie and Śląskie. This is related to the fact that they had people of the German minority who had families among post-war emigrants and who mainly went to that country (Fig. 13). A relatively high rate of migration is also noticeable in Poland's western and northern voivodeships. People living in central regions were the least interested in migration (Łódzkie, Mazowieckie and Świętokrzyskie voivodeships) (Fig. 13). Migration movement in the other direction was relatively highest also in the case of the Opolskie (e.g. emigrants returning after having reached retirement age abroad) and Dolnośląskie. Immigrants settled least often in the voivodeships of Wielkopolskie and Łódzkie.

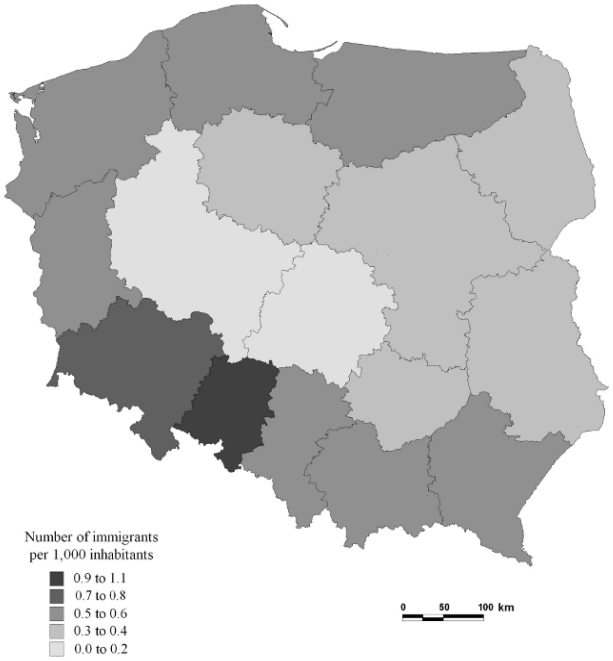


Fig. 13. Permanent immigration to Poland in 2007
Source: own compilation based on data provided by the Central Statistical Office

1.2. 2.3.3. Temporary foreign migration

For many years now, Poles have been participants in international labour markets. Migrations have been a significant element that resolved difficult problems in the labour market. With bilateral agreements on international employment signed in the 1990s and Poland's accession to the EU, freedom of movement and availability of work for Polish people have increased. This type of transformation of spatial mobility has been a consequence of several economic and political factors. Firstly, the liberalizing of border movement regulations has created a previously unknown situation in which Poles are not only able to leave their country, but also return to it, without fear of negative political consequences. Secondly, short-term migrations have gained significance through strictly economic factors, especially the relation between costs and benefits ensuing from migration (the relation between wages and costs of living at home and abroad) as well as labour market needs of receiver countries (often limited to sectors offering seasonal work). However, with the abolishing of successive constraints in international movement (especially those related to passport and visa regulations), chances of

accurate statistical analyses have decreased[5] and this is undoubtedly one of the reasons why the picture of migration by Poles is far from being perfect.

According to national censuses (1988 National Census and 2002 National Population and Housing Census) in 1988 508,000 people stayed abroad longer than 2 months (i.e. 1.3 per cent of the population, and in 2002 the number rose to 786,000 people (1.8 per cent of the population).

Table 10. Emigrants staying abroad temporarily for more than 2 months in 2002 by length of stay and gender

Emigrants	Total	Staying from 2 to 11 months			Staying 12 months or longer
		Total	from 2 to 5 months	from 6 to 11 months	
			Total		
Poland	786,085	159,895	79,881	80,014	626,190
Men	362,973	77,603	40,124	37,479	285,370
Women	423,112	82,292	39,757	42,535	340,820
			Urban areas		
Total	488,122	100,982	48,958	52,024	387,140
Men	221,082	47,135	23,548	23,587	173,947
Women	267,040	53,847	25,410	28,437	213,193
			Rural areas		
Total	297,963	58,913	30,923	27,990	239,050
Men	141,891	30,468	16,576	13,892	111,423
Women	156,072	28,445	14,347	14,098	127,627

Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

Results of the 2002 census prove that over 80 per cent of temporary emigrants (i.e. 626,190 people) stayed abroad 12 months or longer – these were long-term emigrants (Table 10). It needs to be stressed that people who are abroad temporarily (even for a couple of years) are still included in the number of the Polish population. Short-term emigrants (staying abroad from 2 to 11 months) with permanent residence in Poland constituted 20 per cent.

[5] The extent and structure of migrations after 1989 can be examined on the basis of: registered data, national censuses (National Population and Housing Census 2002), data obtained from Population Economic Activity Studies, data from government departments, data obtained from receiver countries as well as scientific research carried out in Poland and abroad.

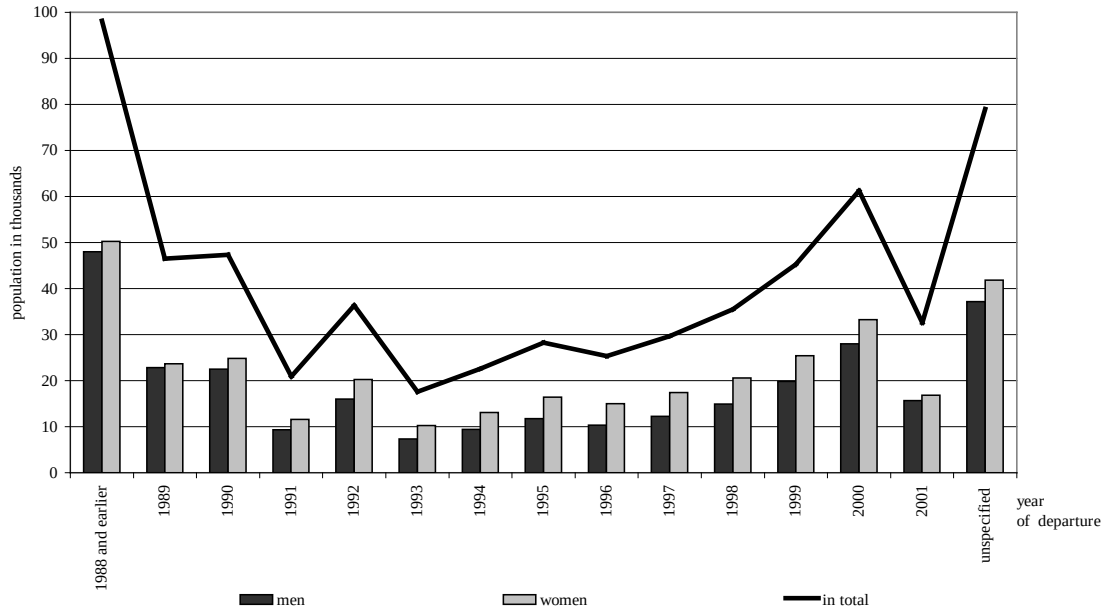


Fig. 14. Emigrants from Poland in 2002 staying abroad temporarily for 12 months and longer
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

According to the 2002 census, the number of emigrants who left Poland in 1988 or earlier stood at about 98,000 (Fig. 14), so almost 20 per cent of people staying abroad temporarily during the census were still there in 2002. The remaining part of people staying abroad in 2002 left the country in later years (after 1988). Quite a lot of people have stayed abroad since 1989 (over 46,000) and since 1990 (over 47,000); this was the first migration wave of the 1990s. A large group emigrated in 1992, out of which over 36,000 were still abroad in 2002. Among emigrants leaving Poland in the period between both censuses, the largest group was those who had left Poland in the previous years (1999–2000) – this was the second wave of emigration in the 1990s. In all the years in question there were slightly more women than men in the emigration structure (Fig. 14).

In the structure of the total number of emigrants staying abroad for more than 2 months, the highest percentage (14 per cent) was of young Poles between 25 and 29 years of age. About 20 per cent of emigrants who stayed abroad for a shorter time than 12 months were 20 to 29 years old. In all other age groups there were more emigrants staying abroad for more than a year (Fig. 15).

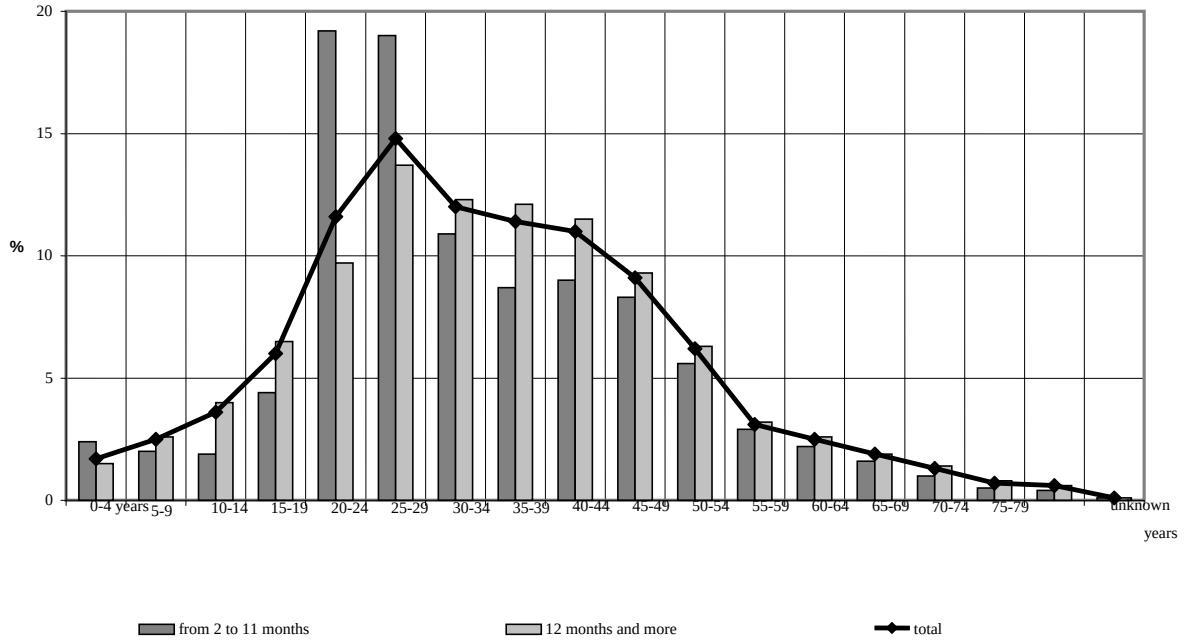


Fig. 15. Polish emigrants by age staying abroad temporarily for over 2 months in 2002
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

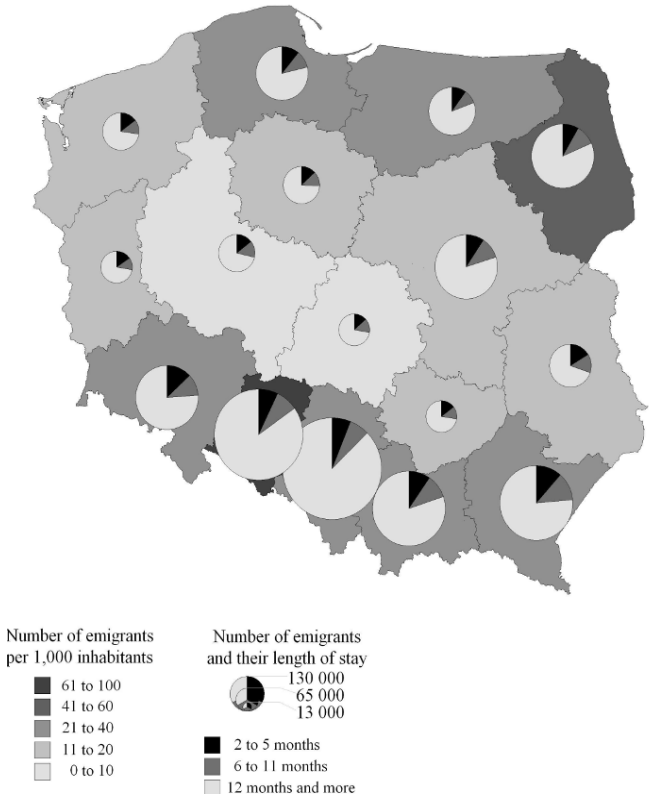


Fig. 16. Emigrants from Poland in 2002 staying abroad for more than 2 months
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

The highest number of people being abroad in 2002 lived in the voivodeships of Śląskie (125,000 people), Opolskie (over 105,000), Małopolskie (80,000 people) and Podkarpackie (77,000 people), before they left Poland. The lowest numbers of temporary emigrants came from the voivodeships of Lubuskie (below 16,000), Łódzkie and Świętokrzyskie (about 18,000 people each). In all the areas there were more people who stayed abroad for over 12 months (Fig. 16).

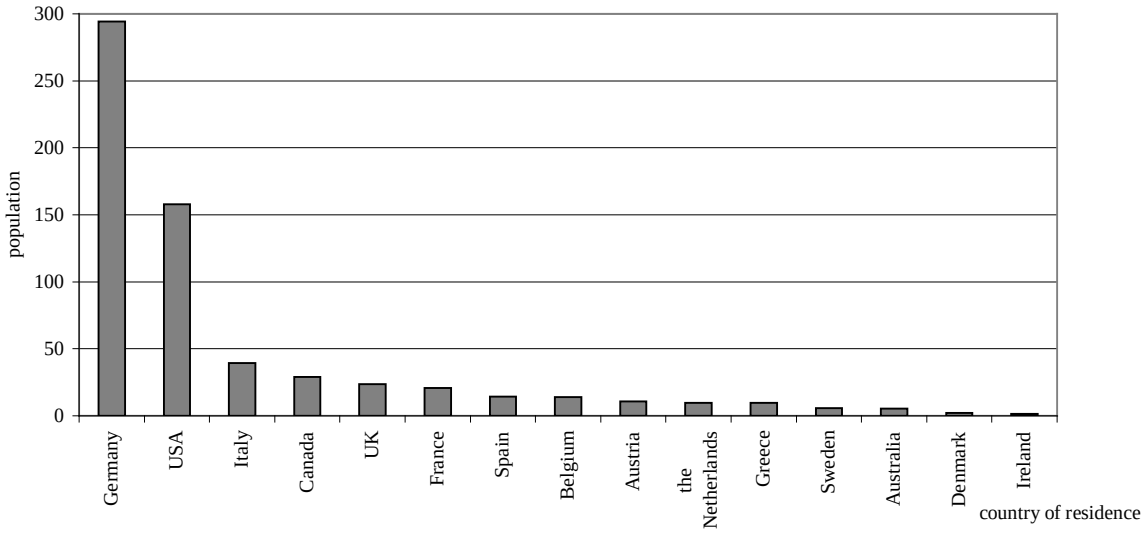


Fig. 17. Destinations for temporary migration of Poles in 2002
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

Results of the 2002 census show that short-term Polish emigrants were present in all continents. Most of them, however, stayed in Europe, 97 per cent of these in EU countries (Fig. 17). The most popular country was Germany, where 294,000 stayed (i.e. 37% of all Polish temporary emigrants). Other countries include Italy (39,000 people), the UK (24,000 people) and France (20,000). Poles were also willing to go to the United States, with 158,000 people already there, which constituted 20 per cent of all emigrants staying abroad. Canada had much fewer people (only 4 per cent of emigrants).

In the 2002 census, information was collected on reasons for emigration (Fig. 18). It is worth noting that in 1988 such data was not collected. The most frequent reasons for Poles moving abroad were employment (44 per cent emigrants) and family affairs (30 per cent). Other reasons influenced their decisions to a much lesser extent (5 per cent in the case of education).

According to the 2002 census, there were 34,100 temporary immigrants who stayed longer than 2 months in Poland, inclusive of 22,700 people (i.e. 67 per cent) who stayed in the country for 12 months or longer – the so-called long-term immigrants. They are regarded as residing population. Immigrants staying in Poland temporarily are not treated as actually living in Poland. The number of immigrants staying temporarily in Poland in 2002 was much higher than the figure obtained in the census. This might be due to the fact that, for various reasons, not all immigrants in Poland were counted.

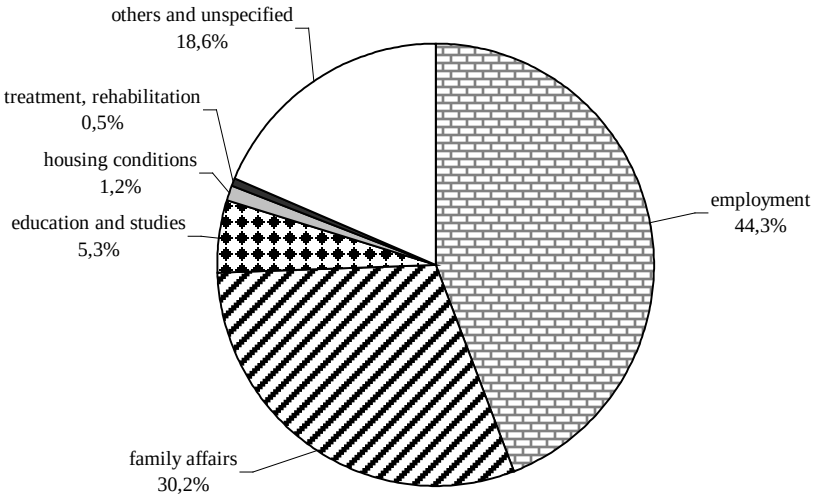


Fig. 18. Reasons for temporary migration of Poles for longer than 2 months in 2002
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

Table 11. Immigrants staying in Poland temporarily for over 2 months by length of stay and gender

Voivodeships	Total	Staying from 2 to 11 months			Staying for 12 months and longer
		Total	from 2 to 5 months	from 6 to 11 months	
	Total				
Poland	34,072	11,362	6,107	5,255	22,710
Men	17,398	5,803	3,239	2,564	11,595
Women	16,674	5,559	2,868	2,691	11,115
	Urban areas				
Total	26,995	9,211	4,700	4,511	17,784
Men	14,062	4,676	2,487	2,189	9,386
Women	12,933	4,535	2,213	2,322	8,398
	Rural areas				
Total	7,077	2,151	1,407	744	4,926
Men	3,336	1,127	752	375	2,209
Women	3,741	1,024	655	369	2,717

Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

Among temporary immigrants who stayed in Poland longer than 2 months, there were more long-term ones. A similar trend could be observed in both urban and rural areas. In the immigration structure, there were slightly more men than women in cities and towns, and more women in rural areas. Almost 80 per cent of immigrants lived in cities (Table 11).

The most immigrants staying temporarily for more than a year had come to Poland before the census. Many of those who had arrived earlier may already have left the country (Fig. 19).

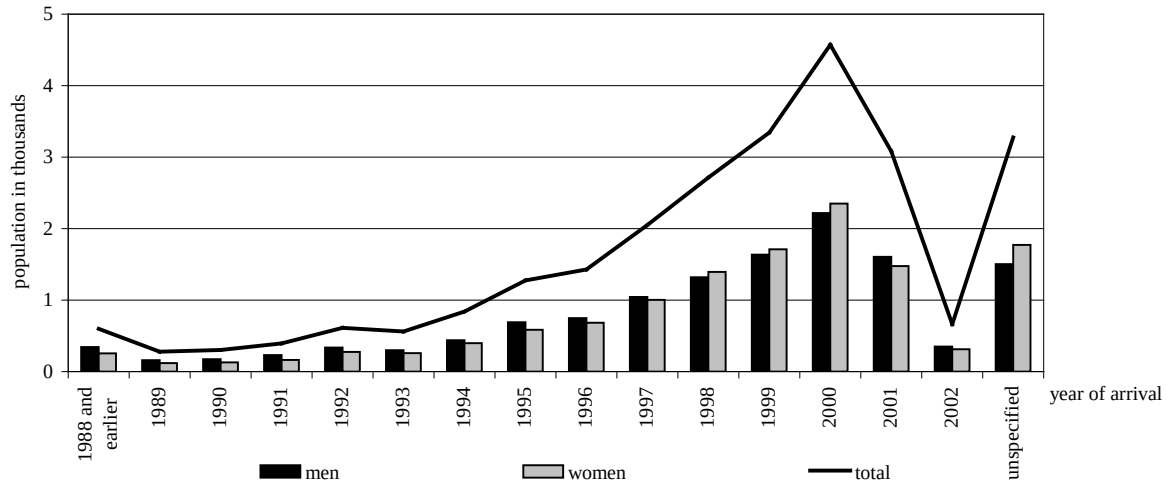


Fig. 19. Immigrants staying in Poland temporarily for 12 months and longer
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

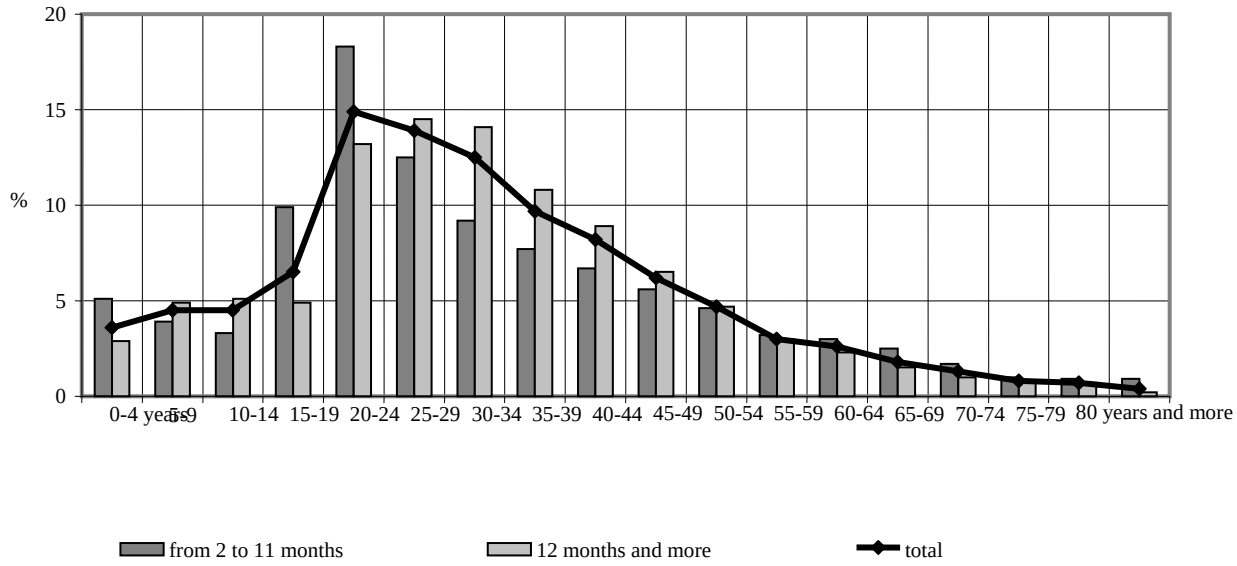


Fig. 20. Age of immigrants staying in Poland temporarily for more than 2 months in 2002
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

The immigrant structure by age was similar to the structure of emigrants (compare Fig. 20 and Fig. 15). In the most active age group when it comes to migration, aged from 20 to 24, the majority of short-term immigrants was much lower than in the case of emigrants. People of mobile working age (20–44 years) constituted 60 per cent of short-term immigrants.

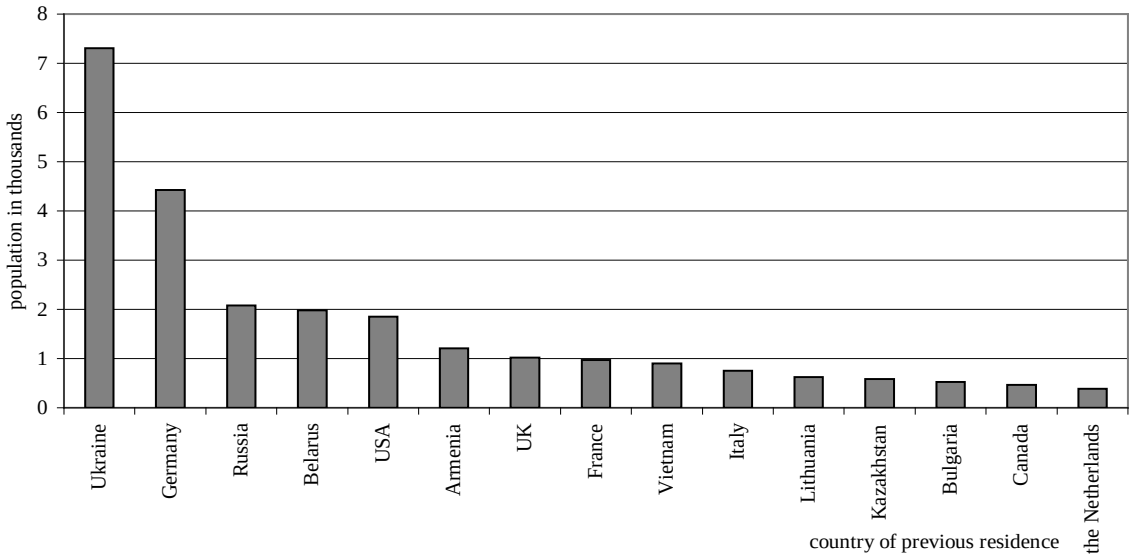


Fig. 21. Immigrants in Poland in 2002 by previous place of residence
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

Countries for which Poland was an attractive place for temporary emigration (e.g. education – studies) include mainly those of the former Soviet Union (Ukraine – 21.5 per cent immigrants in total, Russia and Belarus – 6 per cent each, Armenia – 4 per cent, Kazakhstan – 2 per cent), which, on the one hand, was related to Poland's economic attractiveness, but also to people of Polish origin returning to the country. People from Germany came second (13 per cent), among whom there were post-war Polish economic emigrants, but also people associated with companies financed with German capital. Almost 2,000 immigrants (5.5 per cent) came from the USA, including, like in the case of Canadians, students (usually those of medical sciences[6]). In total, 71 per cent of immigrants came from Europe, 14 per cent from Asia, and 7 per cent from North America (Fig. 21).

[6] In the 1990s Polish medical universities with lectures conducted in English became a major place of study for young people from North America, mainly due to the relatively lower costs of studies and high standard of education.

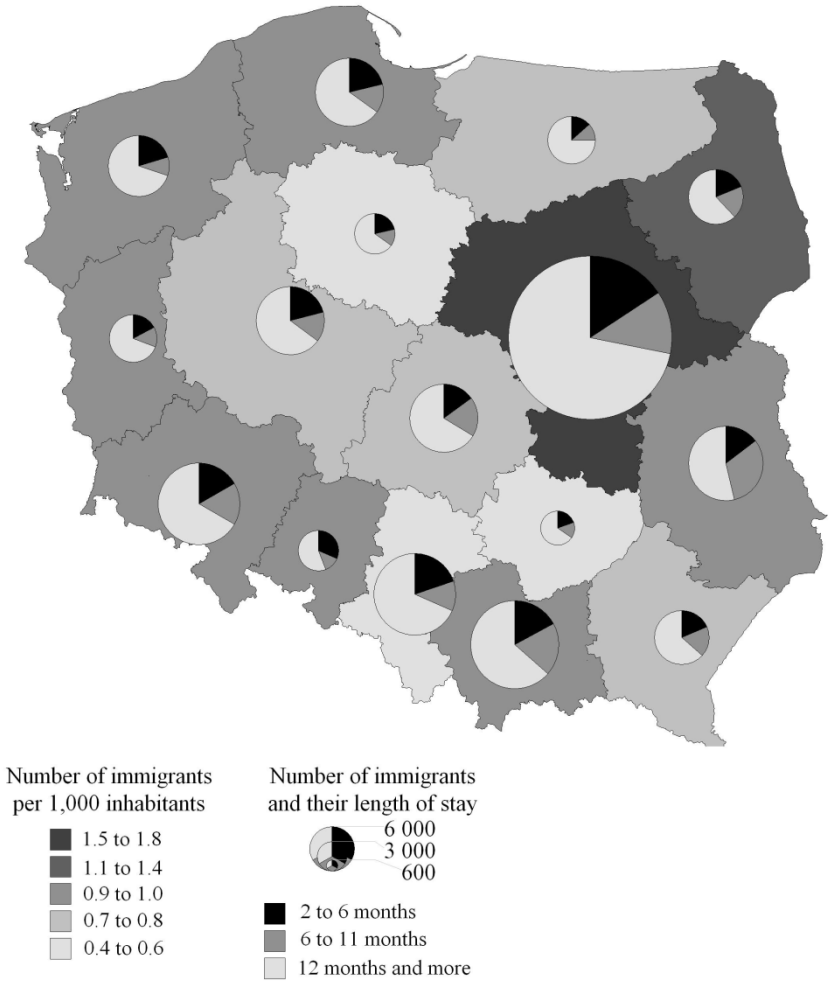


Fig. 22. Immigrants staying in Poland temporarily for longer than 2 months
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

The voivodeship of Mazowieckie attracted the largest number of temporary immigrants (about 9,000 people); followed by the southern voivodeships of Dolnośląskie, Śląskie and Małopolskie; however, the voivodeship of Podlaskie came first ahead of Kujawsko-Pomorskie in terms of the number of immigrants per 1,000 inhabitants. The voivodeships of Kujawsko-Pomorskie and Świętokrzyskie had the lowest number of immigrants, and Śląskie registered the lowest rate of immigrants per 1,000 inhabitants. In all regions there were most long-term immigrants, constituting more than a half of the total in Lubelskie and almost 75 per cent in Warmińsko-Mazurskie, Mazowieckie and Zachodniopomorskie (Fig. 22).

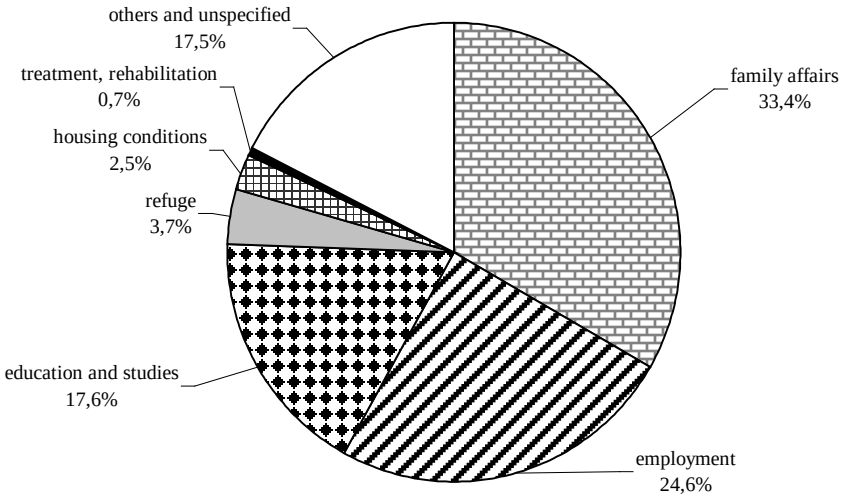


Fig. 22. Reasons for temporary immigration by Poles for longer than 2 months in 2002
Source: own compilation based on data provided by the Central Statistical Office (National Population and Housing Census 2002)

The major reason for temporary migration to Poland was family affairs (Fig. 22). Such a decision was taken by the largest number of immigrants (33 per cent) because of, among other things, their Polish descent, a marriage with Polish citizens or the willingness to settle permanently in Poland. 25 per cent of immigrants came to Poland to seek employment, and 18 per cent of them wished to take up studies, develop their education and improve their qualifications. Almost 4 per cent of temporary immigrants sought refuge in Poland.

2.4. Movement between urban-rural and urban-urban areas

It should be pointed out that in Poland the demographic situation of the urban areas has differed substantially from that of the rural areas. The dynamics of rural population growth in recent years show an upward trend. Since the beginning of the 1990s the population of urban and rural areas has subject to slight fluctuations, but over longer periods it had remained relatively stable (Fig. 23 and Fig. 24). This tendency changed after 1990, when a continuing decrease of inhabitants in urban areas, with a simultaneous increase of inhabitants in rural areas, could be observed. This is to a great extent a result of an ongoing process of suburbanization which involves high prices of land in cities and deterioration of standard of living (lack of greenery, pollution, ambient noise). It has to be noted that due to these processes many suburban villages have lost their rural character and become heavily urbanized areas instead[7]. They do not have city status, therefore from the point of view of the statistics they are regarded as rural areas.

[7] Good examples are villages located in the suburban area of Poznań – Koziegłowy (in 2010 – 11 421 inhabitants), Czerwonak (5651 inhabitants), Suchy Las (4367 inhabitants), Tarnowo Podgórne (4328 inhabitants).

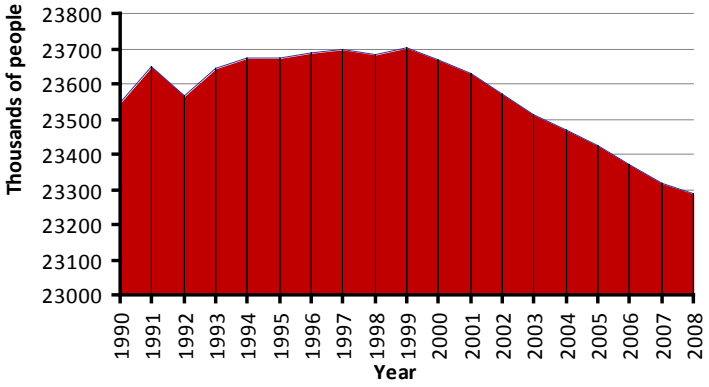


Fig. 23. Urban population changes in 1990–2008 in Poland
Source: own compilation based on Statistical Office data

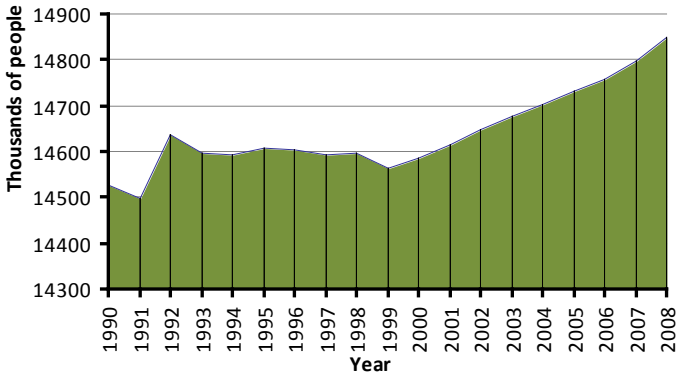


Fig. 24. Rural population changes in 1990–2008 in Poland
Source: own compilation based on Statistical Office data

The situation of domestic migrations between urban and rural areas changed dynamically in the period between 1990 and 2008 (Fig. 25, Table 12). Initially the urban population was becoming higher. People sought opportunities for a higher standard of living and better jobs in the urban areas. In subsequent years the dynamics of this process slowed, and 1998 was the first year when the number of migrations from cities to the countryside exceeded migrations from the countryside to the city. It also needs to be pointed out that between 1995 and 2001 society was characterised by relatively low mobility – people were reluctant to change their place of living.

After 2001 the mobility of cities' inhabitants increased, with markedly more people moving out than moving in. This is linked to the development of suburban zones, which became, in many cities, a sort of "dormitory" for people previously living in the city (Bański 2008, Beim 2008). Progressive motorization and investment in the road infrastructure and public transport shortened the commuting time in the city and its direct vicinity. Inhabitants Residents were looking for larger homes, lower prices of land and a better quality of environment. The suburban zone seemed to be a place that combined the best characteristics of rural areas with the wide availability of all kinds of services and jobs typical for cities.

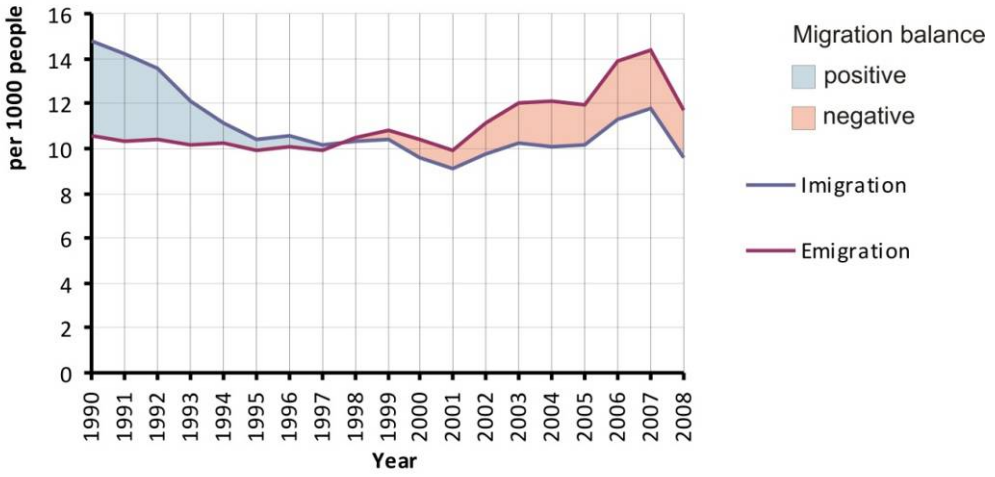


Fig. 25. Migrations in urban areas in 1990–2008
Source: own compilation based on Statistical Office data

Tab. 12. Directions of migrations in Poland in 2008

		*Inflow**				*Outflow***				*Net migration*		
SPECIFICATION		*total*	*from urban areas*	*from rural areas*	*from abroad*	*total*	*to urban areas*	*to rural areas*	*to abroad*	*total*	*internal*	*international*
Total	1952-2008	23,2	9,9	13,1	0,2	23,8	12,7	10,3	0,8	-0,5	x	-0,5
	1952-1960	50,6	21,5	28,0	1,1	51,0	24,8	24,7	1,5	-0,4	x	-0,4
	1961-1970	29,8	10,9	18,8	0,1	30,4	14,8	14,9	0,7	-0,6	x	-0,6
	1971-1980	26,2	10,1	16,0	0,1	26,8	16,0	10,1	0,7	-0,6	x	-0,6
	1981-1990	18,1	7,7	10,3	0,1	18,8	11,3	6,7	0,8	-0,7	x	-0,7
	1991-2000	11,6	5,8	5,6	0,2	12,0	6,7	4,7	0,6	-0,4	x	-0,4
	2007	13,8	8,2	5,2	0,4	14,3	6,9	6,5	0,9	-0,5	x	-0,5
	2008	**11,0**	**6,6**	**4,0**	**0,4**	**11,4**	**5,6**	**5,1**	**0,8**	**-0,4**	**x**	**-0,4**
Urban areas	1952-2008	22,9	10,6	12,0	0,3	18,6	10,6	7,0	1,0	+4,3	+5,0	-0,7
	1952-1960	57,5	28,3	27,7	1,5	50,8	28,3	20,3	2,2	+6,7	+7,4	-0,7
	1961-1970	29,6	13,2	16,3	0,1	22,8	13,2	8,7	0,9	+6,8	+7,6	-0,8
	1971-1980	28,8	12,2	16,5	0,1	18,9	12,2	6,0	0,7	+9,9	+10,5	-0,6
	1981-1990	19,1	8,3	10,7	0,1	13,9	8,3	4,6	1,0	+5,2	+6,1	-0,9
	1991-2000	11,2	5,5	5,5	0,2	10,3	5,5	4,0	0,8	+0,9	+1,5	-0,6
	2007	11,8	6,3	5,0	0,5	14,4	6,3	7,1	1,1	-2,7	-2,1	-0,6
	2008	**9,6**	**5,2**	**3,9**	**0,5**	**11,8**	**5,2**	**5,6**	**0,9**	**-2,1**	**-1,7**	**-0,4**

**Inflow – arrival (i.e. registration) in a given administrative unit with the purpose of residing there;*
***Outflow – departure with the purpose of residing in another administrative unit.*
Source: Demographic Yearbook of Poland 2008

After 1989, urbanisation in Poland started to grow more and more. It was a similar process to that taking place in Europe. This was due to the disappearance of the systemic barriers isolating the Polish economy and society from West European and world tendencies. Still, Polish urbanisation today seems to be the product of both contemporary European trends and the legacy of the country's past. It is equally a post-socialist and a postmodern type of urbanisation. In the 1990s Polish urbanisation clearly became qualitative-quantitative, which

can be seen in the development of suburban zones on the one hand, and in the renewal and redevelopment of the centres of the largest Polish cities on the other (Table 13). In this way Polish metropolitan regions have entered the path of post-industrial, or postmodern, development. The balance of gains and losses of the processes at work is not clear or unequivocal. It should be kept in mind, however, that Poland is still in the middle of constructing a new reality for itself, which is a hard task to complete successfully given the legacy of communism. There is no doubt, however, that the prime beneficiaries of the changes have been large cities, which are the chief growth poles in the country's socio-economic life.

Table 13. Changes in urban population between 1980 and 2008

Years	*Total*	*Size of the city (Number of population in cities in thousands)*						
		less than 5000	*5000 - - 9999*	*10000 - - 19999*	*20000 - - 49999*	*50000 - - 99999*	*100000 - - 199999*	*200000 and more*
1980	20978.5	786.9	1283.5	2391.7	3465.6	2613.9	3090.0	7346.9
1990	23546.0	801.0	1249.0	2544.0	3952.0	3221.0	3004.0	8775.0
2000	23670.3	903.5	1311.3	2679.8	4118.3	3235.0	3118.9	8303.5
2005	23423.7	914.1	1338.3	2663.7	4157.7	3290.4	3065.7	7993.8
2007	23316.9	928.9	1330.6	2673.7	4173.4	3215.9	3048.7	7945.7
2008	23288.2	928.3	1345.2	2643.9	4192.3	3211.0	3044.4	7923.1

Source: Demographic Yearbook of Poland 2008

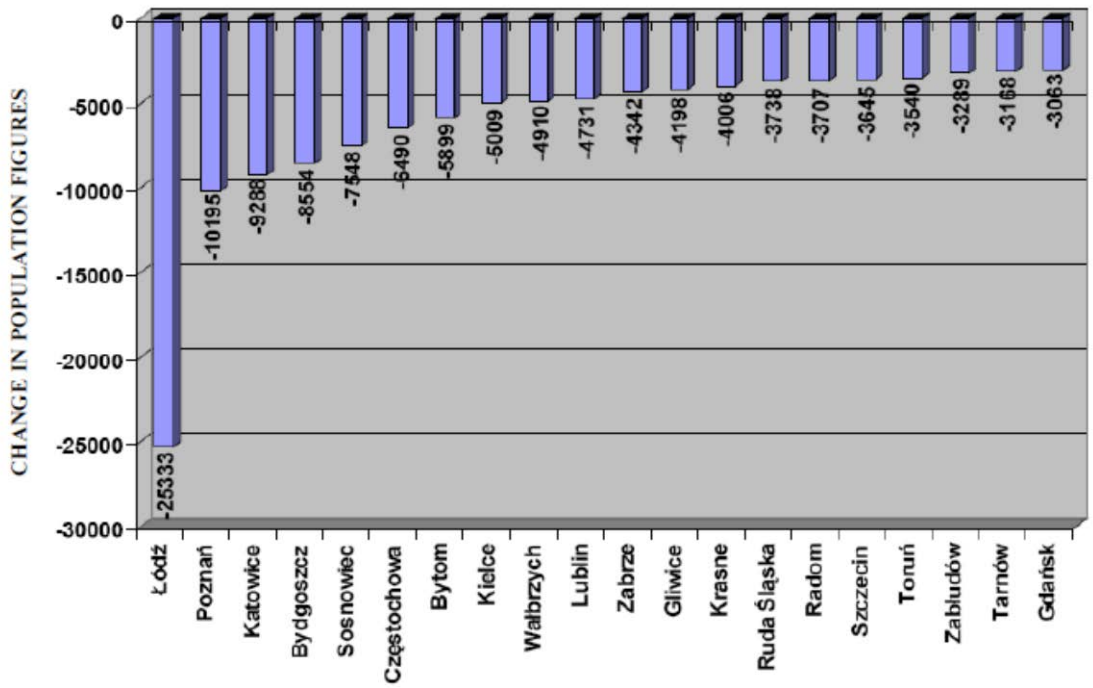


Fig. 26. Gminas which recorded the greatest decrease in population figures in 1995–2007
Source: Krawczyk (2008)

In the last years the greatest population growth took place in several urban, urban-rural and rural gminas (districts) located within the agglomeration areas of the largest cities. In the report *Diagnosis of the condition of Polish cities* (2010) such urban areas with the greatest increase of population are listed:

- in the Warsaw agglomeration: Piaseczno, Ząbki, Marki, Łomianki, Halinów, Józefów, Radzymin, Serock and Kobyłka;
- in the Poznań agglomeration: Kórnik, Luboń, Pobiedziska, Swarzędz and Mosina;
- in the Tricity (Gdańsk, Sopot, Gdynia) agglomeration: Żukowo, Pruszcz Gdański and Reda;
- in the Wrocław agglomeration: Święta Katarzyna and Kąty Wrocławskie;
- in the Rzeszów agglomeration: Tyczyn and Głogów Małopolski;
- in the Białystok agglomeration, Choroszcz, Wasilków and Supraśl;
- in the Kraków agglomeration Wieliczka and Niepołomice.

Among the largest Polish cities only in three units was slight population growth observed (Warsaw, Kraków and Wrocław). In other regional centres such as Katowice, Kielce, Łódź and Poznań, the number of citizens decreased due to a negative migration balance – these units recorded the greatest population decline among all territorial units in Poland (Fig. 26).

Fig. 27. Main migration flows in Poland in 2008
Source: Komornicki et al. (2009)

Changes in the largest cities are associated with the suburbanization process. This can be interpreted as one of the stages, forms or phases of urbanization. According to *Diagnosis of the condition of Polish cities* (2010) it can also be described as 'the movement of forms of urban landscape and land use, urban residents and their lifestyle, jobs and some urban functions to the suburban areas.' Nowadays suburbanization is an essential process creating the structures of urban areas. The main reasons for it are residents' choices and decisions – they expect a higher quality of life and at the same time need good accessibility of the services, jobs and schools located in the central city. The main results of this situation are new housing investments in suburban areas, a rapid increase in daily migration between centre and the suburban zone of agglomeration, and the depopulation process in the central city. Highly dispersed housing areas cause a strong dependency on individual transport and the decreasing role of public transport. There appear new transport problems and residents' expectations concerning development of the existing road network.

In 1988–2007, when large cities noted a decrease or a slight increase, the surrounding gminas recorded a considerable increase in population figures. This phenomenon especially concerns Warsaw, Kraków, Poznań, Tricity, Wrocław, Łódź, Bydgoszcz and Toruń, but also such cities as Radom, Kielce, Tarnów, Rzeszów, Lublin, Białystok, Olsztyn, Szczecin, Koszalin, and even Płock and Włocławek.

The increase of population in suburban areas was caused not only by migrations from the central city. A great impact also came from typical urbanization processes connected with the inflow of people from rural and peripheral areas (Fig. 27). The most important reason for such migrations is the search for work in regions' centres. On the other hand homes in the city are so expensive that people seek possible locations outside its borders.

The structure and scale of internal migrations in Poland was changing slightly over the last several decades. On a national scale the most attractive direction for migrants is still the metropolitan area of Warsaw. Other voivodeships' capitals generate mostly regional migrations (Fig. 27). According to the National Population Census of 2002 most people in Poland (59%) are still living in the place of their birth, and only 10.5% of the whole population changed their place of residence in the years 1989–2002.

What was changed after the transition period are the directions of migrations in some parts of the country. The largest centres of industry such as Upper Silesia, Łódź and Wałbrzych lost their importance and there appeared problems on the labour market. As a result these urban areas declined and even now they have a significant negative migration balance.

The movements between the largest Polish cities are also not as significant as in the past. The balance of migrations between them was positive only in Warsaw, Chorzów and Wrocław. At present the role of international migrations is growing and this is the main reason for the smaller scale of flows between regional centres.

According to the *Diagnosis of the condition of Polish cities* (2010) the above-mentioned trends will continue, at least in a midterm perspective, for 10 to 15 years.

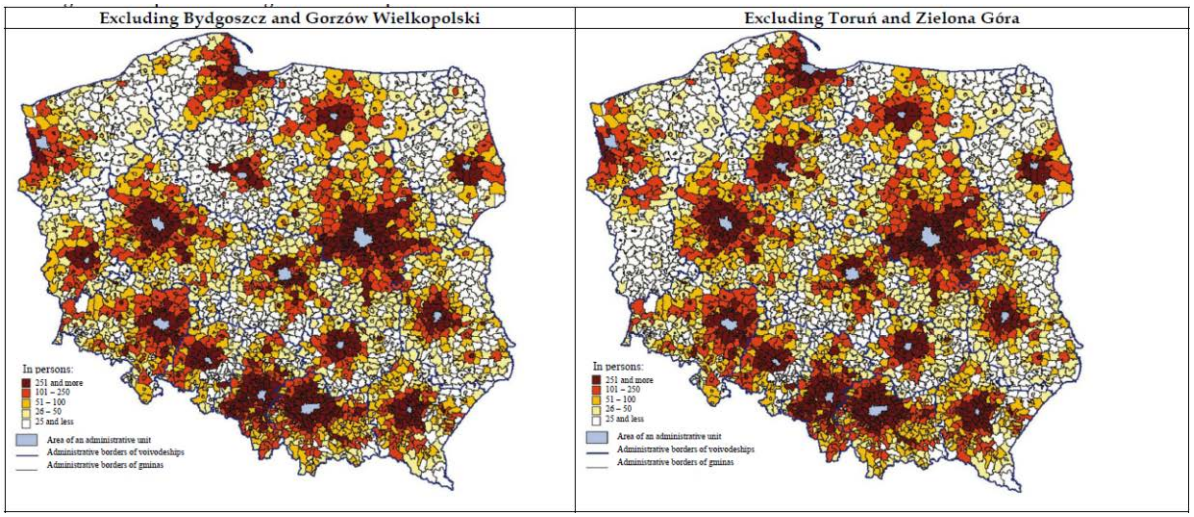


Fig. 28. People commuting to voivodeship cities in 2006
Source: Central Statistical Office

In the light of suburbanization processes, great importance now attaches to daily travel to work (Fig. 28). According to Central Statistical Office data at the end of 2006 over 2.3 million people were working outside the locality in which they resided (25% of employed persons). The scale of this process has the highest importance in Podkarpackie voivodeship, which has a poor economic condition and where only a few significant labour markets are located.

2.5. Growth or decline scenarios for Poland and its urban areas

A problem in demographic scenario prognosis for Poland and its urban areas comes from estimation of the number of the country's inhabitants. According to the prognosis of the Central Statistical Office in Poland (2008) the total population, which was 38 107 406 in 2008, will decrease to 38 016 059 in 2015 and 35 993 069 in 2035 (94.45% of the initial number of population; Fig. 29 and Table 14). This means a further depopulation process in Poland, which will be mostly caused by natural factors. The average annual decrease in the Polish population will be 45 600 people per year, and in the period 2015–2025 – 102 800 per year. This will cause a decrease in population by 1 620 500 in 2025. The prognosis presented by the Central Statistical Office in 2008 forecasts a strong decrease in population. According to the study in 2035 there will be 2 million fewer inhabitants, as a result of a negative birth rate (the 2+1 family model) as well as a negative migration balance. It can also be assumed that historic conditions will still affect the age structure, but they will be less significant.

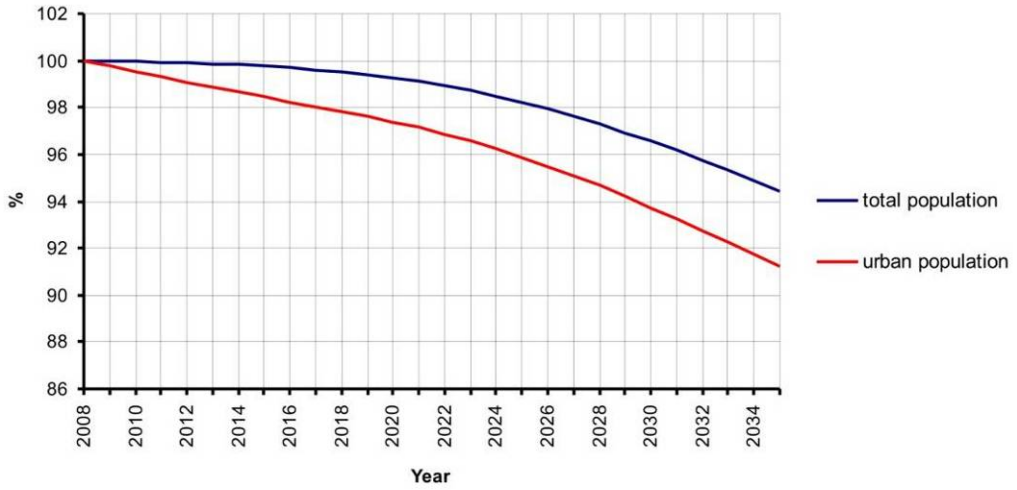


Fig. 29. Declining population in Poland and its urban areas – prognosis (2008=100%)
Source: own compilation based on Statistical Office data

Table 14. Prognosis of the population in Poland and its urban areas to 2035

	Number of population						
	Year						
	2008	2010	2015	2020	2025	2030	2035
Poland	38 107 406	38 091 951	38 016 059	37 829 889	37 438 095	36 796 020	35 993 069
Dynamics (2008=100)	100,00	99,96	99,76	99,27	98,24	96,56	94,45
Urban areas	23 256 962	23 145 472	22 897 686	22 649 726	22 299 025	21 799 537	21 215 106
Dynamics (2008=100)	100,00	99,52	98,46	97,39	95,88	93,73	91,22

Source: own compilation based on Statistical Office data

In 2035, there will be a considerable increase in the population of four voivodeships - compared with the year 2008 (Małopolskie by 146,000; Pomorskie by 100,000; Wielkopolskie by 94,000; Podkarpackie by 45,000). In another four voivodeships the population will in principle remain unchanged (in Mazowieckie it will increase by only 6,000, in Lubuskie by 16,000; and in Warmińsko-Mazurskie and Zachodniopomorskie it will decline by 18,000 and 15,000 respectively). In the remaining eight voivodeships there will be a decline in the population: the largest is expected to be recorded in Śląskie (-257,000) and Łódzkie (-239,000). In the country's current administrative division, due to the fact that the voivodeships are quite big, there are no considerable disproportions between the number of voivodeships from which people migrate to others and those to which people tend to migrate – they constitute almost half of the total number of voivodeships (Lubuskie, Małopolskie, Mazowieckie, Pomorskie, Śląskie and Wielkopolskie). Almost two-thirds of inter-voivodeship migration currently flows to Mazowieckie and Śląskie. The areas from which migrants come most often include Lubelskie, Świętokrzyskie, Podkarpackie and Warmińsko-Mazurskie.

The decrease in the population will be mostly concentrated in the eastern regions of Poland, which are mostly rural areas, with no strong and economically well-developed urban centres. However, not only the eastern urban areas will be affected by the urban population decrease.

On the basis of the Central Statistical Office prognosis, in all of the largest cities the number of inhabitants will decrease (Fig. 30. and Table 15).

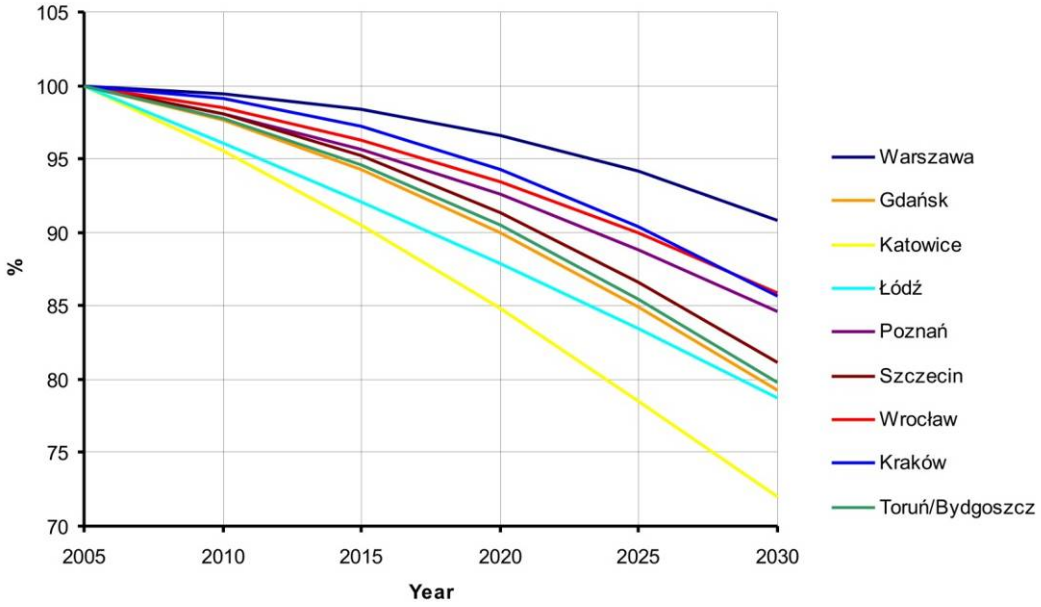


Fig. 30. Population projection in the largest Polish cities until 2030 (2005 = 100%)
Source: own compilation based on Statistical Office data

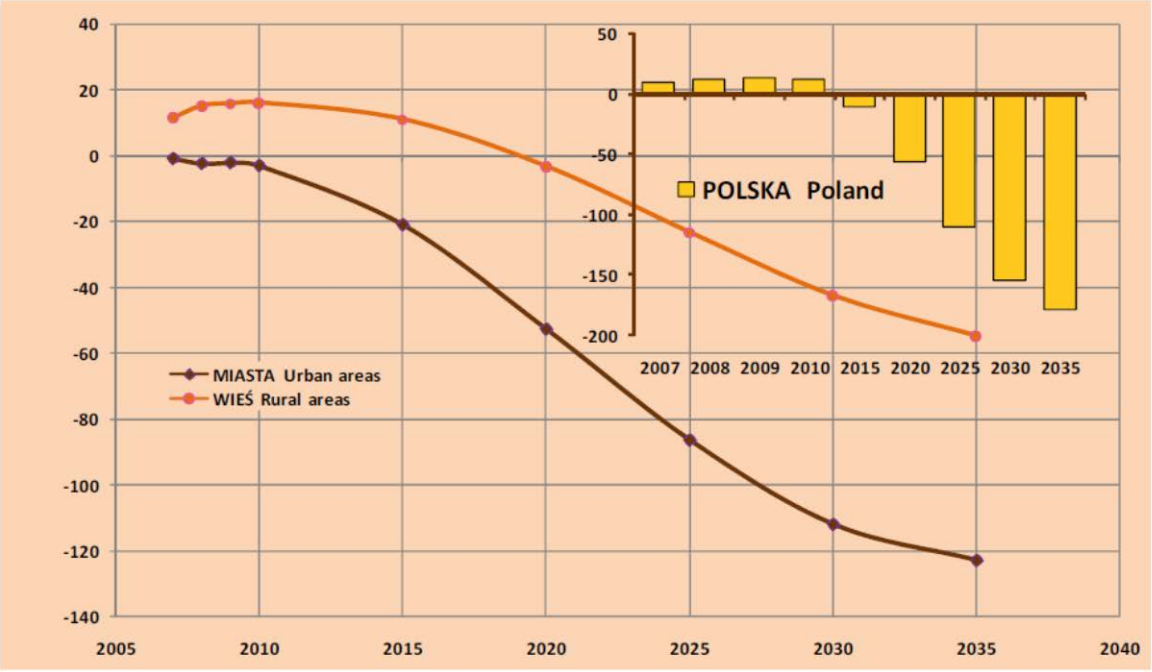
Tab. 15. Population projection for the largest Polish cities to 2030

Urban area	Thousands of people in year:					
	2005	2010	2015	2020	2025	2030
Gdańsk	457.4	446.5	431.3	411.7	388.4	362.4
Katowice	318.6	304.5	288.4	270.2	250.3	229.3
Kraków	760.3	753.4	739.4	717	687.3	651.2
Łódź	768.9	738.8	708.0	675.8	641.7	605.1
Poznań	573.0	561.9	547.9	530.4	509.2	485.1
Szczecin	413.6	405.8	393.9	377.8	358.2	335.6
Toruń/Bydgoszcz	578.2	565.3	547.2	523.2	494.1	461.0
Warsaw	1,687.6	1,678.1	1,660.3	1,630.9	1,588.4	1,532.7
Wrocław	637.2	627.3	613.5	595.4	573.0	547.3

Source: Central Statistical Office

One of the conditions in the prognosis of the decreasing population for Poland is the expected trend in the value of natural increase (Fig. 31. and Table 16). On the basis of the conditions in the Central Statistical Office prognosis for 2008–2035, the change in birth and death numbers will affect ositive natural increase by 2013. In the following years, along with the progressive negative population age structure and decreasing number of women of reproductive age, a negative natural increase is expected. Moreover, the value of this index will be decreasing. In 2035 the surplus of deaths over births will be around 180 000. On the one hand this is a consequence of the decreasing and very low number of births in the 1990s and at the beginning of the new century, and the other hand an effect of the positive changes in the mortality process and live expectancy.

The negative natural increase will be mostly determined by the continuation of the unfavourable changes concerning the relation between the number of births and deaths in urban areas. A negative natural increase in these areas has been noted since 1999 and it is expected to show gradual growth until the end of 2035, when it will be -123 thousands (in 2007 it was -0.9 thousands).



[a)]2007 r. – dane rzeczywiste; *2007 – actual data*

Fig. 31. Projected natural increase (in thousands)
Source: Central Statistical Office in Warsaw

The other factor conditioning the expected population of Poland to 2035 is migration: domestic – within the borders of the country – as well as foreign. Forecasting migration is not a simple task and it involves a high probability of underestimation. The estimation depends on many variables. They include socio-economic changes, internal migration policy and policies of other countries. Foreign migration in Poland mainly depends on the conditions of the labour market. The opening of the labour market in other countries after Polish EU accession created new job opportunities. The decision of many workers to change their place of residence depends also on the family's socio-economic situation and the household.

The report presents two types of migration: 1) internal (domestic), and 2) external (foreign). In the prognosis prepared by the Central Statistical Office, up to 2020 one can see that the dominant role is played by external (foreign) migration in the total value of the migration (Table 17). The same pattern is followed by the urban areas of Poland. Negative migration balance values (migration index) are estimated to continue until 2019, while in the case of urban areas this unfavourable situation is projected to end in 2020 (Table 18).

Table 16. Projected natural increase in Poland and urban areas to 2035

Year	Poland					Urban areas				
	Number of population	Number of births	Number of deaths	Natural increase	Natural increase per 1000 people	Number of population	Number of births	Number of deaths	Natural increase	Natural increase per 1000 people
2008	38 107 406	402 242	389 448	12 794	0,34	23 256 962	233 295	235 624	-2 329	-0,10
2009	38 100 651	406 905	393 228	13 677	0,36	23 200 410	236 053	238 166	-2 113	-0,09
2010	38 091 951	409 902	396 900	13 002	0,34	23 145 472	237 693	240 709	-3 016	-0,13
2011	38 081 740	411 241	400 397	10 844	0,28	23 093 211	238 256	243 213	-4 957	-0,21
2012	38 069 101	410 973	403 624	7 349	0,19	23 041 614	237 787	245 604	-7 817	-0,34
2013	38 056 018	409 179	406 571	2 608	0,07	22 993 830	236 355	247 882	-11 527	-0,50
2014	38 037 113	406 029	409 186	-3 157	-0,08	22 945 110	234 092	249 997	-15 905	-0,69
2015	38 016 059	401 505	411 511	-10 006	-0,26	22 897 686	231 010	251 967	-20 957	-0,92
2016	37 988 193	395 636	413 525	-17 889	-0,47	22 848 394	227 160	253 771	-26 611	-1,16
2017	37 957 272	388 681	415 265	-26 584	-0,70	22 800 026	222 713	255 426	-32 713	-1,43
2018	37 920 307	380 819	416 728	-35 909	-0,95	22 750 666	217 772	256 923	-39 151	-1,72
2019	37 875 974	372 194	417 980	-45 786	-1,21	22 699 349	212 431	258 295	-45 864	-2,02
2020	37 829 889	363 022	419 114	-56 092	-1,48	22 649 726	206 861	259 591	-52 730	-2,33
2021	37 773 176	353 474	420 177	-66 703	-1,77	22 593 137	201 171	260 821	-59 650	-2,64
2022	37 705 691	343 664	421 170	-77 506	-2,06	22 529 708	195 412	261 974	-66 562	-2,95
2023	37 627 241	333 790	422 205	-88 415	-2,35	22 459 382	189 706	263 107	-73 401	-3,27
2024	37 538 020	324 055	423 322	-99 267	-2,64	22 382 438	184 170	264 242	-80 072	-3,58
2025	37 438 095	314 673	424 589	-109 916	-2,94	22 299 025	178 921	265 413	-86 492	-3,88
2026	37 327 770	305 861	426 181	-120 320	-3,22	22 209 490	174 074	266 738	-92 664	-4,17
2027	37 207 601	297 837	427 991	-130 154	-3,50	22 114 178	169 742	268 130	-98 388	-4,45
2028	37 078 356	290 774	430 065	-139 291	-3,76	22 013 699	166 011	269 617	-103 606	-4,71
2029	36 940 799	284 810	432 349	-147 539	-3,99	21 908 591	162 950	271 165	-108 215	-4,94
2030	36 796 020	280 031	434 834	-154 803	-4,21	21 799 537	160 604	272 765	-112 161	-5,15
2031	36 644 693	276 464	437 785	-161 321	-4,40	21 687 005	158 987	274 608	-115 621	-5,33
2032	36 487 817	274 045	440 922	-166 877	-4,57	21 571 686	158 063	276 495	-118 432	-5,49
2033	36 326 316	272 675	444 177	-171 502	-4,72	21 454 179	157 774	278 385	-120 611	-5,62
2034	36 161 113	272 223	447 399	-175 176	-4,84	21 335 114	158 038	280 180	-122 142	-5,72
2035	35 993 069	272 506	450 596	-178 090	-4,95	21 215 106	158 740	281 890	-123 150	-5,80

Source: Own compilation based on data from the Central Statistical Office in Warsaw

Table 17. Projected migrations in Poland to 2020

Year	Number of population	Internal migration		Balance	Internal migration index	External migration		Balance	External migration index	Migration index
		Number of imigrants	Number of emigrants			Number of imigrants	Number of emigrants			
2008	38 107 406	516 996	517 000	-4	-0,0001	14 001	35 001	-21 000	0	-0,55
2009	38 100 651	524 998	525 000	-2	-0,0001	16 500	37 001	-20 501	-1	-0,54
2010	38 091 951	533 002	532 999	3	0,0001	18 300	40 001	-21 701	-1	-0,57
2011	38 081 740	538 002	538 001	1	0,0000	19 001	40 001	-21 000	-1	-0,55
2012	38 069 101	539 997	540 003	-6	-0,0002	19 999	40 001	-20 002	-1	-0,53
2013	38 056 018	529 996	530 000	-4	-0,0001	21 301	37 001	-15 700	0	-0,41
2014	38 037 113	520 000	519 999	1	0,0000	21 301	37 001	-15 700	0	-0,41
2015	38 016 059	509 999	510 003	-4	-0,0001	22 501	33 600	-11 099	0	-0,29
2016	37 988 193	500 001	500 000	1	0,0000	23 604	33 600	-9 996	0	-0,26
2017	37 957 272	480 003	480 001	2	0,0001	26 001	30 303	-4 302	0	-0,11
2018	37 920 307	449 998	450 003	-5	-0,0001	26 001	27 002	-1 001	0	-0,03
2019	37 875 974	430 002	430 002	0	0,0000	28 401	27 002	1 399	0	0,04
2020	37 829 889	420 002	419 999	3	0,0001	30 000	19 998	10 002	0	0,26

Source: Own compilation based on data from the Central Statistical Office in Warsaw

Table 18. Projected migrations in urban areas in Poland to 2020

Year	Number of population	Internal migration		Balance	Internal migration index	External migration		Balance	External migration index	Migration index
		Number of immigrants	Number of emigrants			Number of immigrants	Number of emigrants			
2008	23 256 962	269 998	312 999	-43 001	-1,8489517	10 401	24 999	-14 598	-0,63	-2,48
2009	23 200 410	278 998	319 152	-40 154	-1,7307453	12 101	26 400	-14 299	-0,62	-2,35
2010	23 145 472	287 402	323 950	-36 548	-1,5790562	13 400	28 800	-15 400	-0,67	-2,24
2011	23 093 211	295 252	327 500	-32 248	-1,3964277	13 802	28 800	-14 998	-0,65	-2,05
2012	23 041 614	299 000	328 702	-29 702	-1,289059	14 698	28 800	-14 102	-0,61	-1,90
2013	22 993 830	297 198	322 649	-25 451	-1,1068621	15 601	26 400	-10 799	-0,47	-1,58
2014	22 945 110	293 000	314 999	-21 999	-0,9587664	15 601	26 400	-10 799	-0,47	-1,43
2015	22 897 686	288 000	307 001	-19 001	-0,8298218	16 500	24 001	-7 501	-0,33	-1,16
2016	22 848 394	283 399	299 400	-16 001	-0,7003118	17 303	24 001	-6 698	-0,29	-0,99
2017	22 800 026	273 003	286 002	-12 999	-0,5701309	19 003	21 602	-2 599	-0,11	-0,68
2018	22 750 666	256 799	266 802	-10 003	-0,4396794	19 003	19 201	-198	-0,01	-0,45
2019	22 699 349	246 302	253 302	-7 000	-0,3083789	20 702	19 201	1 501	0,07	-0,24
2020	22 649 726	241 400	245 398	-3 998	-0,1765143	21 500	14 398	7 102	0,31	0,14

Source: Own compilation based on data from the Central Statistical Office in Warsaw.

The analysis of the projection of natural increase and migration for Poland and its urban areas to 2020 are presented on a Webb diagram (Fig. 32). In both cases the trends show a population decrease. However, in the case of Poland in 2008 the population decrease was a result of mainly a negative migration index (-0.55 per mille) and a slightly above-zero natural increase (0.34 per mille). At the end of the projection in 2020, the population decrease in Poland will be determined in the opposite manner – a low positive migration index value (0,26 per mille) and low negative natural increase per mille – -4,95. In the case of Polish urban areas the decrease of population in 2008 was determined by a below-zero value of the migration index and natural increase per mille (-2.48 and -0.1 respectively). At the end of the projection the value of the migration index will be a little above zero; however the value will

be below the value of the same index for the whole country, and there will be a very low value for the natural increase (5.8 per mille).

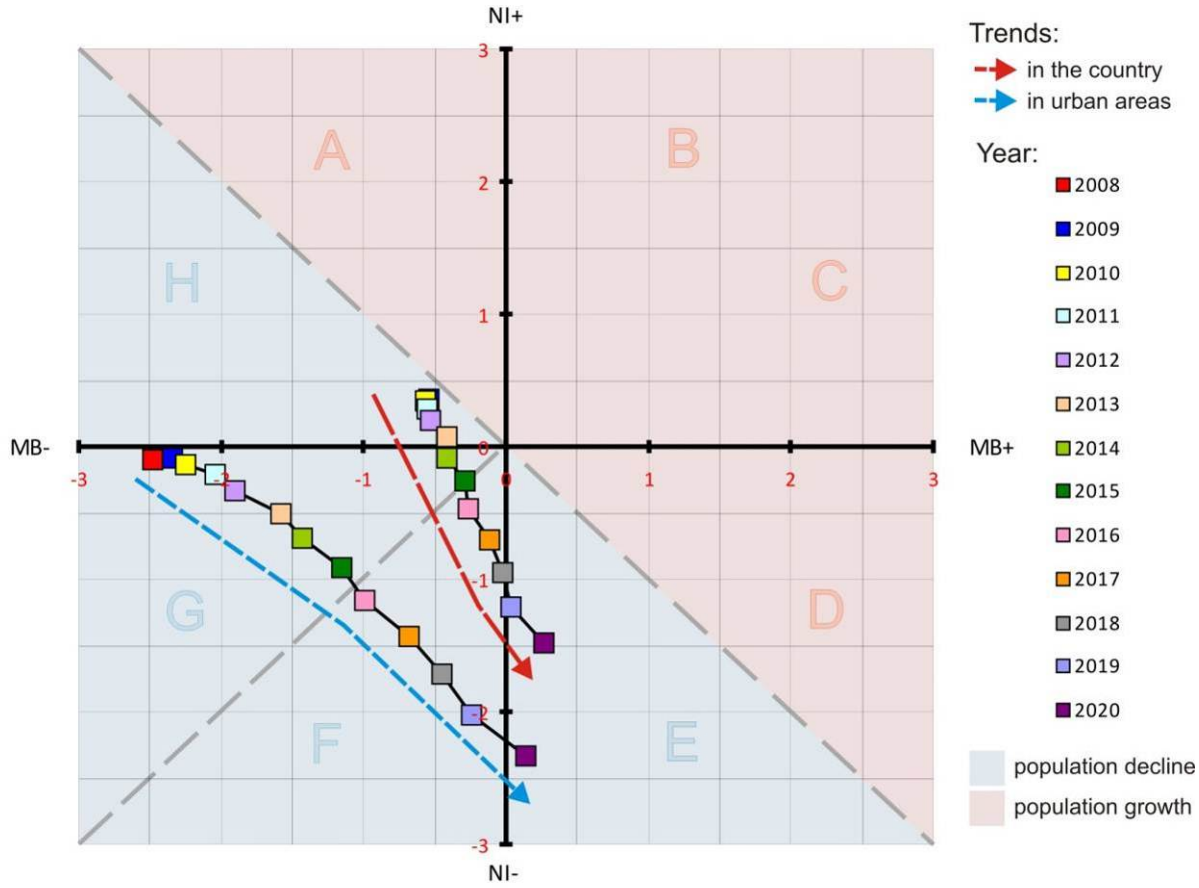


Fig. 32. Prognosis of the character of population decline to 2020 for Poland and its urban areas – Webb diagram
Source: own compilation

An important role in the future prognosis of the situation of the Polish urban areas is played by the labour market and the expected changes in the working age (18 to 59/64). It has been estimated by the Central Statistical Office in Warsaw that to 2035 there will be a significant decrease in the population of working age in the whole country (Table 19, Table 20, Fig. 33). After 2010 the pre-working age population will decrease (by 13%), but there will be a relatively high increase in the post-working age population (by 9%). At the same time the number of people of working age will increase slightly. All these processes will affect the total dependency ratio (from 61 persons from the non-working group per 100 persons from the working group in 2002, to 54 in 2010). However, right after 2010 this trend will change, and in 2011–15 the total dependency ratio of working age to the non-working age population will increase to 58, and in the next 10 years to 70. The decline in working population will, to a large extent, be caused by the fact that Poland's population will be growing older, which will cause an increase in the retired population and its growing share in the total population of the country.

Changes in the age structure of the population will result in a rapidly increasing "burden" index, i.e. the number of people at pre-working and retirement age per 100 people at working age. In 2030 it will equal to 72 persons (31 persons at pre-working age and 41 at retirement age respectively). It should be stressed that both the existing and potential labour force in Poland are structurally poorly adjusted to the needs of a modern market economy. Poles have poorer education, are less mobile, their health condition is worse, and they live shorter lives than people in Western Europe. The highest quality of human resources exists in urban agglomerations, and the lowest quality is observed in poorly urbanized rural areas that are located far from cities.

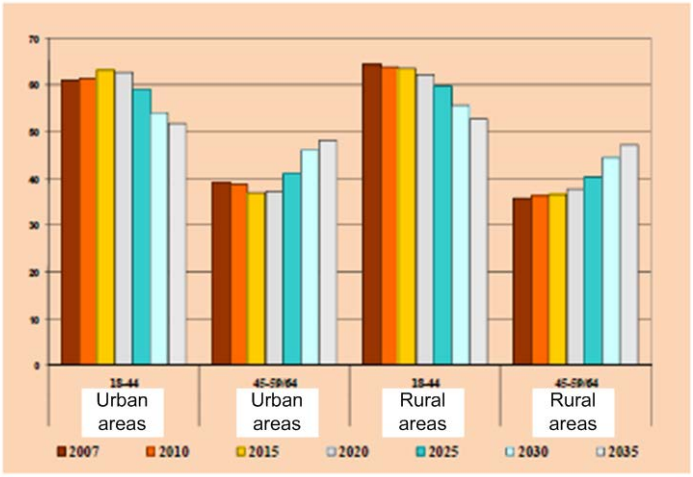


Fig. 33. Prognosis of the changes in working-age population structure
Source: Central Statistical Office in Poland

Table 19. Prognosis of the age dependency ratio in Poland to 2035

Województwa *Voivodships*	Ludność w wieku *Population at age*	2007	2008	2009	2010	2015	2020	2025	2030	2035
	OGÓŁEM *TOTAL*									
OGÓŁEM *TOTAL*	Nieprodukcyjnym *Non-working*	55	55	55	55	60	68	73	73	74
	Przedprodukcyjnym *Pre-working*	31	30	29	29	29	31	32	29	27
	Poprodukcyjnym *Post-working*	25	25	26	26	31	37	42	44	46

Source: Central Statistical Office in Poland

Table 20. Prognosis of the age dependency ratio in Polish urban areas to 2035

Województwa *Voivodships*	Ludność w wieku *Population at age*	2007	2008	2009	2010	2015	2020	2025	2030	2035
	MIASTA *URBAN AREAS*									
OGÓŁEM *TOTAL*	Nieprodukcyjnym *Non-working*	52	52	52	53	61	71	76	76	76
	Przedprodukcyjnym *Pre-working*	27	26	26	26	28	30	31	29	27
	Poprodukcyjnym *Post-working*	25	25	26	27	34	41	45	47	49

Source: Central Statistical Office in Poland

The prognosis lists the increase of the number of people beyond retirement age in the population as the major challenge for the future. This is a huge problem both for state finances as well as for the shaping of local needs (increased demand for medical services, mass transport, etc.). On the other hand, fewer people entering economically productive age may change the situation on the labour market. However, employers will have difficulties with finding workers. Although the problem of unemployment will probably disappear, employers could have problems with finding well-qualified workers.

2.6. Scenarios derived from the observed trends

The scenarios derived from the observed demographic projection for Poland and its urban areas are similar to those for most European cities, and refer to the POLYNET study presented by Hall and Pain (2006). The decreasing costs of transportation and (more particularly) communication, combined with new informational agglomeration economies, lead to the emergence of a highly complex 'space of flows' within the city (Castells 1989, p. 344). According to the study there is a pervasive geographical deconcentration within these regions, from the heavily urbanized areas which form their core, including most of the capital cites of North West Europe, with the most severe losses occurring where urban decentralization is reinforced by industrial decline and the loss of port activities. The gainers are smaller metropolitan areas within the outer parts of the same regions, which have been among the fastest-growing urban areas in Europe; in the very largest and densest urban regions, there is a process of long-distance relative deconcentration from the largest central cities to wide rings of medium-sized cities in the surrounding rural areas.

This process of 'concentrated deconcentration' generates a progressive redistribution of functions: in the core city or cities, continuing concentration of higher-order service functions (financial and business services, design services, media, higher education, health, and so on); in the secondary cities, growth of more routine functions (research and development, high-technology, manufacturing, niche role, such as university cities).

The *Concept of Spatial Development of the Country* (2006) of the Committee for Spatial Economy and Regional Planning at the Polish Academy of Sciences presents a model of spatial structure of Poland to 2030. This strategic document is a prediction of future scenarios for the whole country as well as for its urban areas.

According to the Concept there will be a stronger bias (polarization) between the metropolitan regions and their peripheries in the near future. This means the existence of developed agglomerations – the centre (pole) of development in the central part of the country and the areas of poverty (the post-socialist collective farming areas in the north-west and eastern part of the country).

Urban policy is established in the draft of the Concept of National Spatial Development up to 2030 (CNSD). The Concept determines the vision of spatial development of the country and the national spatial policy understood as all the activities undertaken by the government and

other public entities to ensure implementation of the concept of national spatial development set out in this document. The CNSD contains an Action Plan, which describes the tasks of spatial policy, as well as the tasks of the following policy sectors: transport, water management, energy, environment, urban policy, rural areas development and marine areas development policies. Moreover, the CNSD provides for an implementation system, which constitutes a platform for confronting the plans and projects of politicians and activities of public authorities at each level of their implementation. The major emphasis of the CNSD is placed on urban areas, which are recognized as one of the most important elements of the national space, as well as the drivers of development of the entire country. Therefore, one of its objectives is an increase in the competitiveness of the major urban centres[8] of Poland in the European space, at the same time maintaining the polycentric structure of the settlement pattern (Fig. 34).

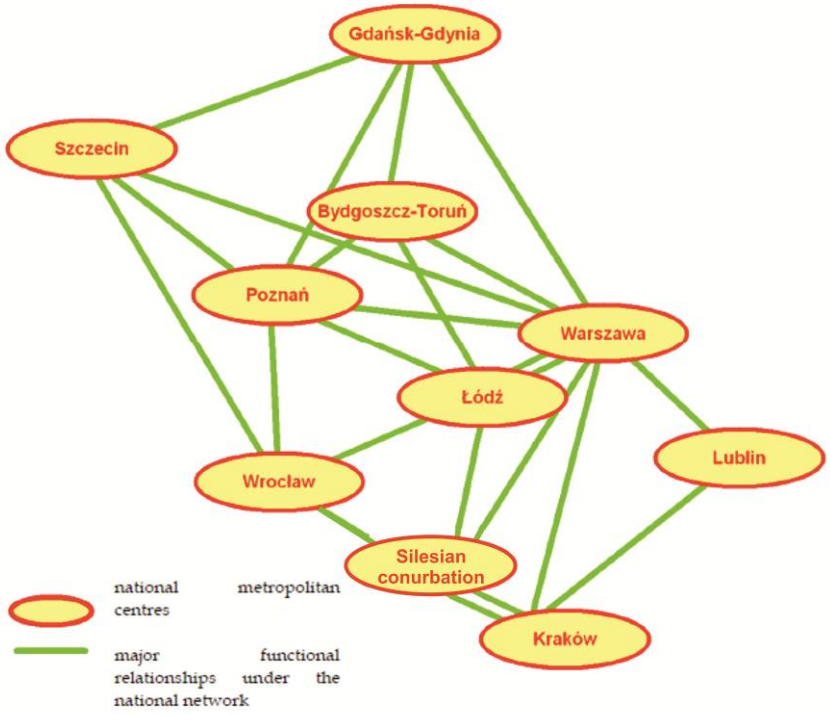


Fig. 34. Concept of the polycentric metropolitan network in 2030
Source: Concept of National Spatial Development (CNSD), MRE, CSERP PAS, 2010

Over the next 20 years the spatial policy is intended to lead to the development of a polycentric metropolitan network that forms a co-related and open network of metropolitan centres, to which other voivodeship and regional centres are attached and which is connected to the European metropolitan network.

According to the concept described in the CNSD, the polycentric metropolitan network will consist of:

[8] This covers: voivodeship centres, including pairs of cities which fulfil voivodeship functions (Gorzów Wielkopolski and Zielona Góra, as well as Bydgoszcz and Toruń) and regional centres (Bielsko-Biała, Częstochowa, Koszalin, Radom, Rybnik and Słupsk).

- Warsaw and the largest metropolitan centres with the population of the core exceeding 300 thousand: Upper Silesia conurbation (Katowice together with its surrounding area), Kraków, Gdańsk-Gdynia-Sopot, Łódź, Wrocław, Poznań, the metropolitan area of Bydgoszcz and Toruń, Szczecin, Lublin;

- other voivodeship cities (attached to the major metropolitan centres) Białystok, Rzeszów, Kielce, Opole, Zielona Góra, Gorzów Wielkopolski, and regional centres (together with their functional areas): Koszalin, Słupsk, Bielsko-Biała, Częstochowa, Radom and Rybnik;

- the above-mentioned urban areas will be supplemented with a network of subregional and local centres.

Separate activities will be targeted at the individual types of urban centres referred to above, which will, according to the guidelines in the CNSD, result in the development of a polycentric metropolitan network and thereby increase the international competitiveness of Polish cities. These activities will be carried out under the following directions:

- Intensification of functional relationships between the major centres of the settlement network (hence between the individual metropolitan centres, between metropolitan and regional centres, and between Polish and foreign metropolitan centres).

The spatial development will, in the first place, strengthen the functional relationships between the metropolitan centres, and next, it will reinforce the relationships between the metropolitan centres and other voivodeship and regional centres. These activities will be focused on achieving an increase in the number and intensity of infrastructural relationships and, above all, functional relationships within the scope of economic, social, educational and symbolic functions, including also the cultural functions and functions of the research and development sector. Next, the spatial policy will support the establishment of functional relationships with subregional and local centres.

- Support for the development of metropolitan functions of the cities. Spatial policy will support the development of metropolitan functions of metropolitan centres, as well as voivodeship and regional centres. The activities supporting the development of metropolitan functions will be tailored to the initial situation, i.e. to the level of metropolisation of individual metropolitan centres.

- Integration between functional areas and the core of the metropolitan areas. Spatial policy will support integration between the functional area and the core of the metropolitan area by means of programming activities and by strengthening the functional relationships inside the metropolitan area, which also includes improvement of transport availability inside these areas.

In order to transfer the economic growth to other urban areas and, with their intermediation, to the areas surrounding the urbanised areas, and to areas of agricultural character, the spatial policy will support the integration of lower-level urban centres into the polycentric metropolitan structure and their attachment to cities of subregional and local significance. Purposeful activities targeted at the following directions will be carried out:

1. Support for the establishment and intensification of relationships between the core of the metropolitan network and regional, voivodeship, subregional and local cities.
2. Support for the development of subregional and local centres
This activity aims at the strengthening and stabilization of the network of medium-sized cities and provision of support for establishment of their functional areas.
3. Diffusion of development from urban centres to their surrounding areas. Spatial policy will support the functional relationships both within the functional areas of regional and subregional cities and larger local cities, as well as the relationships with the space external to their functional areas.

The Concept of Spatial Development of the Country (2006) provides information to draw up two scenarios for the basic demographic situation in Poland and most of its urban areas. Firstly, a growing increase in education and income levels in Poland is expected to 2013 and in the following years. This will bring about a change in the people's lifestyles. One of the spatial effects of this change will be a growth in mobility and a tendency to have one's own family house outside the city. The settlement concentration processes result in increased costs of spatial development (e.g. ensuring access to social services) and contribute to intensification of negative phenomena (external disadvantages) such as uncontrolled suburbanization, congestion or natural environment degradation. On the other hand, insufficient efficiency of the settlement pattern operation (that is manifested in deficiencies in access to institutional and infrastructural systems of local development) makes it difficult for the lesser urban centres to obtain benefits from the development of larger centres, slows down development diffusion and decreases the range of functional relationships. The rapid suburbanization process will increase demand for the new building areas, infrastructure (electricity, sewage system) and transportation corridors (motorways as well as railways). Therefore, there is a need for intensification of spatial planning and its coordination at the local level in the metropolitan areas, which will prevent unregulated urban sprawl.

Secondly, there is documented an 'escape' of wealthy residents from the deteriorating socialist concrete blocks of flats. Currently, a few million Poles live in these blocks . It is expected that in a few years' time poor and deprived communities will be concentrated in this stock of dwellings. Opinions about the technical durability of the socialist buildings from the 70s and 80s are varied. It was assumed that they would be useable for thirty years. Today, after thirty years, people still live in them. However, degradation of many of these buildings occurs mostly due to the moving out of relatively wealthier residents. This will certainly affect the commercial value of the buildings in a short period of time. By 2013 this process will be progressing, but will not be dramatic. However, by 2025 the situation will become more difficult and then it will be necessary to take a decision to invest money in the buildings'

renovation and modernization, or to demolish them. This will be a problem which local governments and will have to cope with. Therefore, this will have to be highlighted in the strategic policies and documents at national level, because it will not be solved by local governments with their limited budgets.

The structure of the housing stock will still be in a process of differentiation. There will be increase in individual housing (mostly detached houses) and apartments, but the socialist block of flats arrangements will be in economic, social and technical danger. The heritage of the command market economy has a consequence in the form of limited housing stock. The process lasting twenty years of catching up with the Western European economies has not been enough to meet the demands of the market. There is a need to build in the future from 4 to 7 million new homes (apartments, dwellings, individual houses). The instruments which will help to improve the situation are presented in the 'Strategy of long-term perspective of housing sector development for 2005–2025' created by the Ministry of Infrastructure. The Ministry states that availability of housing is the most important factor determining mobility.
The presented scenarios in the previous parts of the report as well as The *Concept of Spatial Development of the Country* (2006) draw a future for the sustainable development of Poland and its cities which is based on:

- rapid train and motorway connections between the Polish regions and the main European economic centres, which will empower economic, scientific and cultural relations between Poland and other European Union countries;
- strengthened transportation links between Polish metropolitan regions which will trigger a synergy effect thanks to the competition and cooperation of the strongest centres of the Polish economy;
- improved transportation links between the biggest Polish cities and the peripheral areas which will strengthen spatial diffusion of economic development from the metropolitan centres;
- improved cooperation between stronger and weaker scientific centres;
- a developed national network of scientific centres supporting innovations and technology transfer which will improve the competitive advantage of Poland;
- redeveloped post-industrial regions with changed economic structures.

Realization of the future scenario based on these assumptions will result in a high rate of economic growth, an increasing level of innovativeness and the development of the information society in Poland and its urban areas.

On the basis of the demographic situation in Poland,. there can be formulated the following aims of the strategic plans for local and regional policy:

- elimination of the unbalanced male vs. female structure and ageing population problem not only in the urban areas but also in the rural parts of the country;
- reduction of the high unemployment rate in the peripheral areas of Poland (problem of further bias in city-countryside economic development);

- reduction of the depopulation process in the city centres and the dynamic increase of inhabitants in unplanned and spontaneously developing suburban areas (urban sprawl);
- monitoring of the socio-economic growth of the biggest cities in Poland and especially their metropolitan functions, based mainly on the international relations (based on the international connections via transport corridors – motorways, railways, airways);
- reduction of young people's migration abroad from all types of the settlement units;
- maintenance of sustainable economic growth, preventing strong bias in development based only on a few economic centres – the main cities of Poland, especially – Warsaw;
- maintenance and support of spatial diffusion of economic development from the main cities to the peripheral areas;
- adjustment of the labour market to the economic changes and elimination of poverty areas in cities (implementation of revitalization programmes);
- modernization of the post-socialist areas of concrete blocks of flats,
- coordination of strategic planning at different levels of governance (state, regional and local);
- preservation of the historical large cities and polycentric metropolitan regions, which should be poles of improvement in the standard of living (supplying social services, business infrastructure, culture, science, higher education, health and commerce);
- improvement of the quality of living in the cities especially for the well-educated and skilled knowledge and creative workers (creative class) as the source of the comparative advantage of the cities;
- maintenance of the even distribution of mid-size cities, which will play the role of multifunctional decision centres, specialized in high-tech industry and well developed transportation, providing a good quality of living (e.g. a high standard of cultural events);
- maintenance of a dense network of evenly distributed small, demographically well-developed towns, which should play the role of local growth poles for economic activities based on agriculture.

3. Territorial diagnostics – the competitiveness of urban areas in Poland

3.1. Development path of urban areas in Poland

Urbanisation was one of the key socio-economic processes in Europe and the rest of the world in the 20th century. In order to describe it thoroughly in Poland, an examination of historical factors behind the settlement network's development is necessary. The process of formation of the Polish settlement system was strongly affected by historical events. It can be divided into several stages. The aim of this report is to present the socio-economic situation of the urban areas in Poland and to estimate their assets. Therefore, the historical process described in the report presents the path of development of today's settlement system based on crucial historical events. It is divided into two parts: the first one relating to the period before World War II, and the second describing the situation after 1945.

3.1.1. Development of the settlement system before World War II

According to archaeological materials, it can be concluded that settlement on Polish territory began in ancient times as a result of the Old Sorbian settlers' arrival in these areas. However, more organised forms of settlement began to emerge not earlier than the 10th century, i.e. the beginning of the Polish state. At that time, the largest and the most developed settlements were the centres which had administrative (i.e. seats of the ruler) and defensive functions. They were located primarily in the Wielkopolska region (Poznań, Gniezno, Kalisz – now in the western part of Poland).

Settlement structures in Poland developed the most in the 13th and 14th centuries. During this period the conception of the city was systematised in Polish law. Because of the fact that Polish law was based mainly on the German model, most cities were planned according to Magdeburg rights and settled with German settlers. These cities had a characteristic four-sided market, a perpendicular grid of streets defining quarters of buildings. They were surrounded by walls and sometimes also by a moat. In the northern part of the country many cities were located in accordance with the Chelmno law (a modification of the Magdeburg rights – for example Toruń, Olsztyn, Warsaw) or Lubeck law (characterised by the lack of market square – for example Elbląg and Gdańsk). To this day these structures are still visible in many Polish cities, in spite of the changing concepts of urban development and war devastation.

From the sixteenth century the role of the cities gradually decreased. This was due to the growing status of the nobility, who wanted to prevent the emergence of large urban centres for fear of competition from the middle class. Distrust towards cities was also caused by ethnic factors. The major part of trade and craft was dominated by people of German and Jewish origin.

An important barrier to urban development in this period was also the small social and geographic mobility of the society, peasants in particular, because they were strongly attached to the land. Contacts with the cities of the Western Europe were scarce, causing the isolation of the national settlement network and the development of partially different socio-spatial and functional structures in cities (Węcławowicz 2003).

Despite these unfavourable processes the settlement network remained relatively well developed. In the 17th and 18th centuries, however, the urban population declined by around 10% as a result of devastating military action and economic slump. The only city that managed to create well-developed urban structures was Warsaw. In the years 1772–1795 Poland gradually lost parts of its territory and independence, and finally disappeared from the political map of Europe. The country was partitioned by three neighbouring countries – Russia, Austria and Prussia. All this substantially affected the settlement processes.

From the beginning of the nineteenth century Western Europe was experiencing very rapid economic and demographic growth connected with the Industrial Revolution. From then on, the role and importance of cities increased significantly. In Poland, this process was delayed because of the lack of independence and poor economic situation. Development and industrialisation of such cities as Łódź, Sosnowiec and Warsaw took place in the 19th century. Acts of freedom of peasants signed in all the occupied territories were extremely significant. A mass migration of population from the overcrowded and poor countryside to the cities began during this period (Węcławowicz 2003).

It should be noted that the level and direction of urban development in this period varied depending on the occupying country. At the beginning of the 20th century the most urbanised areas were under the protection of Prussia. The region of Upper Silesia, where the population living in urban centres represented approximately 50% of the total, was one of the best-developed. The lowest level of urbanisation was observed in Galicia (the area occupied by Austria) and the north-eastern territories occupied by Russia. Gawryszewski (2003) notes that only 10% of the inhabitants of these areas were living in settlement units with more than 10 thousand residents. For comparison, it can be added that at the same time 78% of the population of England lived in cities.

Further development of Polish cities was connected mainly with the increasing role of industry, which required a great number of workers. This benefited some units which were located directly on rail lines (e.g. Kalisz). Characteristic multi-family buildings for workers were built in cities. The dynamic development of urbanisation was stopped by the First World War (1914–1918). Many urban areas in Poland were directly affected by military action. They experienced serious population losses, economic and infrastructure devastation (as a result of the destruction of production facilities, looting and halted production). However, the destruction affected mainly the suburbs of cities and rural areas in Poland.
In 1918 Poland regained its independence, and after that the country was faced with the task of reintegration of the urban network. The first step was the unification of legal rules under which towns were granted city rights. According to one of the first censuses and studies of

this period there were 622 cities, and 625 settlements and small towns. They were inhabited by around 27% of the country's population. Among the urban population 66% were of Polish nationality, 26% were Jewish, 4% Ukrainian, 3% German and 1% Belarusian (Gawryszewski 2003).

Austria, Prussia and Russia had imposed their own administrative divisions on the Polish lands before World War I. This challenged the newly independent Poland with the great task of unification of this division, in order to enable the proper organisation of governmental institutions. In 1919 the new authorities set up a provisional administrative division, which in 1928, with minor changes, was adopted as a permanent arrangement. It was based on the division of the occupying countries' territories into regions. Poland during this period was divided into 16 *voivodeships* (regional level) and 227 *powiats* (sub-regional level), and the city of Warsaw with the status of a city with *voivodeship* rights. In subsequent years, however, the administrative system was often changed for social and organisational reasons.

During the period between World War I and II, the western cities in Poland were developing at a very rapid pace. This was a result of the sustainable urban development in this area. The percentage of urban population out of the whole population was relatively high, at 34%. At the same time, urbanisation in the eastern part of Poland was developing very slowly. The voivodeships which before 1918 had been a part of the Russian Empire were agricultural in nature, and their settlement network was poorly developed (only 12% of the population was living in cities). Apart from Vilnius, there were not any larger settlement centres. Small cities like Nowogrodek (6400 inhabitants), Brest (23 500 inhabitants) and Luck (23 400 inhabitants, only 22% of them with Polish nationality) became the voivodeship capitals. The settlement network of the southern voivodeships was also poorly developed. The level of urbanisation there amounted to only 21%. One of the characteristic features was the dominance of the major large urban centres – Kraków and Lvov.

Apart from experiencing demographic growth, major urban centres were spreading, often absorbing smaller towns and villages. During this period Katowice, Gdynia, Warsaw and Łódź were the fastest growing settlements. In the 1930s the process of urban growth slightly slowed down and amounted to approximately 2% (Gawryszewski 2003).

One of the characteristic features of the second half of the 19th and the first part of the 20th century was the industrial model of cities' structures and buildings. Large factories and multi-family buildings, often located near workplaces, became a common landscape. The development of rail and location of rail stations, where goods were handled, had a huge impact on spatial structures. In larger cities public transport (e.g. trams) was introduced. At first there were horse-trams, but later they became electrified. This mode of transport played a vital role in the development of the increasingly expanding cities, providing fast connections to workplaces for commuters.
In the post-war settlement system the influence of the period when Poland had not existed officially on the map of Europe and had been divided between three countries – Austria, Russia and Prussia (later Germany) – was still visible. The most developed settlement

network was in areas in the west, which had been under the rule of Prussia. The historical urban structures were preserved there. By contrast, in the areas under Austrian and Russian rule the settlement system was significantly thinned out in comparison to the historical forms of settlement in these areas (Dziewoński, Jerczyński 1977).

3.1.2. Development of the settlement system after 1945

As a result of World War II many cities fell into decline, and some lost their importance. New cities, often of great significance, like Wrocław and Szczecin (which had belonged to Germany) and Gdańsk (which in the years 1918–1939 had had free city status) appeared in the settlement structure. As a result of changes in the eastern borders, Poland lost to the Soviet Union two cities with over 200 thousand inhabitants – Vilnius and Lvov, which were key elements in the national urban network. A slow crystallisation of the settlement network was started in the post-war years. With minor changes, this network is practically present to this day (Wendt 2001).

Changes in the country's borders forced amendments to the administrative division (which was established in the inter-war period). In the years 1949–1950 an administrative reform was carried out. It resulted in the creation of 17 *voivodeships*. The three-level hierarchy (*voivodeships, powiats* and communes) was kept. Such cities as Koszalin, Opole and Zielona Góra were granted the rank of *voivodeship* capitals. At that time, they were inhabited by less than 50 thousand people. As a result, the three-level hierarchy of the administrative divisions varied substantially. The population numbers at the same level of administrative division were significantly different across the country (North, 1957, Wendt 2001). These elements undoubtedly had an influence on the national structure of settlement networks.

The post-war development of Polish towns and cities may be divided into several periods. The first stage took place in the second half of the 1940s, and was connected mainly with the repair of war damage and cities' adoption of the principles of the new socio-economic system. New residents began to come to the deserted towns and villages. New buildings were raised and old ones rebuilt (Węcławowicz 2003).

The state policy of socialist industrialisation strongly affected the size and shape of cities. Malisz (1978) noted that it involved a strong process of urbanisation, especially in areas with a rich raw material base, where new industrial districts were being developed. In other areas cities developed slowly, despite the centrally stimulated development of industry. Malisz divided the country into three zones, each having a different pace of urban development during the industrialisation of the country. The first one includes the Upper Silesian Industrial District and surrounding areas (in the south-western part of Poland). The urbanisation processes there took place dynamically. This can be confirmed by the highest population density in that area and the largest amount of cities. The second area (according to Malisz) was located in the southern and central Polish territories. Typical of these areas was the prevention of development of large agglomerations and promotion of medium-sized cities with high industrial importance. The third area included the north-eastern and north-western

parts of the country. Despite the forced urbanisation process, the rates of urban population were the lowest there. Large urban centres such as Szczecin and Białystok were developing rapidly.

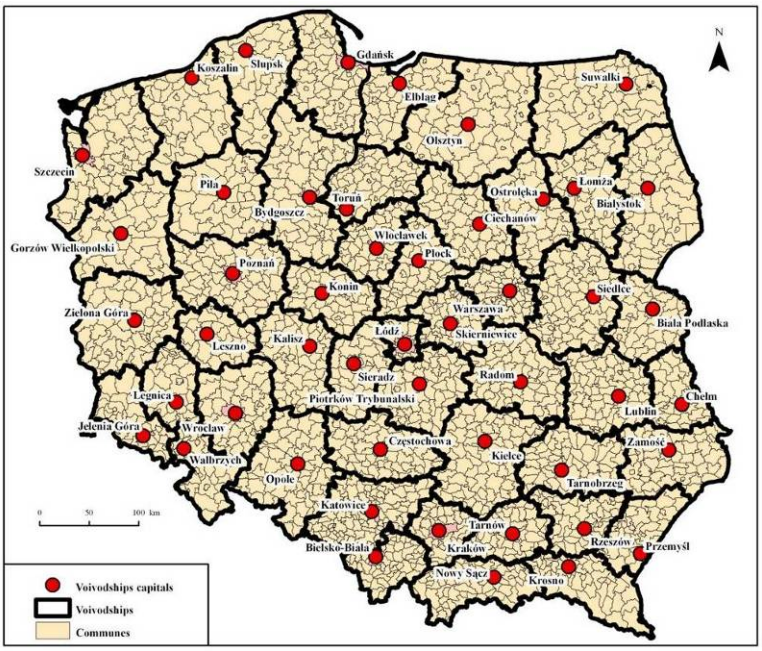


Fig. 35. Administrative division of Poland in 1975–1999
Source: own compilation

The subsequent years (1970s and 1980s) can be characterised by a weakening urbanisation growth. The suburbanisation process on the outskirts of large urban centres had begun (Parysek, Kotus 1997). The introduction (in two stages in 1973–1975) of administrative reforms in the country played a vital role. As a result of the creation of 49 voivodeships, many medium-sized urban centres rose to the rank of major cities with administrative functions (Fig. 35). Undoubtedly, it accelerated their pace of development significantly, but unfortunately often at the expense of other cities. During this period and later on many changes were made at a lower administrative level. The number of cities had been changing frequently either due to the granting or removal of city rights, or merging with other major centres. These changes show that the administrative division of the country was lacking in stability (Korcelli, Gawryszewski, Potrykowska 1992).

The period between 1945 and 1989 featured a varying pace of development in different categories of cities. Some of them were expanding, while others experienced periods of stagnation or decline. As Parysek stated (1995, p. 59), this was caused by many factors, including the "systemic conditions and acceptance (in fact an enforcement) of an inefficient model of development and functioning of the economy, poor economic situation of the country, the place in the military-economic group of countries of the Moscow bloc, current international relations, changes in the territorial division of the country and the totalitarian model of government." The largest growth of large cities took place in the 1950s (about 5% p. a.) and in the 1970s (4% p.a.). Small towns (less than 20 thousand inhabitants) experienced a

period of prosperity at the beginning of the 1950s, when the population was increasing at an average rate of 5% per year. Subsequent years, however, saw their gradual decline, mainly due to the outflow of population to larger centres or emigrations abroad. Medium-sized towns (20–100 thousand inhabitants) had a low rate of development until the 1970s. From the 1980s their population began to increase slightly faster (about 2% per annum), which can be partly explained by the fact that some of these centres gained the status of voivodeship cities in 1973 (Korcelli, Gawryszewski, Potrykowska 1992).

The development of cities in Poland from 1945 to 1989 can be summed up by pointing out the most important trends in the processes of urbanisation in this period (Parysek, Kotus 1997):

1. Post-war urbanisation had a varied, systematically decreasing pace;
2. There are two characteristic stages of this process: the dynamic urbanisation (1946–1965) and suburbanisation (1965–1990), each of them consisting of two phases: improvement and reduction of the growth dynamics;
3. In urbanisation processes each city category played a different role; this was reflected by diverse growth dynamics and level of population density;
4. Although differed size categories had the highest growth dynamics in different periods (the largest city in 1950–1955, very large in 1955–1960, large in 1960–1965, medium in 1965–1970, large in 1970–1975, very large in 1975–1980, large, very large and medium in 1980–1985, and large and small in 1985–1990), the processes of population density affected only the largest cities; the process of urbanisation of the country took place primarily owing to the population density in major cities;
5. The post-war period was marked by the demographic crises of Polish cities, which were in a phase of depopulation;
6. Each size category of cities had a specific growth trajectory, but large cities and the largest cities had a wave-like (or phased) growth, and small towns were declining;
7. Urban development was very dynamic; it was observed that the process started to slow down from 1980 – the growth dynamics of particular cities substantially decreased. Disproportions in these dynamics disappeared.

The development of large urban centres in the period from 1945 to 1989 took place fairly rapidly, despite the unfavourable policy of central government. Most attention was paid to the development of major industrial centres with a rich resource base. In the 1970s special attention was paid by the communist government to the Upper Silesia Industrial Zone (Górnośląski Okręg Przemysłowy) and to the development of its centre in Katowice. Large funds for investment were directed there, many jobs were created, and as a result people started to migrate to that and other industrial areas. Despite all this, the largest urban areas were also able to attract people because of their huge job market, a higher standard of living and access to more services (Karlowicz 1978).

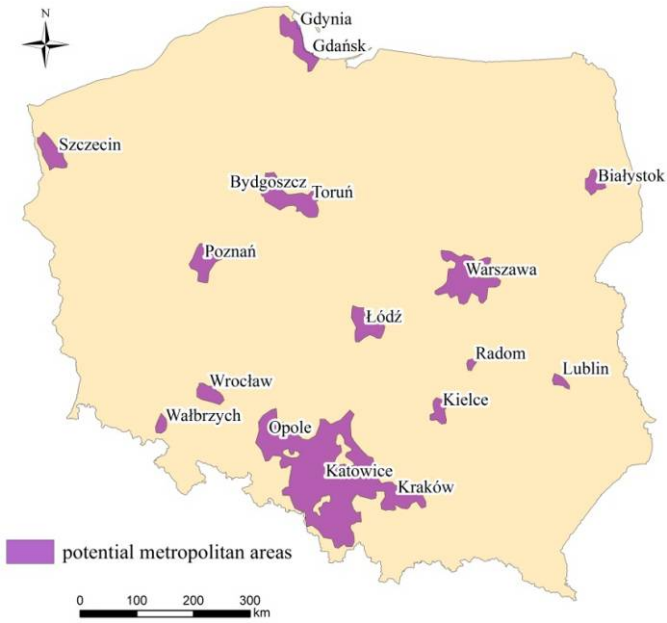


Fig. 36. The potential centres of growth in the Polish settlement system in 1975
Source: Dziewoński (1967)

Until 1975, large agglomeration areas also played an important role in the settlement system of the country because of their administrative functions (Fig. 36). In this period their development had the highest dynamic rate. In the face of political and economic crisis in the early 1970s the central authorities decided to reduce the strong position of regional centres. Administrative reforms and the establishment of 49 voivodeships were supposed to make these units more dependent on the national authorities, among other things due to a greater redistribution of funds for investment (Wendt 2001).

A great number of economic and social processes affected cities in Poland during this period, and changed their internal structure significantly. This was particularly visible in the large urban centres that are essential in the settlement system of the country. Large, homogeneous areas with an insufficient service base came into being there. Cities had their specific functions (Jałowiecki, Szczepański 2006). The division into residential and industrial areas was becoming visible, which caused the destruction of historical structures and generated numerous social (see Karlowicz 1978, Malick 1978, Jałowiecki, Szczepański 2006) and transport problems (due to the necessity to commute from distant residential areas to workplaces). The most important production functions were located in preferential areas (Węcławowicz 2003). The residential areas were located on the outskirts and often featured the modernist and socialist-realist architecture of the period. Similar blocks of flats built from large slabs were dominant. However, investment in infrastructure and development of the public service sector (e.g. public transport) did not keep pace with the general growth.

The policy of industrialisation and urbanisation of the country implemented during this period also had a strong impact on the development of smaller urban centres. Some cities experienced significant development, which was caused by large industrial investment and the construction of new housing for workers. They were developing relatively fast, but (according

to Szymańska, Grzelak-Kostulska 2005) not always in a sustainable manner. However, not all cities could benefit from the national funds for investment in industrial development.

The situation of small towns was particularly bad. After World War II most of them were destroyed and depopulated. In addition, the process of nationalisation of the economy meant that they had limited social and economic functions connected with the administration of agriculture. As a result, many small cities declined even more after the war, and their crisis-like situation in many cases has continued until today (Szymańska, Grzelak-Kostulska 2005).

3.2. Evaluation of the competitiveness of Polish regions

Development of urban structures in Poland after 1989 was strongly affected by the processes of transformation which occurred in Poland in the late 20th and in the early 21st century. Węcławowicz (2003) distinguished three most important processes: the abandonment of the communist system, European integration, and globalisation. This led to the emergence of new fields of competition between cities at different hierarchical levels in the settlement system of the country. Through the processes of integration and globalisation, Polish cities have begun to develop links with European cities, often at the cost of ties with the national centres.

The development of urban centres in Poland since 1989 began similarly to the processes occurring in the cities of Western Europe. National borders were no longer barriers isolating Poland from economic and social relations with European cities and from contemporary trends in urban planning. The current shape of the settlement system and urban areas in Poland, therefore, appears to be the sum of current trends in European visions of cities, and the Polish heritage (Parysek, Mierzejewska 2005, Stryjakiewicz et al. 2007).

Particularly important for organising the country's settlement network and regional processes was the introduction of administrative reform in 1999. The two-level division of the country (49 voivodeships and 2489 *gminas*) in the new socio-economic situation became uncomfortable and untenable (Wendt 2001). It was decided to return to the three-level territorial division that existed before World War II, i.e. voivodeships, powiats and gminas (corresponding to the levels of NUTS 2, NUTS 4 and NUTS 5 respectively; Table 21). All of these units would be governed by elected local authorities. In each voivodeship there was also a regional representative appointed by the central authorities – the *voivode.*

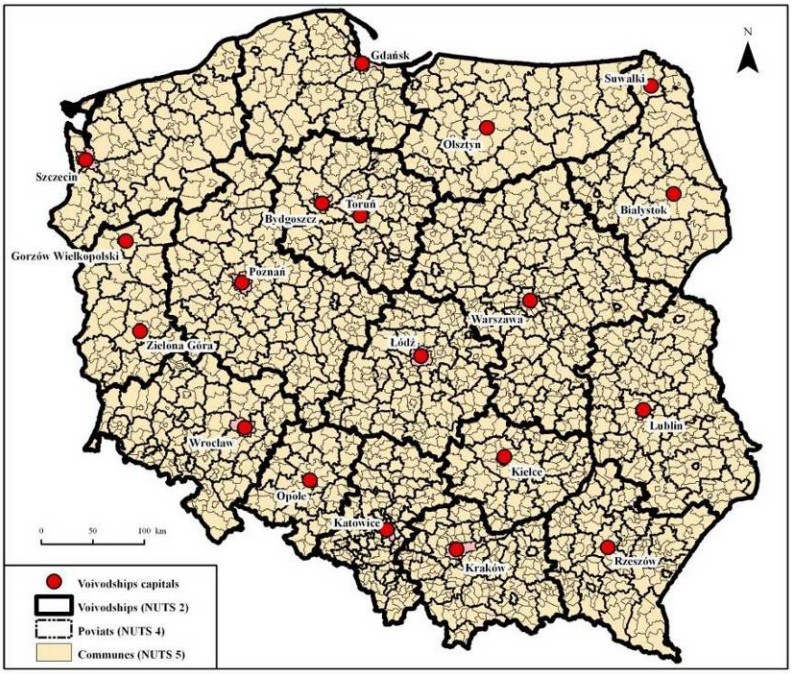


Fig. 37. Administrative division of Poland after 1999
Source: own compilation

Tab. 21. Administrative division of Poland according to the EUROSTAT classification

Level	Units	Number
NUTS 1	macroregion: 2–3 voivodeships	6
NUTS 2	region: voivodeship	16
NUTS 3	subregion: group of powiats	66
NUTS 4	powiat	379
NUTS 5	gmina	2,478

Source: Ministry of Regional Development

16 voivodeships were set up as a result of the reform (Fig. 37). Their capitals became centres of supra-regional or regional level importance. As a result, many medium-sized cities lost their importance as they no longer had administrative functions at the highest level. In the case of two voivodeships (Kujawsko-Pomorskie and Lubuskie), mainly due to social reasons, it was decided to divide the institutions of regional administration between two cities. Toruń and Zielona Góra became the seats of the local government, and Bydgoszcz and Gorzów Wielkopolski were the seats of the *voivode* (representative of the central authorities).

In the case of the second-level administrative units – *powiats* – it was decided to create 379 units. 65 of them are cities with powiat status. Their area includes only large urban centres, and the local authorities combine the functions of powiat and gmina. The basic tasks of the powiat authorities are focused primarily on education, health, social welfare, environmental protection, combating unemployment, transport and others.

The basic units of local government are the *gminas*. Their number amounts to 2,478. They perform tasks connected with affairs of a local nature. As a result they are primarily responsible for land management, education, health care, local transport, culture, tourism,

municipal infrastructure (roads, waterworks, electric energy supply, heat and gas, waste disposal) and tasks assigned by the central government.

The territorial division established in 1999 considerably improved the functioning of the administrative sphere in Poland. It made it possible to develop a coherent and rational regional policy. The new division initiated and forced new mutual cooperation in the settlement system of the country. Not without significance is the fact that the new administrative structure is better matched to European standards and it facilitates processes of management and distribution of EU funds (Kaczmarek 2005).

The development of regional or sub-regional centres of growth such as metropolitan areas or cities depends strongly on the socio-economic situation of their regions: the voivodeships in Poland's case. The emergence of strong urban areas (metropolitan regions) is possible in regions which create strong socio-economic peripheries, which reinforce the urban centres with functional economic links. The following chapter presents the differences in the socio-economic development of the Polish regions (voivodeships) and the development of urban areas which are growth centres of these regions. It provides information for the evaluation of the competitiveness of Polish urban areas, their key assets and their future development scenarios.

To present the role of the metropolises in regions and the role of a region's space for its capital the analysis is performed at two spatial levels:

- at first, selected aspects of socio-economic growth are presented at regional level;
- then similar characteristics are provided for nine main regional centres of growth.

3.2.1. Economic competitiveness

Economic competiveness is one the most important elements of the analysis. Strong economic regions are mostly those with developed urban areas which are growth poles for the economy. The state and prospects of the job market, entrepreneurship and average salaries can directly influence further development or stagnation. In the analysis seven indices were used to evaluate the economic competiveness of the Polish regions' economies: % of working people in the population, employment dynamics in 1998–2008, unemployment rate, GDP per capita, income per capita (in zloty), the number of enterprises per 1000 people, and the proportion of enterprises with foreign capital out of the total number of enterprises. The values of the indices for all voivodeships are contained in Appendix 1.

Mazowieckie, containing the country's capital, Warsaw, is dominant in nearly all categories. Wielkopolskie, in comparison with other voivodeships, has a good economic situation. The unemployment rate is the lowest in the country, and for the majority of the remaining variables this region is highly ranked.

Using Principal Component Analysis (PCA), the initial matrix of variables was reduced to obtain one principal component – economic situation – which explains the total variance at a

level of 67%. It is highly negatively correlated with such variables as (Table 22): GDP per capita, employment, average income per capita and total number of enterprises. There is a strong correlation with unemployment rate. The dynamics of employment is the least important variable (negatively correlated).

Table 22. Principal Component Analysis in the category 'economy'

Principal component	Correlated characteristics
Factor 1 (Economic situation)*	Positive correlation - unemployment rate (r=0.65). Negative correlation - GDP per capita (r=-0.98) - the number of employees per 100 people (r=-0.91) - income per capita (r=-0.90) - the number of enterprises with foreign capital per 1 000 people (r=-0.86) - the number of enterprises per 1 000 people (r=-0.80) - employment dynamics in 1998–2008 (r=-0.55)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

When comparing the values of components for the regions, the marked dominance of Mazowieckie can be observed. This is the strongest region in terms of economy, owing to the potential of the Warsaw metropolis, with about 3 million inhabitants, comprising the most important administrative functions as the capital of Poland, and other functions including economic, trade and cultural.

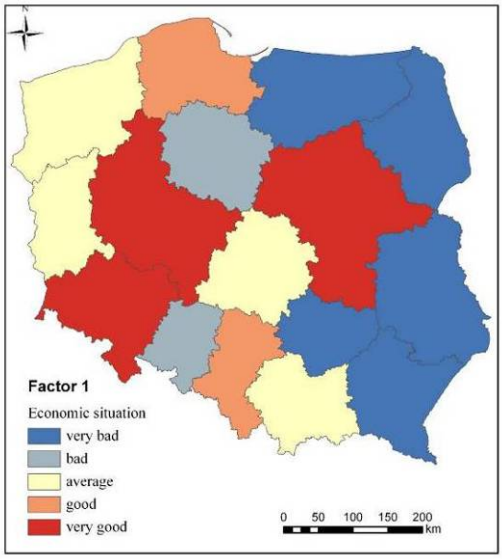


Fig. 38. The economic situation in Polish regions in 2008
Source: own compilation

The analysis also shows a good economic situation in Dolnośląskie, Wielkopolskie, Pomorskie and Śląskie (Fig. 38). In case of the first three their good economic situation is related to the dominance of the strong growth centres – the metropolises of Wrocław, Poznań and the Tricity (Gdańsk, Gdynia, Sopot). In the case of Śląskie the situation is mainly the effect of the mining industry heritage based on the profits from coal and the huge socio-

economic potential of the population (the highest urbanisation ratio and the highest population density in the country).

According to the analysis, the economically weakest regions in Poland include the eastern voivodeships such as Warmińsko-Mazurskie, Podlaskie, Lubelskie, Świętokrzyskie and Podkarpackie. In case of these voivodeships central government aid was necessary to improve their economic competiveness, e.g. introduction of the EU-funded programme called Development of Eastern Poland (Narodowe Strategiczne Ramy Odniesienia 2007–2013). The objective of the project was to increase the competitiveness of these regions mainly through building the necessary technical and social infrastructure.

A region's innovativeness is a category strongly linked to the economy.. The level of innovativeness depends on the strong scientific and university centres, which are mainly in urban areas. An important element of the current and future socio-economic development of the regions is their innovativeness. Investments in new technologies and scientific research bring benefits in the future through improvement of the economic situation as well as higher standard of living (Męczyński 2007). Therefore, such variables as innovativeness financing and R&D, the number of students at technology schools, employment in R&D and the number of patents were listed in a separate category 'innovativeness'. The values of the variables for all voivodeships can be found in the appendix.

In terms of variables pertaining to innovativeness (Table 23) Wielkopolskie is a region with a rather potential in this category. Its position is lower in terms of the values of indices related to innovativeness compared to Mazowieckie, Dolnośląskie and Małopolskie. Only employment in R&D and financing of that sector in are at a relatively high level in Wielkopolskie.

Table 23. Principal Component Analysis in the category 'innovativeness'

Principal component	Correlated characteristics
Factor 1 (The level of innovativeness)*	Negative correlation - innovations financing per 1 person (r=-0.88) - employment in R&D - % of working people (r=-0.90) - R&D financing per 1 person (r=-0.97) - number of patents per 10000 people (r=-0.85)
Factor 2 (Education of technical specialists)*	Positive correlation - the number of students of technological faculties - % of total (r=0.96)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

PCA in the case of the category 'innovativeness' led to the obtaining of two principal components: 1) the level of innovativeness and 2) education of technical specialists. The first explains the total variance at a level of 66%, the second 21%. The first component is highly negatively correlated with four variables: financing of the R&D sector, employment in R&D, financing of innovations and the number of patents. The values of the obtained principal components are presented in the appendix.

As the result of the analysis of the first principal component, the level of innovativeness, again Mazowieckie turned out to be a leading region (Fig. 39). Also highly ranked are such regions as Małopolskie, Pomorskie, Śląskie and Dolnośląskie. An average level of innovativeness was found in Wielkopolskie. The worst situation is found in the regions without strong urban centres (Lubelskie, Lubuskie, Warmińsko-Mazurskie).

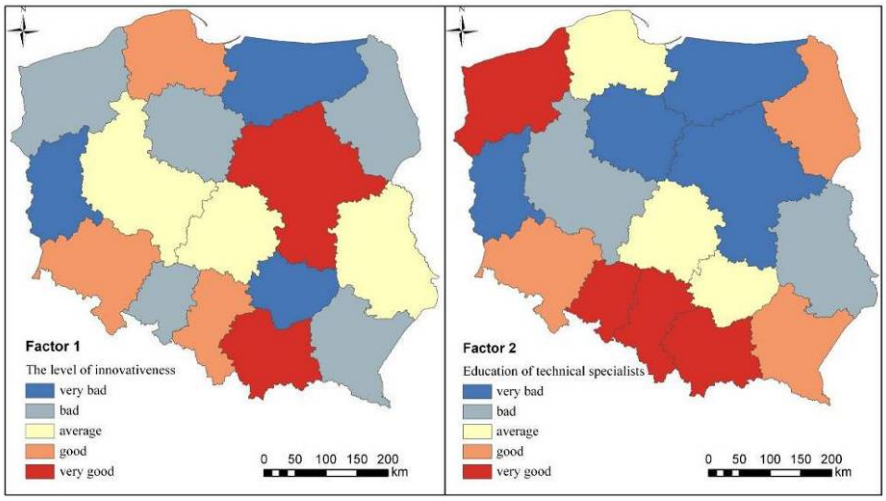


Fig. 39. The level of innovativeness and education of technical specialists in Polish regions in 2008
Source: own compilation

The second principal component – education of technical specialists, highly correlated with the number of students at technology universities – reached its highest values in Śląskie, Opolskie and Zachodniopomorskie. This reflects the high number of technical faculties in these regions, which is the result of the demand for educated students for the regional industry, as well as the relatively small number of large universities which teach other specialities. This is especially relevant in case of Śląskie voivodeship, which is one of the most industrialised regions of Poland. However, the high number of students at the technical universities in this region reflects also a high number of young people interested in the new type of industries, requiring higher education qualifications, located in the region.

3.2.2. People – demographic and human resources

Socio-economic development and prospects for the future are determined to a great extent by the potential of people in a region. The values of statistics related to the education, migration tendencies and people of economically productive age are good prognostics for the future scenarios of social capital development in the regions (values of the indices are given in the appendix).

In comparison with other regions, Wielkopolskie voivodeship is in a favourable position concerning the values of the demographic characteristic indices. In particular, its favourable migration tendencies are distinctive (for both permanent and daily migrations) as well as the

general population growth. Wielkopolskie is also a leading region in terms of people graduating from university.

In order to reduce the number of characteristics and to compare the situation between the analysed regions, PCA was applied. As a result, two principal components were obtained: migration tendencies and demographic potential (explaining the total variance at a level of 48% and 30% respectively; Table 24).

The first component – migration tendencies – is highly positively correlated with four variables: migration balance, population dynamics in 1998–2008, number of daily migrations to work and number of university graduates. The second component – demographic potential – shows a high level of correlation with the number of people of economically productive age (negative correlation) and the number of people per household (positive correlation). The values of particular components are presented in Table 24.

Table 24. Principal Component Analysis for regions in the category 'people'

Principal component	Correlated characteristics
Factor 1 (Migration tendencies)*	Positive correlation - migration balance per 1 000 people (r=0.96) - population dynamics in years 1998-2008 (r=0.86). - the number of daily migrations to work – balance (r=0.77) - high school graduates per 1 000 people (r=0.77)
Factor 2 (Demographic potential)*	Positive correlation - the number of people per household (r=0.90) Negative correlation - number of people in productive age per total population (r=-0.85)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

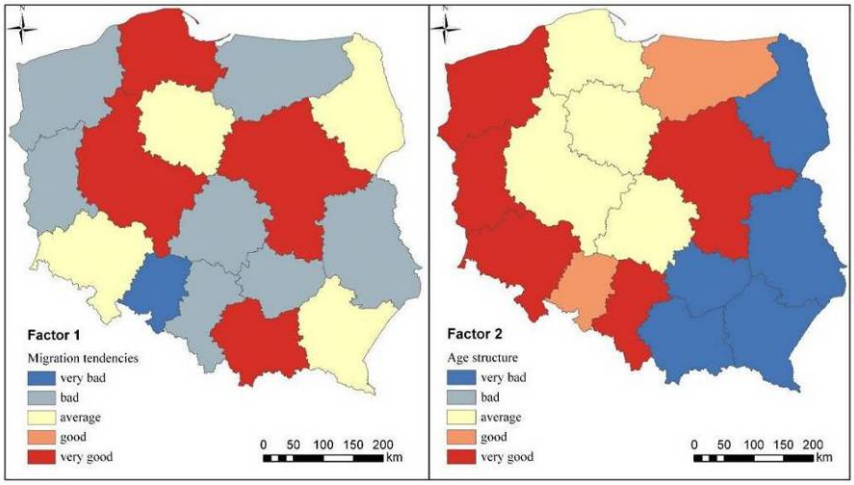


Fig. 40. Migration tendencies and age structure in Polish regions in 2008
Source: own compilation

It can be concluded that the voivodeship with the best situation in the people category is Mazowieckie (Fig. 40). A relatively good demographic position for the socio-economic situation is also visible in Wielkopolskie, Pomorskie and Małopolskie.

The weakest situation is found in small voivodeships without a strong urban centre, i.e. Opolskie and Świętokrzyskie. The situation of the south-eastern regions is also not favourable as they have a high economic burden of population (a low number of people at economically productive age).

3.2.3. Society – social and political competitiveness

The level of development of local society has a significant influence on the social and political competitiveness of the regions and their urban areas. This is also a category which, to a great extent, determines their future. The main objective of the local government is to provide the inhabitants with a safe living place, good quality healthcare system, places in social welfare homes, but also to provide good quality cultural events. A category 'society' was created on the basis of eight indicators: crime detection rate (in %), number of visitors to cinemas per 100 people, number of art exhibitions per 10000 people, the number of visitors in cinemas per 100 people, number of cinemas per 10 000 people, number of beds in general hospitals per 10 000 people, number of infant deaths per 10 000 births, number of places in social welfare houses and facilities per 10 000 people. The values of the indices are given in the appendix.

PCA led to data reduction and the identification of 4 principal components (Table 25): 1) security level, 2) quality of medical care, 3) access to medical services and 4) access to cultural facilities, which explain the total variance at a level of 28%, 21%, 18% and 12% respectively. The first one shows a high positive correlation with crime detection, and a high negative correlation with the number of cinema visitors. The second one is highly negatively correlated with the number of infant deaths and the third one with beds in general hospitals.

Table 25. Principal Component Analysis in the category 'society'

Principal component	Correlated characteristics
Factor 1 (Security level)*	Positive correlation - crime detection rate in % (r=0.92) Negative correlation - the number of visitors in cinemas per 100 people (r=-0.90)
Factor 2 (Quality of medical care)*	Positive correlation - the number of art exhibitions per 10 000 people (r=0.59) - the number of places in social welfare homes and facilities per 10 000 people (r=0.59) Negative correlation - the number of infant deaths per 10 000 births (r=-0.78)
Factor 3 (Access to medical services)*	Positive correlation - the number of crimes per 100 people (r=0.55) - the number of libraries per 1 000 people (r=0.54) Negative correlation - the number of beds in general hospitals per 10 000 people (r=-0.80)
Factor 4 (Access to cultural facilities)*	Negative correlation - the number of cinemas per 10 000 (r=-0.50)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

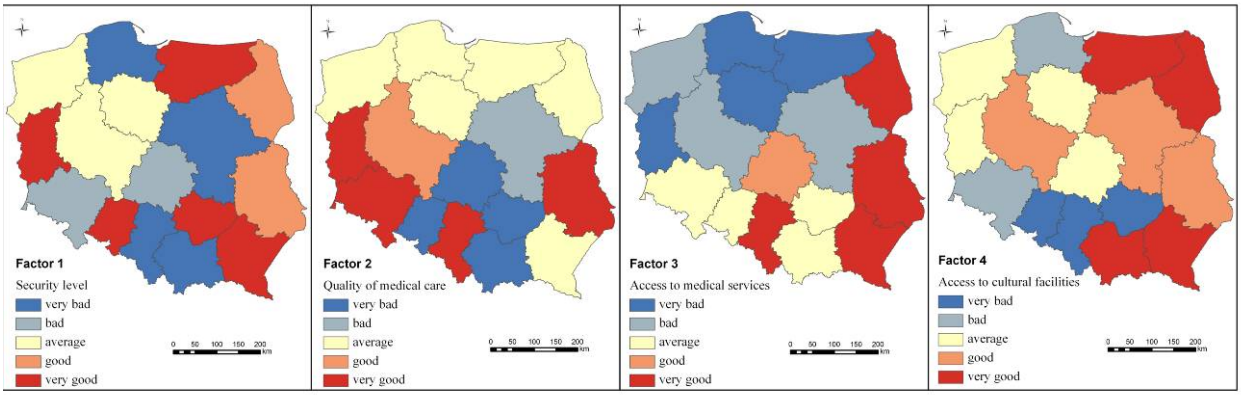


Fig. 41 *Security level, quality of medical care, access to medical services and to cultural facilities in the main regional centres of growth in 2008*
Source: own compilation

On the basis of the analysis it is very difficult to indicate which regions are dominant in the society category (Fig. 41). This is signified, for instance, by the large number of obtained principal components. For example, the voivodeships which dominate in terms of cinema visitors (Mazowieckie, Pomorskie, Śląskie and Małopolskie) vary substantially as regards other points, and they also have some of the highest crime figures.

The next category – 'governance' – is based on two elements: budget variables of administrative units and activity of inhabitants (Table 26). The first of these elements is explained by the level of expenditure and income of a local authority. These elements may indicate not only the economic situation of a region but also its attitude towards investment policy or rationality in spending. The activity of inhabitants is reflected by the number of non-profit organisations and percentage turnout in the last election.

Table 26. Principal Component Analysis in the category 'governance'

Principal component	Correlated characteristics
Factor 1 (Local budget condition and community's activity)*	Positive correlation - administrative district incomes per 1 person (r=0.90) - administrative district expenditure per 1 person (r=0.85) - the turnout in the last local government elections (r=0.79) - the number of non-profit organisations per 1 000 people (r=0.54)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

In the PCA one factor – local budget conditions – was distinguished and explains 61% of the total variance. It is highly positive correlated with expenditure and income of voivodeship budget and the turnout in the last election.

The highest value of the principal component was reached in Mazowieckie, owing to its very high income and at the same time the highest expenditure (Fig. 42). The activity of inhabitants is also at a high level there.

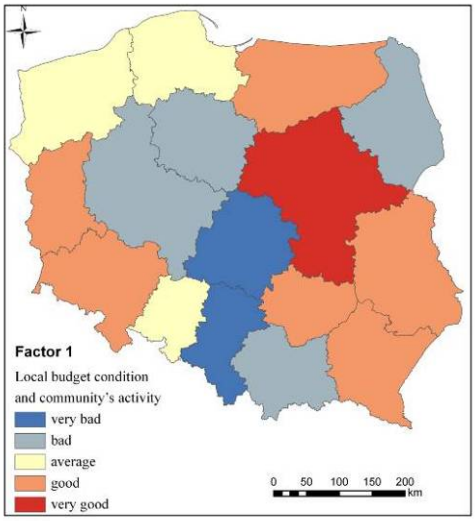


Fig. 42. Local budget condition and community activity in Polish regions in 2008
Source: own compilation

Three regions are placed after Mazowieckie*:* Lubuskie, Warmińsko-Mazurskie and Podkarpackie. A relatively low number of population and a strong determination to develop the formerly economically backward regions mean that expenditure and income of voivodeship budgets per 1 person are relatively high. The lowest values were recorded in Śląskie and Łódzkie. This is a result of their poor economic situation and high number of population. Wielkopolskie obtained average values. Only the number of non-profit organisations is relatively high there.

3.2.4. Place and environmental competitiveness

Such elements as dwelling conditions, quality of public and environmental space, public transport and trade spaces determine the development of regions. All these elements contribute to the standard of living in a given area, and in the *Silicon Valley Index* they are put together under the category "place and environmental competiveness". They also determine the attractiveness of particular places or areas for new inhabitants.

Wielkopolskie is strong in terms of the number of new buildings and homes. The figure reflects a high increase in new homes compared to 2001 (Rydzik W., 2008). For the remaining elements it records average values in comparison with other voivodeships.

On the basis of the PCA three principal components were obtained (Table 27): 1) housing development, 2) retail development, 3) access to public transport, which explain the total variance at a level of 31%, 23%, 20% respectively. The first one is highly negatively correlated with the number of new homes, and a little less highly negatively correlated with the number of lodgings for tourists. The second shows a statistically relevant positive correlation with the number of new buildings and the number of people per 1 shop. The third factor has a high positive correlation with legally protected areas and a high negative correlation with the number of public transport lines.

Table 27. Principal Component Analysis in the category 'place'

Principal component	Correlated characteristics
Factor 1 (Housing development)*	Negative correlation - the number of new homes per 1 000 people (r=-0.82) - the number of lodgings (for tourists) per 10 000 people (r=-0.66) - the number of new buildings per 1 000 people (r=-0.61)
Factor 2 (Retail development)*	Positive correlation - the number of people per 1 shop (r=0.66) - the number of new buildings per 1 000 people (r=0.64)
Factor 3 (Access to public transport)*	Positive correlation - legally protected areas due to unique environmental value in % (r=0.72) Negative correlation - the number of public transport lines per 10 000 people (r=-0.74)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

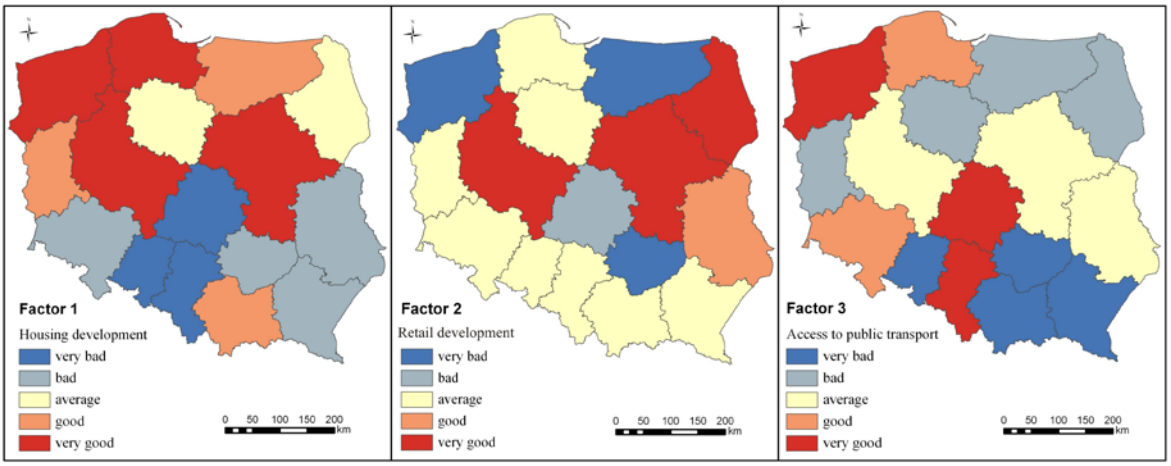


Fig. 43. Housing development, commercial development and access to public transport in Polish regions in 2008
Source: own compilation

In terms of the first principal component – housing development – it can be concluded that voivodeships close to the sea are dominant, mainly owing to their rich tourist base (Table 43). Tourism (mainly in the highlands) is also very important for Małopolskie. Kraków, apart from being a robust economic centre, it is also an interesting place for tourists, and attracts creative people, even from abroad, causing demand for new homes. Moreover, apart from being one of the most important cultural centres in Poland, the city offers a high quality of life (Korzeniak, Rozenau-Rybowicz, Zborowski 2008). Mazowieckie and Wielkopolskie also have much to offer for tourists – in this case mainly business tourism. Warsaw and Poznań are also strong economic centres attracting new inhabitants. New homes are being built as a result of the desire of current inhabitants to improve their standard of living.

The second component – retail development – reached the highest values in Mazowieckie, Wielkopolskie (owing to the high development of trade and building industry) and in the weakly populated Podlaskie. The weakest development of these elements can be observed in Zachodniopomorskie and Świętokrzyskie.

The third component – access to public transport – reaches the highest values in the voivodeships of southern and eastern Poland, because of the fact that there are many legally protected areas. The lowest values, due to the high density of the public communication network, are recorded in Śląskie, Łódzkie and Zachodniopomorskie.

3.3. Development of urban metropolises in Poland

The systemic transformation in Poland influenced development in the largest urban areas the most. Their rapid development was caused by the establishment of local government structures, the introduction of a market model in the economy, and their great economic and population potential (Stryjakiewicz et al. 2007).

Transformations in spatial structures of large cities are a very long and costly process. Twenty years of systemic transformation were not enough to achieve a complete reorganisation of space in urban areas and create fully functional metropolitan regions, especially in the eastern part of Poland. The information provided in section 3.1 reveals that these regions are not able to support strong economic urban centres. This is also a result of the studies conducted by the Institute of Geography and Spatial Organisation of the Polish Academy of Sciences (Fig. 44). On the basis of the analysis it can be stated that only nine urban centres have more than regional and supra-national functions, and they can be considered as the metropolitan areas. None of them is located in the eastern part of Poland. Even the capitals of the regions of the eastern part of Poland were not able to develop functional links beyond the administrative borders of the regions (Fig. 45).

Major investments (including those involving foreign capital) are usually situated in urban areas in the western part of Poland, which are also a richer base of human capital (Johnson, Loveman 1995, Korcelli 1997). Universities and R&D centres provide highly qualified staff, and the large number of such agglomerations also provides an important market for manufactured goods or services. In today's globalising economy a significant role is played by road (highways under construction), rail and air connections with Polish and foreign centres (Piechowicz, Staszewska 1998). In this field the cities located in the eastern part of the country lag behind the others.

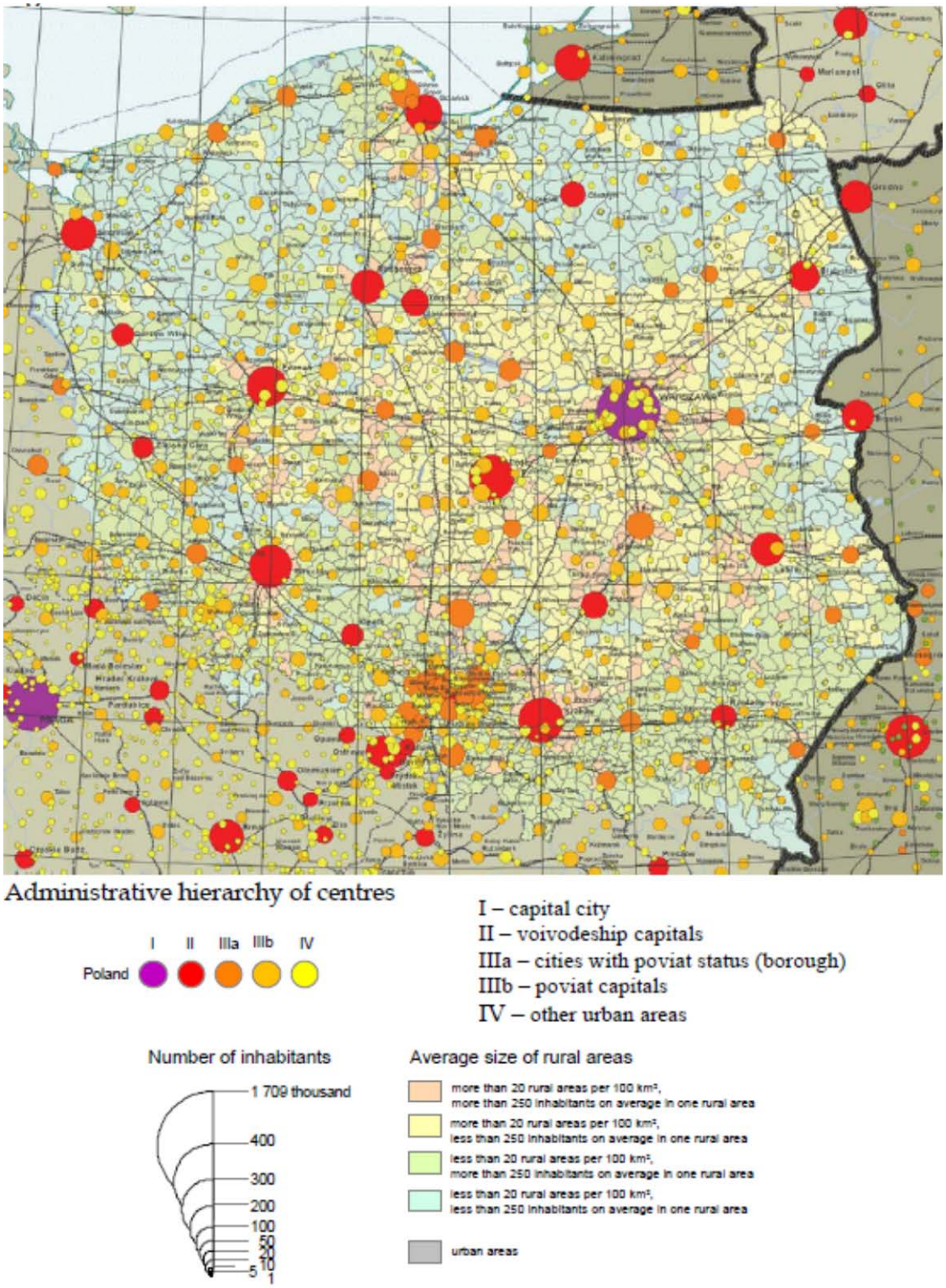


Fig. 44. Settlement structure of Poland in 2008
Source: Institute of Geography and Spatial Organisation of the Polish Academy of Sciences

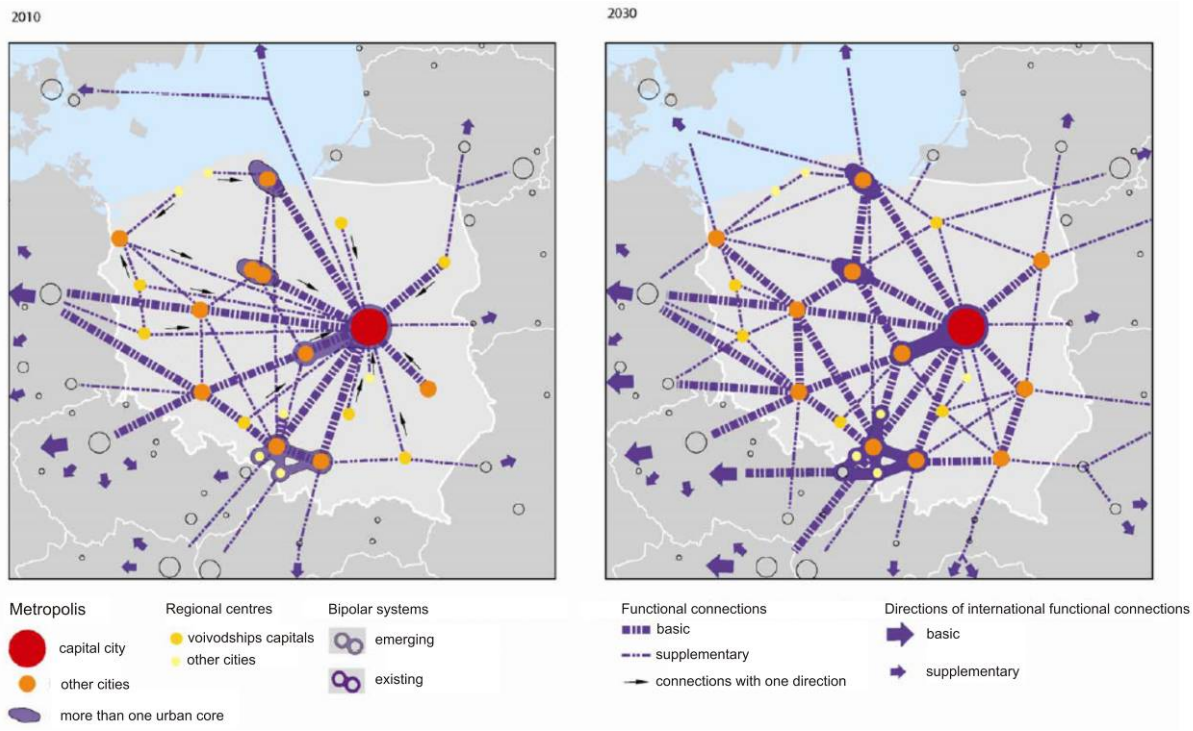


Fig. 45. Functional connections between the most important urban areas in Poland 2010–2030
Source: Concept of Regional Planning Policy 2030 (draft; 2010)

It is very difficult to estimate the number and the spatial range of metropolitan areas in Poland. Terms like ‘metropolis’ or ‘metropolitan area’ do not exist in the Polish legislative system. Scientific publications and reports are also not unanimous. There are no clear, explicit rules or uniform methodology. The definition of ‘metropolis’ itself is also not uniform in the literature (Parysek 2002).

In ESPON reports on metropolitan areas in Europe, eight Polish cities are listed as potential metropolises – Warsaw, Kraków, the Tricity, Wrocław, Poznań, Katowice, Łódź and Szczecin (Interim Territorial Cohesion Report 2004, Territorial Future 2007; Fig. 46). Only Warsaw is described as a ‘potential Metropolitan European Growth Area (MEGA)’ and the other cities have the status of ‘weak MEGA’. The Centre of Metropolitan Research in its analyses also includes as a metropolis Bydgoszcz together with Toruń (2010). In the Polish literature Lublin, Białystok and Rzeszów are also often defined as potential metropolises (Węcławowicz 2010).

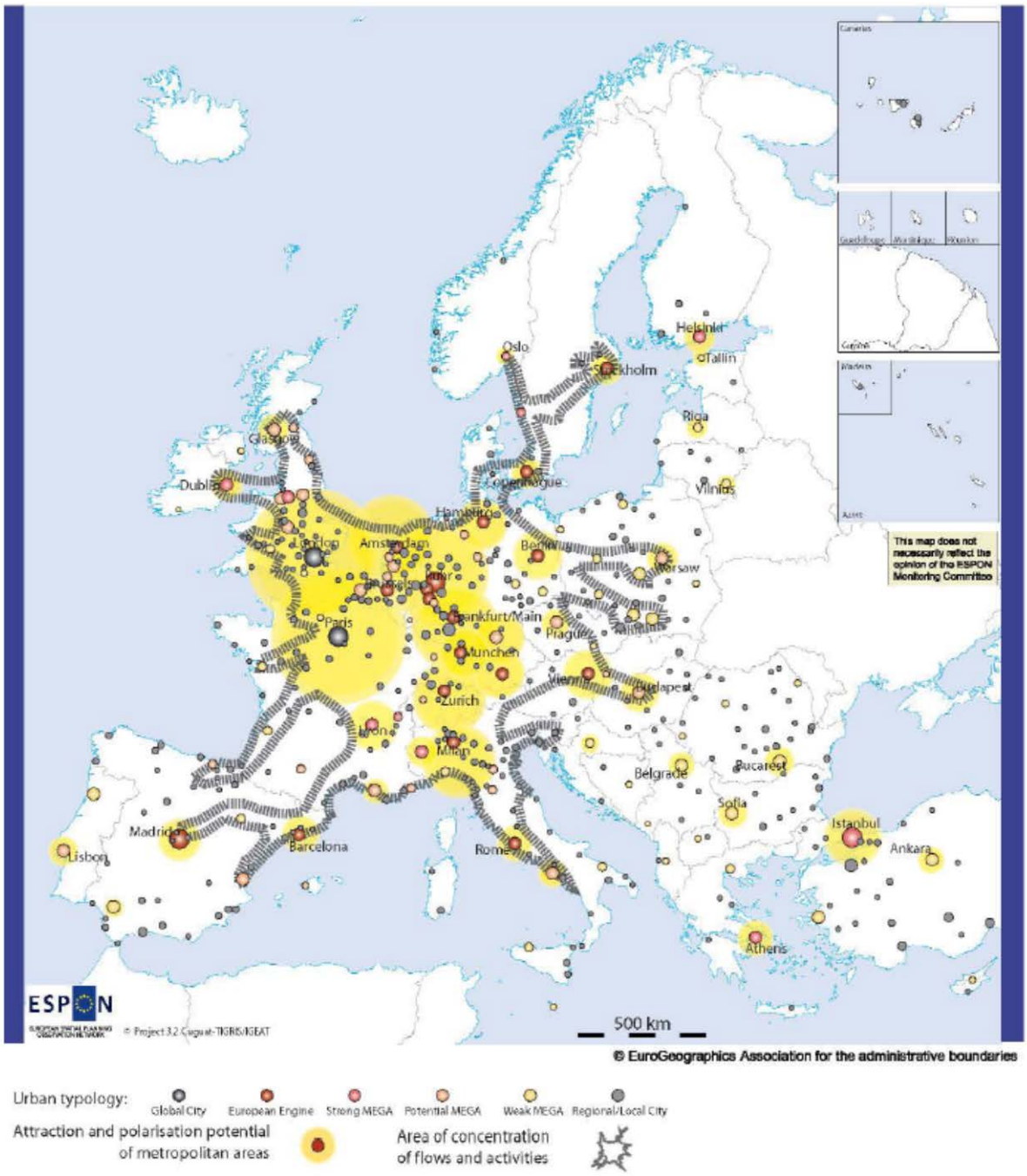


Fig. 46. Spatial structure and urban hierarchy in 2030 according to the Trend Scenario
Source: Scenarios on the territorial future of Europe, ESPON (2010)

The spatial range of the metropolis is the subject of many public debates and discussions (Metropolis Poznań 2020 – Green Paper). Often the availability of statistical data is taken into consideration, hence the borders of the metropolis areas overlap with the borders of subregional units – powiats and subregions (NUTS 4 and NUTS 3). This corresponds in most cases to the daily migration of commuters living in these areas (section 2.4, Fig. 47). However, considering the differing rules for delimitation of these areas and substantial differences in their area, their comparisons must be viewed critically.

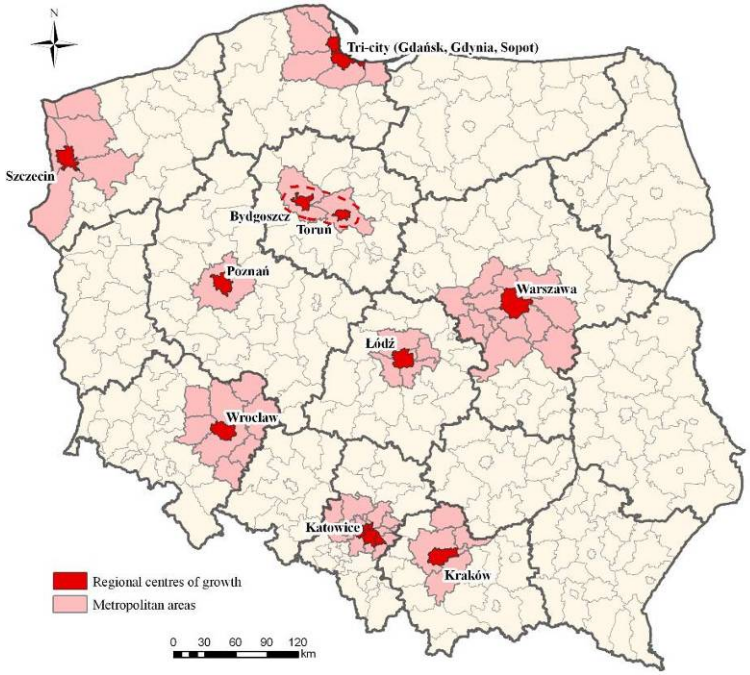


Fig. 47. Delimitation of metropolitan areas in Poland
Source: own compilation based on Metropolis Poznań – Green Paper

The majority of metropolises (Wrocław, Kraków, Poznań) are monocentric agglomerations, with strong core centres and numerous cities and satellite villages. In the case of Bydgoszcz and Toruń we can talk about a bicentric agglomeration, where the central functions are performed by both cities. Similarly, the agglomeration area of Gdańsk and Gdynia can be classified in the same way, although these cities together with Sopot in fact constitute one large urbanised centre – often called the Tricity. The settlement system in Silesia includes a conurbation with more than ten cities. Its largest city is Katowice, but other cities – Sosnowiec, Gliwice, Zabrze, Bytom and others – are not much smaller than it in terms of population and area. This is the largest urbanised area in Poland besides Warsaw, with a population of 2.5 million.

Based on this analysis it can be concluded that currently, the only urban centre in Poland of international importance which can be regarded as a European metropolis is the country's capital, Warsaw. In 2008 it had more than 1.7 million inhabitants, while the whole agglomeration area had approximately 3.4 million. The central administration is focused there, as well as many research centres, representation centres and headquarters of foreign companies and several cultural institutions. Cities that are strong centres with national

importance (potential metropolises) include Gdańsk (along with Gdynia), Łódź, Poznań, Katowice (together with the whole Silesian agglomeration), Kraków and Wrocław. Białystok, Bydgoszcz with Toruń, Lublin and Szczecin aspire to this group. Other voivodeship capitals are regional centres. These cities are characterised by dynamic change of population. Most of them, except Warsaw and Kraków, saw the number of inhabitants fall over a period of 10 years (1998–2008). However within a period of one year (2007–2008) every one except Warsaw saw a population decline (Table 28). Despite that fact, all these cities are dominant in and shape the country's settlement network (Parysek 2002, Węcławowicz 2003).

Table 28. Population changes in the largest Polish urban areas in 1998–2008

City	Years										
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Łódź	806728	805311	798418	791727	785134	779129	774004	767628	760251	753192	747152
Warsaw	1618468	1677316	1672418	1671727	1688194	1689559	1692854	1697596	1702139	1706624	1709781
Kraków	740666	755355	758715	757942	757547	757685	757430	756629	756267	756583	754624
Poznań	578235	584257	582254	579343	577117	574125	570778	567882	564951	560932	557264
Szczecin	416988	416791	416657	415748	415117	414032	411900	411119	409068	407811	406941
Wrocław	637877	643522	640614	640804	639150	637548	636268	635932	634630	632930	632162
Bydgoszcz-Toruń	593013	589367	585870	585621	582806	579181	576513	574081	570658	567841	564941
Tricity	755290	760210	758730	757284	756571	755528	752943	750919	748126	745113	743659
Katowice*	843268	816271	809196	803540	797182	791338	786622	781683	776197	771521	767341

**Katowice subregion (Katowice, Chorzów, Mysłowice, Ruda Śląska, Siemianowice Śląskie, Świętochłowice)*

Source: Central Statistical Office

Tab. 29. Socio-economic characteristics of the metropolises in Poland in 2000 and 2008

Characteristic	Kraków		Gdańsk		Łódź		Poznań		Warsaw		Wroclaw		Katowice***		Szczecin		Bydgoszcz/ Toruń	
	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008
Area in km^2	327	327	262	262	293	293	262	262	517	517	293	293	380	380	301	301	292	292
Demography																		
Population in thousands	758,715	754.624	462,995	455.581	798,418	747.152	582,254	557.264	1,672,418	1,709.781	640,614	632.162	809,196	764.645	416,657	406.941	585,870	563.368
Women per 100 men	113	114	110	111	119	120	114	116	116	118	112	114	108	109	109	111	113	115
Population growth per 1,000 inhabitants (compare to 1999 and 2007)	4.4	-2.6	-2.9	-0.4	-8.6	-8.2	-3.4	-6.6	-2.9	1.8	-4.5	-1.2	-8.7	-5.4	-0.3	-2.1	-6.0	-5.1
Economy																		
State enterprises registered in the REGON system	88,852	105,610	54,581	60,122	80,832	94,578	78,599	93,250	248,453	324,282	88,121	95,602	70,949	78,851	59,335	64,394	65,911	65,668
Average employment:																		
in thousands	259.725	277.243	138.258	142.720	212.200	205.124	221.830	227.846	762.430	1,223.455	200.260	251.829	275.191	259.125	125.266	163.564	186,778	179111
per 1000 inhabitants	342.3	367.4	298.6	313.3	265.8	274.5	381.0	408.9	455.9	715.6	312.6	398.4	340.1	338.9	300.6	401.9	318.8	317.9
Registered unemployment in thousands	24.5	10.6	13.5	4.8	55.5	22.5	11.0	5.6	34.0	20.7	21.7	10.6	38.9	22.0	16.4	11.4	29.0	20.0
Unemployment rate*	7.5	2.8	11.5	2.6	18.4	6.7	6.7	1.8	6.2	1.9	12.3	3.3	13.5	6.3	15.3	6.5	12.3	8,1
Average gross monthly salary (zlotys)**	2,300.64	3,259.63	2,491.47	3,847.90	2,102.42	3,002.12	2,395.19	3,517.34	3,238.19	4,504.85	2,298.65	3,415.39	2,524.78	4,090.32	2,282.01	2,764.51	4,197.13	2505,765
Housing																		
Homes completed in thousands	3.4	6.6	0.8	4.6	1.2	2.4	2.2	3.3	14.4	19.0	2.7	5.3	0.6	1.4	1.8	2.0	1.2	1.9
Lodgings in thousands	10.3	22.4	10.3	10.8	5.7	4.1	6.6	7.8	14.0	24.6	6.5	7.8	3.1	3.5	4.9	5.6	4.348	5.0
Quality of living																		
Crime detection rate %	29.3	40.2	48.3	47.4	24.6	-	43.3	52.1	30.7	44.4	47.0	53.1	41.4	50.6	42.5	51.3	50.1	67.7
Viewers in permanent cinemas per 10,000 inhabitants	14,636	35,940	12,839	35,603	9,046	23,095	23,944	46,558	28,382	39,630	21,758	36,840	6,633	24,712	8,499	25,767	7,936	27,341
Hotel customers in thousands	800.6	1,287.2	306.3	387.3	198.0	329.4	393.5	532.7	1,182.0	2,022.2	379.1	709.9	153.5	228.5	300.8	375.6	217.823	288.3
including foreign tourists	406.9	684.1	118.1	119.2	39.4	63.7	142.0	159.5	601.5	764.5	138.9	228.2	45.0	55.8	146.4	160.4	50.165	46.6

** 2004 and 2008; ** 1 zloty ≈ 0.25 euro; 2002 and 2008*

**** Katowice subregion (Katowice, Chorzów, Mysłowice, Ruda Śląska, Siemianowice Śląskie, Świętochłowice)*

Source: own compilation based on 2001 and 2009 Statistical Yearbook of Poland

3.4. Growth and decline analysis

In the literature, economists and socio-economic geographers recognise the problems of Polish cities. They have been mentioned in the previous sections of this analysis; however not all of them are connected with the future trends of urban areas. In the foreign literature Hall (2009) defines basic parameters of future scenarios for the development of the largest cities in the world. These parameters reflect long and deep structural trends, which are reasonably predictable, and refer to different socioeconomic realms (environment, demography, sociology, culture, technology, economy, consumption). On the basis of Hall's general categorisation, it is possible to draw up a future projection of Polish cities' development. The fundamental problems of the future of Polish cities can be described in just two categories: 1) demography and 2) economy. The others also play an important role, however in many cases they create only a background for processes related to the two aforementioned categories.

Recent years have shown numerous problems that have to be dealt with in urban agglomerations. The decrease in their population seems to be the most important phenomenon. It is conditioned by the negative trends in the population growth rate (resulting from the modern model of the family), as well as the negative migration balance. Large cities are no longer an attractive place to live for many people. Highly developed suburban areas often offer a higher standard of living. This is reflected in lower land and housing prices, lower taxes, and the greater prestige of having one's own accommodation. The quality of the natural environment in those areas is much better. A smaller concentration of population causes a lower level of pollution and noise, more green spaces and increased living space. Because of the simultaneous development of the road network in the suburban areas and widespread access to motor transport, these elements outweigh the benefits of living in the centre of a large city.

Parysek (2005) noted that the specific features of urbanisation processes in Polish cities in the last twenty years involved two phenomena: deurbanisation, associated with the development of suburban areas and reurbanisation, manifested in changes of quality in the city centres (regeneration, rebuilding of central areas – see Billert 2001). The economic potential of a population was concentrated mainly in large residential conurbations, which ensured their fast development, but also resulted in the stagnation of the smallest towns (Table 30).

According to Parysek (1995), starting from the first period of transition there have been considerable transformations of the urban structure, which still apply; they include:

1. Changes in the central area, with the dominant housing functions replaced by service functions (mainly commercial, financial, cultural and catering).
2. Modern, large shopping and service centres (usually not of the highest standard) are located in suburban areas.
3. New investment areas are established mainly on the outskirts of cities and their suburban areas.
4. Expansion and modernisation of the transport network in the whole agglomeration, with the simultaneous reduction of traffic in its central areas.

5. A housing model adjusted to the expectations of residents; the result is the construction of small estates offering a high standard (often fenced and monitored – see Jałowiecki, Łukowski 2007).
6. Programmes of revitalisation of historical buildings in city centre and other areas (post-industrial, post-communication, military, warehouses and so on).
7. Single-family housing has begun to grow strongly in suburban areas (caused by deterioration of living conditions in the city, and lower land and building prices outside the city).
8. There are attempts at the deconcentration of compact urban centres with high density.

All these processes have brought significant changes in the shapes and structures of large cities in Poland. After 2000, these trends have still been growing. Especially the central areas of cities have begun to resemble those of Western European cities. This is due to, among other things, the emergence of shopping precincts with streets lined with prestigious shops, reduced traffic, restoration of historical buildings and improvements in cultural offerings (museums, art galleries, theatres), catering (restaurants) and the accommodation sector (Parysek 2004).

Table 30. Urban areas in Poland in 2008

Towns by the number of inhabitants	Number	% of population Poland = 100%
Total	892	61.1
Below 5,000	304	2.4
5,000-9,999	188	3.5
10,000-19,999	180	7.0
20,000-49,999	134	11.0
50,000-99,999	47	8.4
100,000 – 199,999	22	8.0
more than 200000	17	20.8

Source: Statistical Yearbook of the Republic of Poland 2008, CSO

The decreasing number of people in big cities also means less revenue from local taxes. This is a significant problem for local finances and investments in infrastructure. It is a paradoxical situation, because many people living in the suburbs continue to benefit from the central city infrastructure (Parysek 1995, Konecka-Szydłowska 2006, Beim 2008, Stryjakiewicz et al. 2009).

Equally worrying is the rapid ageing process among the population living in urban areas. Already a large proportion of residents are no longer of productive age, and this process will be further deepened also because of migrations of younger age groups to suburban areas. This situation generates a need for additional investment in the sphere of public life such as health, public transport and social assistance. Many new social problems have occurred. In addition,

the size of the labour market is decreasing, and so is the economic potential of the society. In the next few years, local authorities will have to firmly tackle these issues.

Among the most important regional centres of growth the majority have experienced a loss of population within the last decade (Table 31, Fig. 48). Only the populations of Warsaw and Kraków increased (by 5.3% and 1.8% in the last 10 years). In the last year only Warsaw managed to maintain this trend, with a slight increase in population (0.2%). Being the strongest economic centre in Poland, Warsaw is still a popular migration destination for people counting on an improvement in standard of living and on finding a job.

Table 31. Dynamics of population in metropolitan areas in Poland

Central city	***Number of people in central city***	***Dynamics of changes in population*** period: 1998-2008 (%)	period: 2007-2008 (%)	***Number of people in metropolitan area***	***Dynamics of changes in population*** period: 1998-2008 (%)	period: 2007-2008 (%)
Bydgoszcz-Toruń	564 941	-5.0	-0.5	195 076	14.8	1.9
Katowice	309 621	-11.7	-0.8	2 210 915	-6.7	-0.3
Kraków	754 624	1.8	-0.3	673 452	4.9	0.7
Łódź	747 152	-8.0	-0.8	377 214	0.5	0.3
Poznań	**557 264**	**-3.8**	**-0.7**	**311 390**	**20.1**	**2.5**
Szczecin	406 941	-2.5	-0.2	438 515	-5.2	0.4
Tricity	743 659	-1.6	-0.2	505 881	11.0	1.5
Warsaw	1 709 781	5.3	0.2	1 499 875	7.9	1.0
Wrocław	632 162	-0.9	-0.1	540 792	2.3	0.7

Source: own compilation based on Statistical Office data

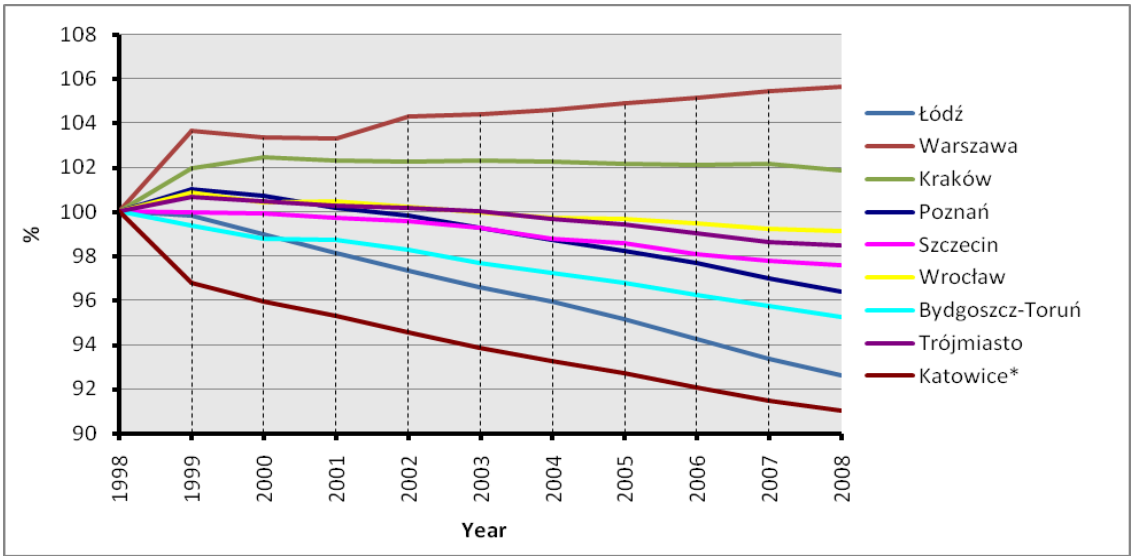


Fig. 48. Dynamics of changes in population in the largest Polish cities (1998=100)
Source: own compilation

Katowice and Łódź lost the largest numbers of inhabitants in the last 10 years (11.7% and 8.0%). It seems that this was influenced by the diminishing importance of these two industrial urban centres (Katowice with mining and metallurgy and other related industries, Łódź with textile industry). Due to the weakening of industry, unemployment increased, causing problems of a social nature. Kraków and Warsaw may have contributed to the outflow of inhabitants in those cities. Their economic potential may have attracted people hoping to find jobs and a better standard of living. This can somehow be confirmed by the fact that the metropolitan areas of Katowice and Łódź did not develop – in the case of the Silesian conurbation we can see a significant outflow of inhabitants, and in the suburban zone of Łódź the number of inhabitants was almost unchanged (Kotus 2006; Table 32).

Szczecin is also in a similar situation, although population decline was slightly smaller there (-2.5% in the last 10 years). This city also experienced the effects of gradual liquidation of industry – in this case shipbuilding. Its peripheral location (lack of crucial trade and communication routes and the minor role of tourism) may also be significant. The suburban zone of Szczecin also lost many inhabitants (Table 32).

Table 32. Changes of population in metropolises in 2008

Metropolis	***Natural increase (per 1000 people)***		***Migration balance (per 1000 people)***	
	in the city	beside city	in the city	beside city
Bydgoszcz-Toruń	0.29	4.40	-4.52	14.79
Katowice	-1.62*	-0.42*	-2.72	-2.08
Kraków	0.56	1.98	-0.08	5.04
Łódź	-5.55	-2.34	-2.19	5.01
Poznań	**0.69**	**5.73**	**-5.60**	**18.66**
Szczecin	-0.50	2.42	-1.92	2.18
Tri-city	0.38	6.87	-1.60	8.13
Warsaw	0.43	2.06	2.28	7.53
Wrocław	-0.42	1.53	0.29	4.90

**Katowice subregion* (Katowice, Chorzów, Mysłowice, Ruda Śląska, Siemianowice Śląskie, Świętochłowice)

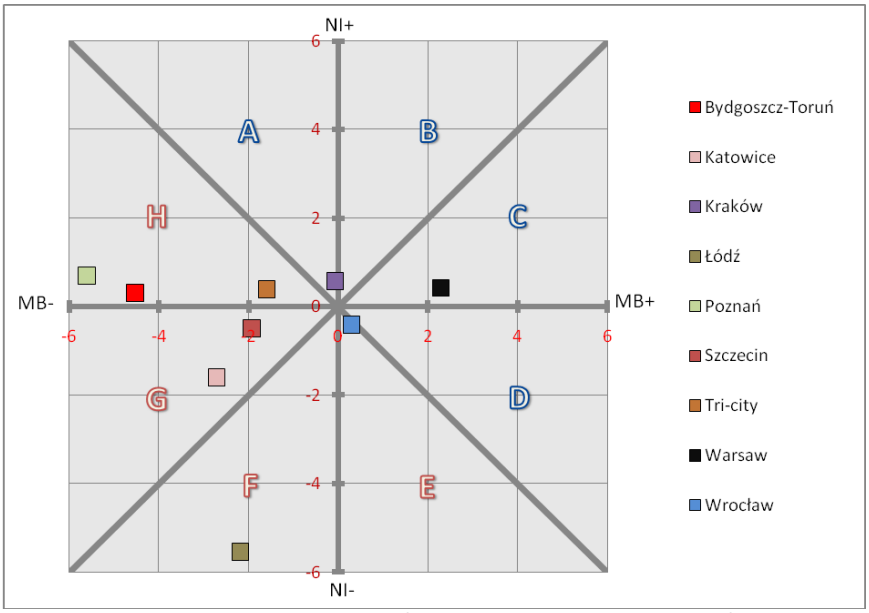
Source: own compilation based on Statistical Office data

Among the cities which experienced population decline are Poznań, Bydgoszcz, Toruń and the Tricity. However, the situation here is different because these urban centres did not experience stagnation. They rather quickly increased their dominant positions in the regions. Their popularity also indicates their good situation. In the last years the population increased by more than 10% in the suburban zones (in Poznań as much as 20%). It seems that these centres are a good example of *urban sprawl*.

Differences concerning demographic processes in particular cities are presented using a Webb diagram (Fig. 49). The majority of centres experienced population decline; only in two centres was the population growing.

Centres which had a positive population growth can be grouped into 2 classes:

- Class A – including Poland's second largest city in terms of population, Kraków. The birth rate was balanced by the negative migration balance and led to a slight increase of population.
- Class C – a one-element set containing the country's capital, Warsaw. In this city both birth rate and migration balance had positive values; however the second variable was dominant (it took the highest value among all cities analysed).



MB – migration balance (in $^{o}/_{oo}$), **NI** – natural increase (in $^{o}/_{oo}$)

Fig. 49. Typology of population growth/decline in Polish regional centres of growth in 2008 (according to Webb's typology)
Source: own compilation based on Statistical Office data

The remaining seven cities had a negative population growth/decline index in 2008. According to the typology suggested by Webb they can be grouped into 4 classes:

- Class E – includes only Wrocław. Its positive migration balance is not enough to balance the negative birth rate. As a result Wrocław experienced a slight decrease in population.
- Class F – includes one element – Łódź. The population decline is mainly caused by a mass outflow of population, the negative birth rate here is of less importance. Łódź has the largest decrease in population among all the centres analysed.
- Class G – includes two centres – Szczecin and Katowice. These cities have a negative birth rate and migration balance. In their cases the population decline is caused mainly by the second variable.
- Class H – with three centres – Tricity, Bydgoszcz/Toruń and Poznań. Despite the positive birth rate, a significantly higher negative migration balance led to a population decline. In the case of Poznań this is a major decline (smaller only than Łódź).

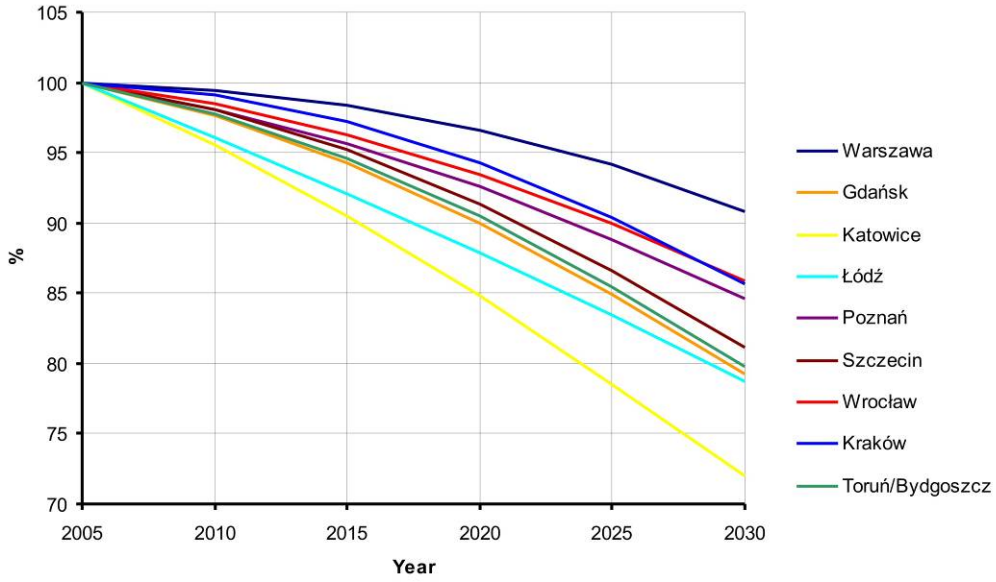


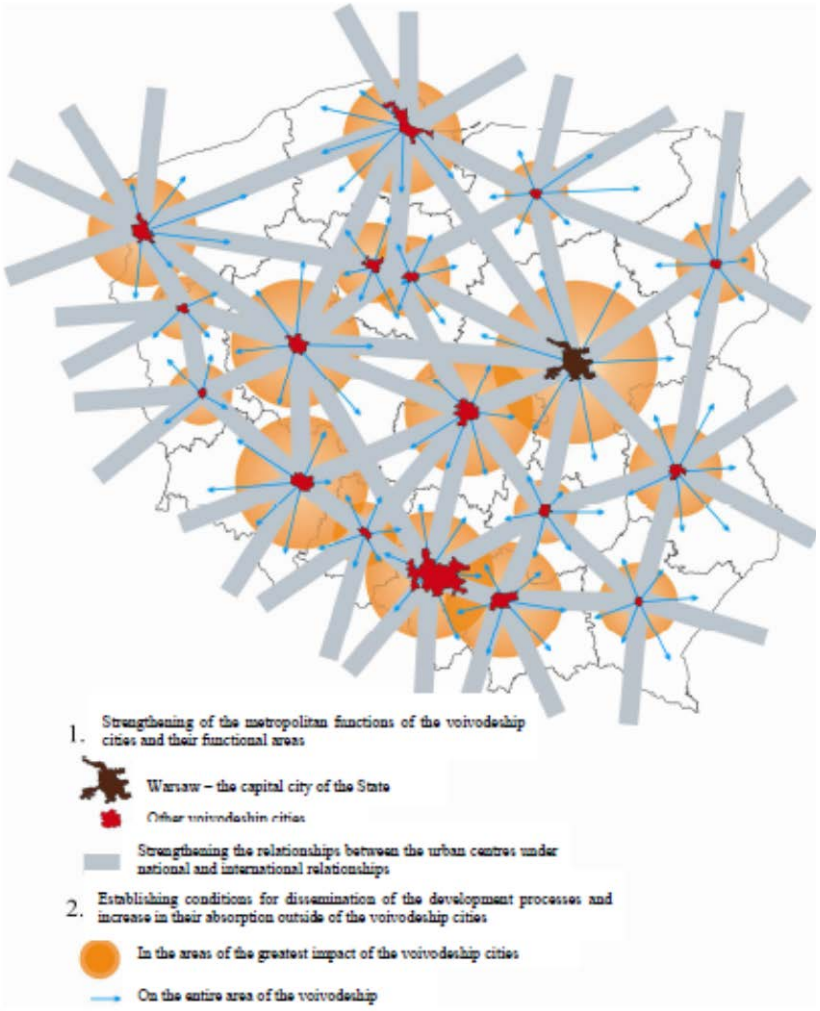
Fig. 50. Population projection in the largest Polish cities until 2030 (2005 = 100%)
Source: own compilation based on Statistical Office data

Table 33. Population projection in the largest Polish cities until 2030

Urban area	Thousands of people in year:					
	2005	2010	2015	2020	2025	2030
Gdańsk	457.4	446.5	431.3	411.7	388.4	362.4
Katowice	318.6	304.5	288.4	270.2	250.3	229.3
Kraków	760.3	753.4	739.4	717	687.3	651.2
Łódź	768.9	738.8	708.0	675.8	641.7	605.1
Poznań	573.0	561.9	547.9	530.4	509.2	485.1
Szczecin	413.6	405.8	393.9	377.8	358.2	335.6
Toruń/Bydgoszcz	578.2	565.3	547.2	523.2	494.1	461.0
Warsaw	1,687.6	1,678.1	1,660.3	1,630.9	1,588.4	1,532.7
Wrocław	637.2	627.3	613.5	595.4	573.0	547.3

Source: Central Statistical Office

The prognosis produced by the Central Statistical Office in 2007 for the nine largest urban centres (metropolises) in Poland forecasts that all of them will experience a population decline in the coming years (Fig. 50 and Table 33). It is estimated that the phenomenon of suburbanisation will continue to advance, and cities will undergo urban sprawl. As a result, the entire functional area around these centres will continue to develop, providing the whole agglomeration with a gradual increase in the number of inhabitants (despite of the outflow of people from its central part).



Source: MRD's own elaboration.

Fig. 51. Future development of the main urban areas in Poland
Source: National Strategy of Regional Development (2010)

According to the Ministry of Regional Development (2009) in the Polish settlement system large urban agglomerations will remain the growth centres for the country's economy (Fig. 51). The role of those located in the western part of the county will become more important and they are projected to be sources of the spatial diffusion in economic development. Their strong economic potential will be diffused along the major economic corridors created by the functional links between all the voivodeship capitals and adopted by the smaller territorial units in the lower settlement hierarchy. Therefore the smaller cities will remain within the area of influence of the large agglomerations.

3.5. Supply and demand for urban assets and services

The introduction of the market model into the economy has resulted in privatisation and the emergence of entrepreneurship and competition. These changes, accompanied by new technologies, have not only improved economic performance, but also seriously lessened the

environmental pollution burden. Market rules have substantially contributed to the restructuring of the economy in each of its dimensions, that is, ownership, sectoral, size, and spatial. The biggest cities have become attractive locations for investment. What attracts serious investors is their demographic potential, education of their residents, fixed assets and infrastructure, economic entities already operating there, their markets, business environments, scientific and cultural institutions, and the promotional and marketing actions of the local authorities. Cities with a balanced economic structure and well-developed infrastructure had much better chances for growth to start with. Numerous small and medium-sized businesses began to be set up there, and it is they that have changed the economic structure in such a way that broadly understood services rather than manufacturing play the most important role today. Investment has contributed to the visible spatial-structural transformation of cities. They have developed administrative-commercial centres and new areas of industrial investment. Large shopping malls have been built on city peripheries. Small estates of single-family houses have started to replace the large and dreary estates of blocks of flats, which in turn have acquired badly needed facilities offering personal services. Steps have been taken towards for urban renewal, transport systems are being modernised, and the main access roads, called city gates, have been made more attractive. Indirect effects of the transformation embrace everything related to Poland's opening to the world, including the effects of globalisation.

However, not all large cities are performing well in the new socio-economic conditions. A Z-scores index was constructed for the main regional centres using chosen statistical characteristics. This enabled assessment of the general level of socio-economic growth in these urban areas. The resulting ranking is presented in Fig. 52. The dominance of Warsaw is clearly visible. Values above average were noted in Kraków, Poznań, Katowice and Wrocław. These are face a number of problems in different fields, especially in terms of labour market or technical infrastructure.

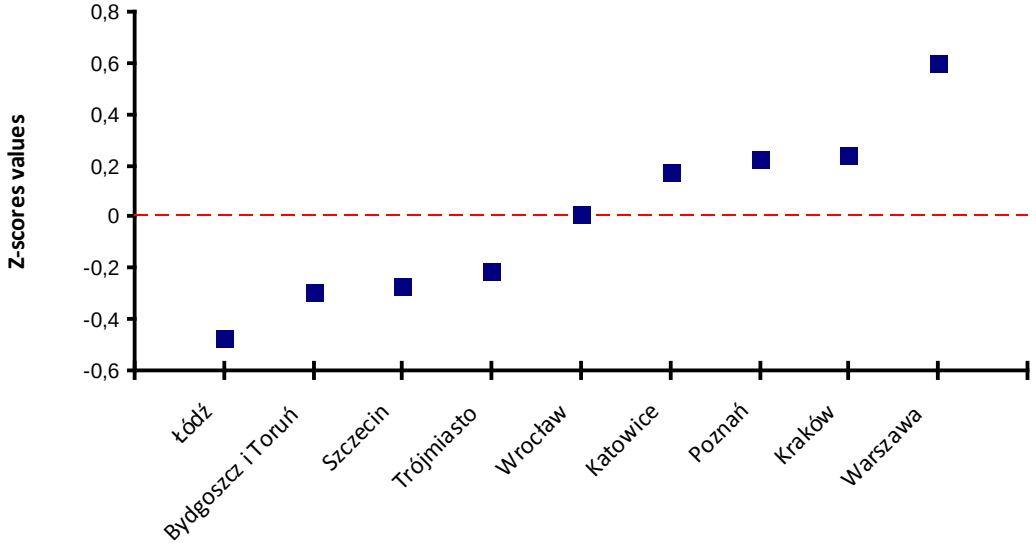


Fig. 52. The level of socio-economic growth (Z-scores values)
Source: own compilation

To identify the most relevant demands in the most important urban areas and centres of growth (metropolises), six categories of socio-economic development were analysed (people, economy, innovativeness, society, place and governance). For analytical purposes and in order to reduce the number of variables in each category, Principal Component Analysis[9] was applied. In the following sections the urban assets in the main urban centres – metropolitan areas – are evaluated. These sections also describe the demands of the areas which struggle to provide the required level of assets and which need external financial intervention. All values of statistical indices are included in the appendix to the report.

3.5.1. Demographic and human capital resources

In the analysis of the category 'people' for the regional centres of growth the same variables were applied as in the analysis of voivodeships. The initial matrix of variables included the following indices: 1) the number of people of working age per total number of population, 2) population dynamics in 1998–2008, 3) migration balance per 1000 people, 4) the number of high school graduates per 1000 people, 5) the net number of daily migrations to work per 1000 people, 6) the number of people per household.

The Principal Component Analysis (PCA) resulted in the obtaining of two principal components (Table 34): 1) population change and 2) demographic potential. They explain the total variance at levels of 42% and 34% respectively. The first one is highly positively correlated with the change of population in the last 10 years, and negatively correlated with university graduates and daily migration to work. The second one has a statistically relevant positive correlation with the number of people of economically productive age and the size of a household.

Table 34. Principal Component Analysis in the category 'people'

Principal component	Correlated characteristics
Factor 1 (Population changes)*	Positive correlation - population dynamics in years 1998-2008 (r=0.83) - migration balance per 1 000 people (r=0.58) Negative correlation - the number of daily migration to work – balance (r=-0.87) - high school graduates per 1 000 people (r=-0.82)
Factor 2 (Demographic potential)*	Positive correlation - the number of people per household (r=0.88) - number of people in productive age per total population (r=0.83) Negative correlation - the number of daily migration to work – balance (r=-0.66)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

In terms of the first obtained factor (Fig. 53), population change, the best situation in 2008 was in Warsaw. The city had the highest population dynamics in 1998–2008 (5.34%) out of all nine metropolitan regions. According to the estimation one can state that the population of the Polish capital will be increasing. However, the projections of the Central Statistical Office

[9] The methodology was described in part 1.3.2.3. of the report.

are not so promising (see section 4.3) and it is estimated that the population of Warsaw will be decreasing after 2010. Warsaw also had very good values of indices related to the migration balance per 1000 people (22.79). The other indices related to that factor also placed Warsaw in a more favourable position than the other cities analysed.

On the other hand there was a very bad or bad situation related to the factor population change in Katowice and in Poznań. In the case of the first city, that situation was caused by the highest decrease in population in 1998–2008 (-11.73) out of all metropolitan regions in Poland, and followed by the negative migration balance per 1000 people (-34.69). This was caused by the growing importance of the neighbouring cities of the Upper Silesia Industrial Zone (Rybnik, Tychy, Ruda Śląska, etc) and many smaller cities which are offer attractive living areas to Katowice's inhabitants. However, Katowice is still a place of work. This is revealed by the highest value of the daily migration balance per 1000 people (58.35) out of all cities analysed. This negative situation for Katowice is stimulated by the well developed network of motorways and expressways. The city requires special attention in relation to revitalisation of the old nineteenth-century industrial centre as well as introduction of new functions of the abandoned mining facilities to stop the process of population loss. The situation of Poznań in 2008 was similar to Katowice in terms of people flows. There was recorded the highest negative migration balance per 1000 people (-56.01) and one of the highest values of daily migrations balance per 1000 people (20.75) out of all the analysed cities. In both cities there was identified a process of very rapid suburbanisation, followed by loss of population. In the other seven cities this process was not so strong, and in the cases of e.g. Warsaw and Kraków the process of suburbanisation was followed by an increase in the population in a period of 10 years (Warsaw 5.34% and Kraków 1.85%).

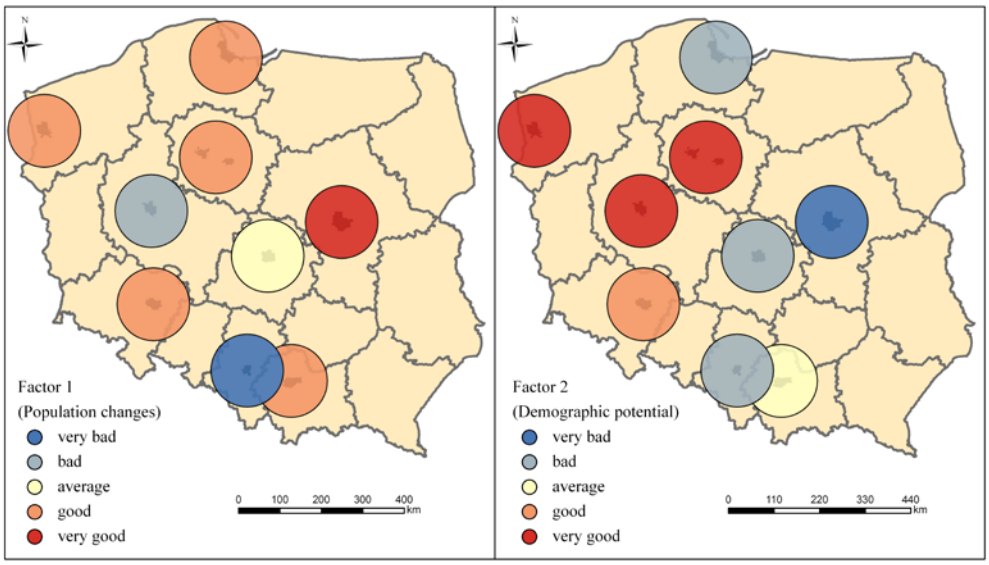


Fig. 53. Population changes and demographic potential in the main regional centres of growth in 2008
Source: own compilation

Concluding, it is difficult to predict whether most of the analysed cities will lose population numbers as a result of further suburbanisation or natural causes. However, most of them

require investment to improve the living conditions of their inhabitants, e.g. through the regeneration of old abandoned industrial buildings in cities like Katowice, Poznań and Łódź, and creation of new flats at reasonable prices (or turning them into homes partly financed by the local government) or by investing in public transport.

According to the analysis based on the second principal component – demographic potential – a very good situation was noted in Bydgoszcz-Toruń, Poznań and Szczecin. In these three cities an important role is played by the number of people of working age per total number of population. In all three cases the value of this indicator was above 66%. This is a promising sign for the development of the local economy, which has a reserve of human capital of working age. However, these three cities have a low value of the natural increase index, which might limit this capital. There is a need for policies oriented toward facilitation of the development of families with more than one child, as well as education of the younger generations about a family model which is preferable for economic reasons.

3.5.2. Urban physical assets – social infrastructure and quality of place

The main objective of urban centres is to provide inhabitants with a high standard of living. Regional and local policies come down to providing access to technical and social infrastructure as well as ensuring safety, peace and good health – the components of the social infrastructure. In the analysis of this type of infrastructure it was decided to choose variables as followed: 1) the number of cinemas per 10 000 people, 2) the number of visitors to cinemas per 100 people, 3) the number of libraries per 1000 people, 3) the number of arts exhibitions per 1000 people, 4) the number of crimes per 100 people, 4) crime detection rate (%), 5) the number of beds in general hospitals per 1000 people, 6) the number of infant deaths per 1000 births, 7) the number of places in social welfare homes and facilities per 10 000 people. These indices mainly represent the accessibility of culture, healthcare, level of safety and protection of health.

The social infrastructure category comprises 3 principal components (Table 35): 1) medical services quality, 2) access to cultural facilities 3) security level. They are the result of reduction of the indices matrix and explain the total variance at a level of 43%, 26% and 13% respectively. The first component is highly negatively correlated with the number of visitors to cinemas, infant deaths, beds in general hospitals and to a lesser degree with the number of crimes. The second principal component has statistically relevant negative correlation with the number of libraries, the number of arts exhibitions, vacancies in social welfare homes, and a positive correlation with crime detection. The third factor shows only significant negative correlation with crime detection.

Table 35. Principal Component Analysis in the social infrastructure category

Principal component	Correlated characteristics
Factor 1 (Medical services quality)*	Negative correlation - the number of infant deaths per 10 000 births (r=-0.88)- the number of visitors in cinemas per 100 people (r=-0.82) - the number of beds in general hospitals per 10 000 people (r=-0.77), - the number of crimes per 100 people (r=-0.69) Positive correlation - the number of places in social welfare homes and facilities per 10 000 people (r=0.61) - the number of arts exhibitions per 10000 people (r=0.59)
Factor 2 (Access to cultural facilities)*	Positive correlation - crime detection rate in % (r=0.68) Negative correlation - the number of libraries per 1 000 people (r=-0.69) - the number of places in social welfare homes and facilities per 10 000 people (r=0.66) - the number of arts exhibitions per 10000 people (r=-0.65)
Factor 3 (Security level)*	Negative correlation - crime detection rate in % (r=-0.69)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

The first principal component (Fig. 54) – medical services quality – had its highest value, representing a very good level, in the case of Katowice and Poznań. In the case of Poznań an important role in the high position of the city is played by the location in the city of a leading national medical university and its hospitals, which provide a high standard of medical care and education. This affects the number of beds in hospitals per 1000 inhabitants (104). Surprisingly, Kraków, one of the leading university centres, appeared to have the worst situation regarding medical service quality. Very indicative is the fact that even in Kraków there was a relatively low number of available beds in hospitals per 1000 people (74.5); however it had the lowest number of infant deaths per 1000 births (3.8) out of all metropolitan regions in Poland.

The second component of the social infrastructure category (Fig. 54) is access to cultural facilities. There is a very good situation in Katowice, Kraków and Łódź. The high values of indicators such as number of arts exhibitions per 1000 people (in Kraków 6.84, in Łódź 5.33) prove how important these cities are on the cultural map of Poland. The situation of the Tricity (Gdańsk, Gdynia, Sopot), Bydgoszcz-Toruń and Wrocław, where access to cultural facilities is very limited, needs improvement. All of these metropolises have unique values such as historical old towns which provide a valuable area for cultural events. There are also revitalisation actions required that stimulate the development of new cultural facilitates (e.g. small cinemas or theatres located in regenerated post-industrial buildings, etc.). A good example of a regeneration process of an old industrial area is the revitalisation of the Mill Island in Bydgoszcz. An important part of this process was the implementation of the new functions for told storage houses located on the island (e.g. Museum of Leon Wyczółkowski, restaurants, hotel). These are functions which do not always need to be subsidised by the local and regional government budget, but can also bring a profit. However, they have to be a part

of the revitalisation process, need to be located in an attractive central place and should be functionally linked with the other facilities.

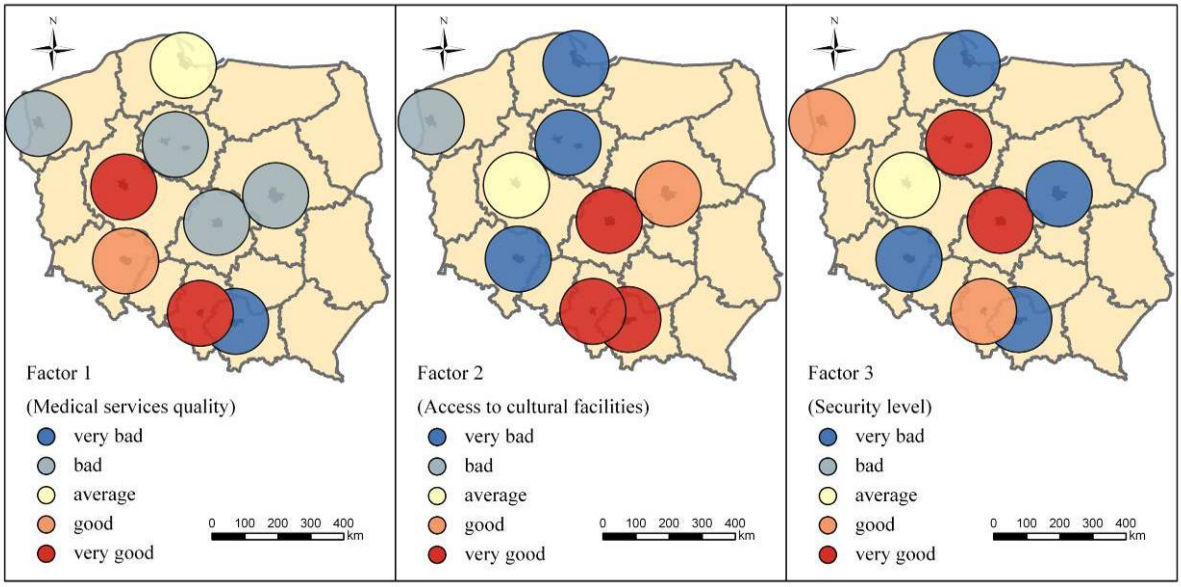


Fig. 54. Medical services quality, access to cultural facilities and the security level in the main regional centres of growth in 2008
Source: own compilation

The third component of the social infrastructure category (Fig. 54) is the security level. The highest level was in Bydgoszcz-Toruń and Łódź. The highest value of the correlated indicator – crime detection – was registered in Bydgoszcz-Toruń. The worst situation, which requires attention at local, regional and state level, was found in Wrocław, Kraków, the Tricity and Warsaw. In these cities the values of crime detection were low, and Kraków it was at 40.2%. These cities need to improve policing efficiency, to guarantee their inhabitants safety and a better quality of living.

Such elements as dwelling conditions, quality of public and environmental space, public transport and trade spaces determine the long term development of urban areas. All these elements contribute to the quality of place. They also have an influence on the attractiveness of places for new inhabitants.

The analysis of the category ‘quality of place’ comprises the following indices (Table 36): 1) legally protected areas due to unique environmental value (% of the total area of the city), 2) the number of new flats per 10 000 people, 3) the number of new buildings per 10 000 people, 4) the number of lodgings (for tourists) per 10 000 people, 5) the number of public transport lines per 10 000 people. As a result of calculations using PCA one principal component, place quality, was obtained, explaining the total variance at a level of 54%. It shows a strong negative correlation with the number of new flats, the area of the legally protected areas and the number of lodgings for tourists, and a positive correlation with the number of public communication lines.

Table 36. Principal Component Analysis in the category 'quality of place'

Principal component	Correlated characteristics
Factor 1 (Place quality)*	Positive correlation - the number of public transport lines per 10 000 people (r=0.70) - the number of new buildings per 1 000 people (r=0.51) Negative correlation - the number of new homes per 1 000 people (r=-0.90) - legally protected areas due to unique environmental value in % (r=-0.81) - the number of lodgings (for tourists) per 10 000 people (r=-0.71)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

Owing to the single principal component it can be relatively easily determined which of the centres have the highest standard of living for inhabitants, including availability of homes, quality of environment and services.

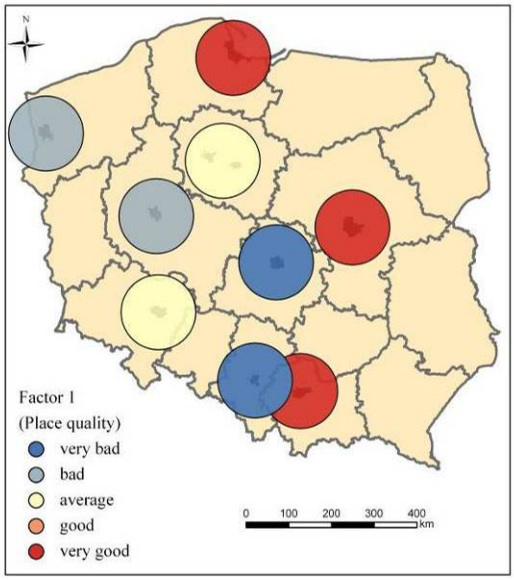


Fig. 55. Quality of place in the main regional centres of growth in 2008
Source: own compilation

Taking into consideration these characteristics, the situation was very good in three cities (Fig. 55): the Tricity, Kraków and Warsaw. Special attention should be paid to Warsaw, where 111.5 new homes per 1000 people were built in 2008. This number shows the capacity of the local economy in terms of the supply generated by construction companies and developers as well as the demand from the capital's inhabitants. At the same time, the prices of homes per square metres are the highest in Warsaw (from 6610 zł/m^2 i.e. 1694 €/m^2 in Wesoła district to 11 090 zł/m^2 or 2844 €/m^2 in the centre; www.snajp.pl 2010). These flats are affordable by residents with a monthly salary much above the national average – 3345 zł (€846.17). Therefore, in the main Polish cities such as Warsaw, Kraków, Tricity, but also in the six others, there is a need to provide social housing to people with average salaries, or cheaper housing credit subsidised by the local, regional or state government. Cities like Warsaw, the Tricity and Kraków are doing generally very well in terms of quality of place,

however they struggle with a lack of public transportation (the number of public transport lines per 10 000 people is 8.01, 8.62 and 9.18 respectively). New public transport solutions are needed for the cities in order to eliminate rush-hour congestion.

A very bad situation in terms of quality of place was noted in Łódź and Katowice. In Łódź there were only 32 homes per 1000 people built in 2008 and only 9.97 new buildings per 10 000 people. However, the city still provides a relatively good public infrastructure in terms of number of public transport lines (the number of public transport lines per 10 000 people was 13.46) and was among the highest out of all the analysed cities (after Katowice with 15.18). In Katowice only 41 new homes per 10 000 people were built in 2008, and at the same time the city has one of the lowest percentages of legally protected areas on its territory, mostly the green belts. These statistical facts reveal that the low quality of life in Katowice has an influence on the outflow of city inhabitants mentioned in the previous sections of the report. However, it must be stressed that both these cities provided, out of all nine cities, the highest availability of public transportation, which is a good result in relation to the number of their population.

3.5.3. Economy and urban governance

The economic situation of a given region is one of the most important elements determining the standard of living of the inhabitants. The state and prospects of the job market, entrepreneurship or average salaries can directly influence further development or stagnation. That is why economic variables are so significant in the *Silicon Valley Index* (2009). For further analysis seven indicators (variables) were chosen: 1) the number of working people per total number of population, 2) employment dynamics in 1998–2008, 3) unemployment rate, 4) income per capita (in zloty), 5) number of enterprises per 1000 people, 6) the number of enterprises with foreign capital (% of total).

Tab. 37. Principal Component Analysis in the category ‘economy’

Principal component	Correlated characteristics
Factor 1 (Economic situation)*	Positive correlation - unemployment rate (r=0.81) Negative correlation - the number of enterprises with foreign capital per 1 000 people (r=-0.92) - income per capita (r=-0.90) - the number of employees per 100 people (r=-0.81) - the number of enterprises per 1 000 people (r=-0.81) - employment dynamics in 1998–2008 (r=-0.54)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

The PCA made it possible to reduce the matrix of variables and identify a category ‘economy’ which is based on one component – economic situation (Table 37). It is highly correlated with almost all the chosen variables apart from employment dynamics. In the case of unemployment rate the correlation has a positive value, and for the rest of the variables it is

negative. Warsaw was the city that performed well in this category. Most of the indicators values were way above the average.

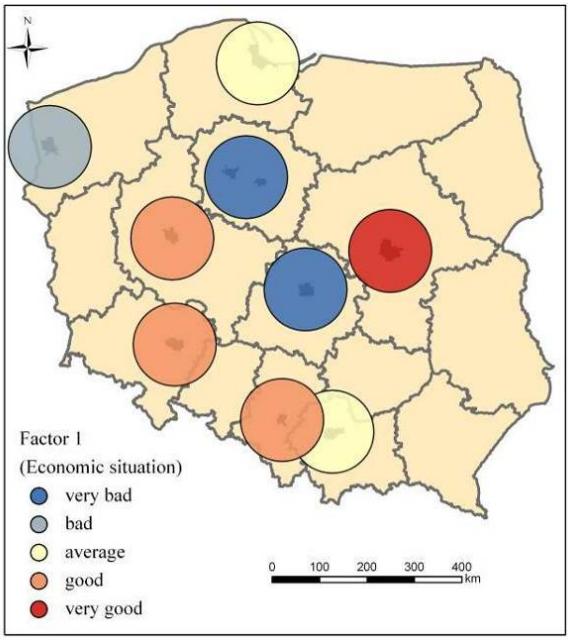


Fig. 56. Economic situation in the main regional centres of growth in 2008
Source: own compilation

A single principal component enables a relatively easy diagnosis of which city has the highest level of economic development (Fig. 56). In this comparison, unsurprisingly, Warsaw is dominant. In second place is Poznań, mainly owing to the low unemployment rate (1.8) and high number of enterprises per 1000 people (167.3). Katowice is also a strong centre in terms of economy, mainly because of concentration of industry (mining, extraction of raw materials). Łódź and Bydgoszcz-Toruń have the worse results according to the analysis due to relatively high unemployment rates (6.8 and 5.5 respectively) and a low level of entrepreneurship (126.6 and 124.8 respectively). In the case of the first city, Łódź there still exists the strong influence of the textile industry which functioned until the beginning of the 1990s, when was the market economy was introduced. Heavy industry workers in Łódź are still undereducated and struggle with the problem of accommodation to the new socio-economic situation. Therefore, the city faces the problem of restructuring its human capital to become more economically competitive. The education of people of working age should be more tailored to market needs. There is a need for the introduction of life-long education programmes for the young as well as people of working age.

An important category in the analysis of assets and demands is that of governance. The PCA made it possible to obtain one principal component – local budget condition and community's activity – which explains the total variance at a level of 84%. It is highly negatively correlated with all three variables (Table 38).

Table 38. Principal Component Analysis in the category 'governance'

Principal component	Correlated characteristics
Factor 1 (Local budget condition and community's activity)*	Negative correlation - administrative district income per 1 person (r=-0.97) - administrative district expenditure per 1 person (r=-0.94) - the number of non-profit organisations per 1 000 people (r=-0.84)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

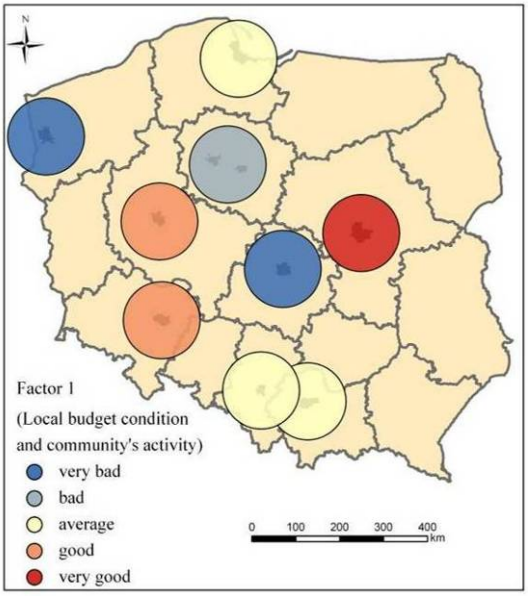


Fig. 57. Local budget condition and community's activity in the main regional centres of growth in 2008
Source: own compilation

In terms of the level of expenditure and income and activity of inhabitants, Warsaw is again a dominant centre (Fig. 57). Poznań boasts many non-governmental organisations per 10000 people (33,61). A very poor situation of public finances can be observed in Szczecin and Łódź (administrative district expenditure per 1 person in both cities was not much above 3000 zł or €770). At the same time the administrative district income per 1 person for both cities was among the lowest out of all the cities considered (also slightly above 3000 zł or €770). This means that the local government budgets are very limited and possible investment in transportation infrastructure or revitalisation must be co-financed by external capital – urban development funds or EU funds.

In the future it is Warsaw, Poland's capital, which has the best chances for fast development in terms of economy as well as local government investment. Warsaw is particularly dominant and outperforms other cities.

4. Identification of the most relevant mid- to long-term urban investment strategy for Poland – the case of the Wielkopolska region

4.1. Development path of the region

The name 'Wielkopolska' (Greater Poland) began to be used widely in the 15th century, but the history of the region is much longer. In the 10th century the region was the territory of the Polanie tribe. In the following years they played the most important role in the process of formation of the Polish nation. Mieszko I (the prince of Polanie) united the other tribes which were living in the present territory of Poland and formed a new state. The first capitals of Poland become Poznań, Gniezno and Giecz. These cities (mainly Gniezno) were the seats of Polish kings until 1038, when the capital was moved to Kraków.

In the following centuries the significance of Wielkopolska dropped, but the region still played a significant economic, cultural and strategic role in the country. Due to its advantageous localization Poznań become one of the most important trade centres in this part of Europe. The situation had not changed much by the end of the 18th century, when almost the whole of Wielkopolska came under Prussian rule. The region developed faster than the other parts of the country, which were under Russian or Austrian protection. There was much investment in the development of the rail system and industrialisation.

In 1918, after World War I, Wielkopolska was still under German occupation, but in December of that year the citizens organized an uprising (the Wielkopolska Uprising). As a result the region again became part of Poland. During World War II the region was incorporated into the Reich as the so-called Warta Land. The Nazis particularly aimed to liquidate the intellectual elite of the society. The region, like the whole country, came out of the war badly damaged. The economy and infrastructure were almost destroyed – due to the hostilities most industrial plants, housing areas and cultural facilities had to be rebuilt.

After World War II and the Nazis' defeat new lands in the west were added to Wielkopolska. Several years later a new voivodeship with its capital in Zielona Góra was created. In 1975, as a result of the territorial reform, Wielkopolska was divided into 5 smaller voivodeships – *Poznańskie, Pilskie, Konińskie, Kaliskie* and *Leszczyńskie*. The boundaries of the region were changed most recently in 1999 after the next territorial reform.

At the beginning of the 20th century Wielkopolska was the second largest voivodeship in Poland in terms of area and third in terms of population. The number of inhabitants in 2008 was nearly 3.4 million. It was created in 1999 out of the five former voivodeships with capitals in Poznań, Piła, Konin, Kalisz and Leszno. The region is situated at the junction of major European communication routes (Fig. 58). It is at the crossroads of a major route from Berlin through Poznań to Konin and Warsaw and on to Moscow, and from Prague through

Leszno and Poznań to the Baltic Sea. Poznań's Ławica airport operates both domestic and international flights. There are regular connections to London, Dublin, Brussels, Stockholm, Vienna, Munich, Frankfurt am Main and Copenhagen.

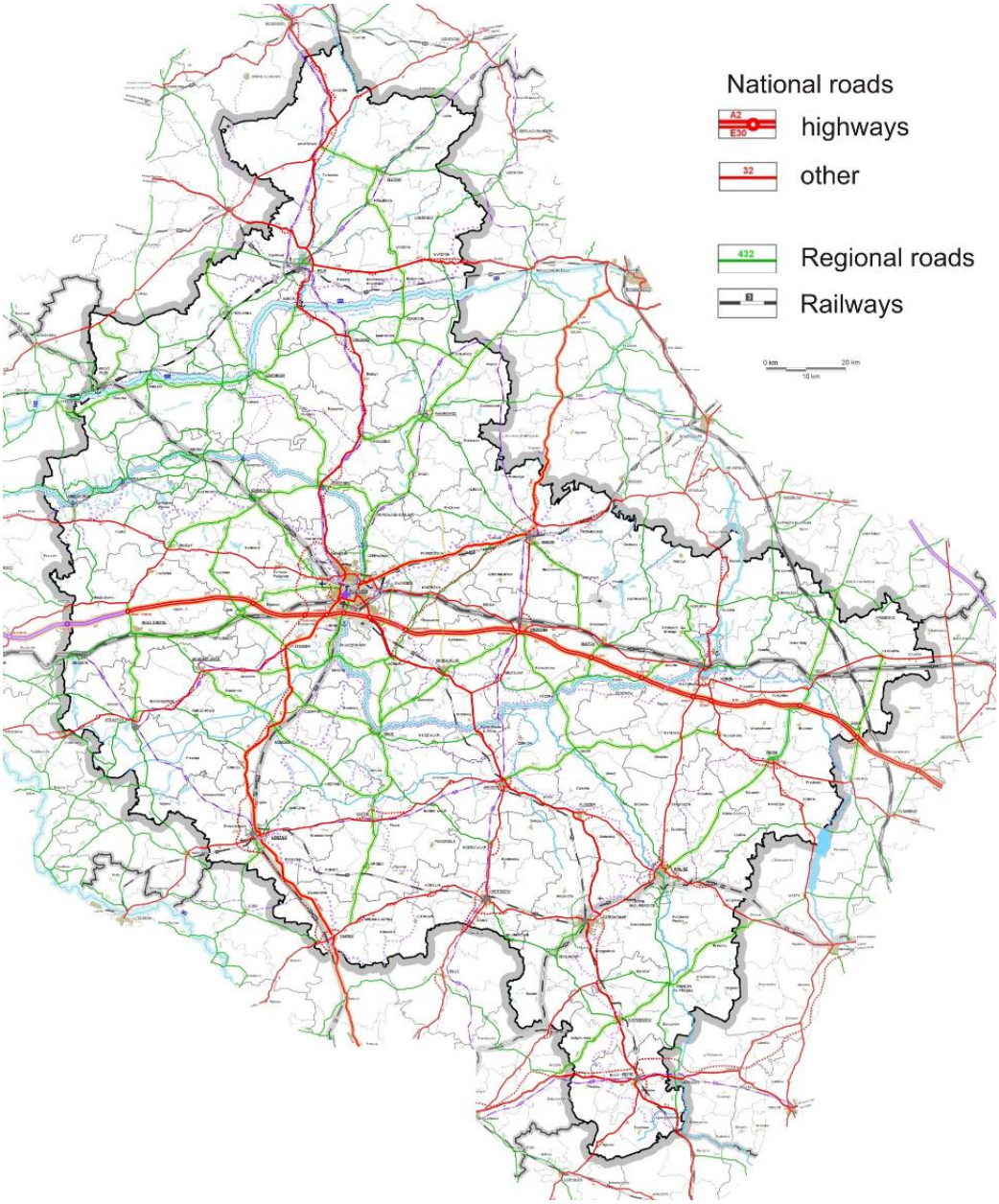


Fig. 58. Main transport connections in Wielkopolska voivodeship
Source: Spatial Development Plan of Wielkopolska Voivodeship (2010)

Wielkopolska is a region of historical and economic significance, and is identified as such not only in Poland, but also on the international arena. 4% of all active businesses in Poland operate in the voivodeship of Wielkopolskie. There are over 300 thousand business entities registered here, placing the voivodeship in third place nationwide. Small and medium businesses constitute a decisive majority among existing businesses. There are over 40 companies from Wielkopolska among the 500 largest in Poland.

An important position in the economy of the voivodeship is held by industry. The healthy condition of industry in Wielkopolska is due to successfully completed privatisation (currently only 1% of industrial entities are state owned) and a significant involvement of foreign capital. Germany, Great Britain, United States, Ireland, Sweden, Japan, Holland and Switzerland have invested the most in the Wielkopolska region. The most significant industrial centres in Wielkopolska are Poznań, Kalisz, Ostrów Wielkopolski, Konin, Piła and Leszno.

Wielkopolska is rich in energy resources, mainly brown coal, natural gas, crude oil and peat. Brown coal deposits are excavated and processed in the Konin region. Deposits of natural gas are mainly found in the southern and south-western part of the voivodeship. In the Kłodawa region rock salt is excavated. Wielkopolska is also characterised by an enormous wealth of peat.

Food processing is the predominant sector of industry in the region, thanks to its excellent raw material input. Moreover, over 35% of produced refrigerators and freezers in the country are manufactured in the voivodeship, as well as 30% of gas stoves. Wielkopolska's participation in furniture manufacturing is also significant (approx. 6%). Vehicle production is one of the more important developing areas of the industry of this region. Among other areas of industry, the following should be mentioned as having substantial importance: metal casting, pharmaceuticals, lighting and household appliances, tyre manufacturing, textiles and clothing. Brown coal mining, milling and power production in the Konin region also play a noteworthy role. Wielkopolska is traditionally associated with productive and efficient agriculture. Despite the fact that the local soil and weather conditions as well as water resources are considered average, the region has one of Poland’s highest levels of agricultural production. The geographically and economically favourable location of Wielkopolska, the advantageous size of farms compared with others in the country, but primarily a highly developed farming culture, impact the high level of agriculture. Wielkopolska is the leading region in the country in cattle breeding. The region is the unquestionable leader in grain production.

Farms in Wielkopolska are well-equipped with technical infrastructure, and the number of farming machines often significantly surpasses the national average. A well-developed consulting, scientific research and production-supporting infrastructure as well as trade in agricultural products contribute to the increase of agricultural production quality and output.

The farmers of Wielkopolska adapt to changing market conditions. New crops like asparagus, button mushrooms and organic food appear in the region. Also hunting centres are being created. The popularity of agro-tourism farms is also a new phenomenon. One of the attractions of Wielkopolska’s agriculture is horse breeding. The following stud farms have a long tradition in this area: Racot, Pępowo, Golejewek, Iwno, Posadów and Sieraków.

In 2000-2010 the number of inhabitants in Wielkopolska has grown to approx. 1.35%. Trends in the numbers of inhabitants of urban and rural areas are similar as in Poland as a whole. An

ongoing population decline in cities and a significant increase in population in rural areas has been observed since 2002 (Fig. 59).

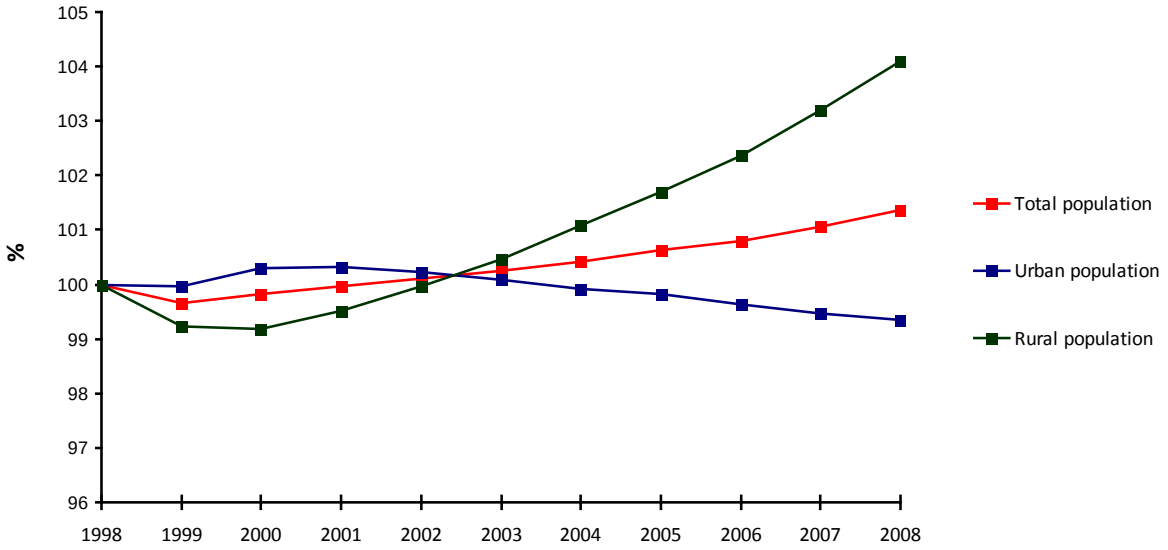
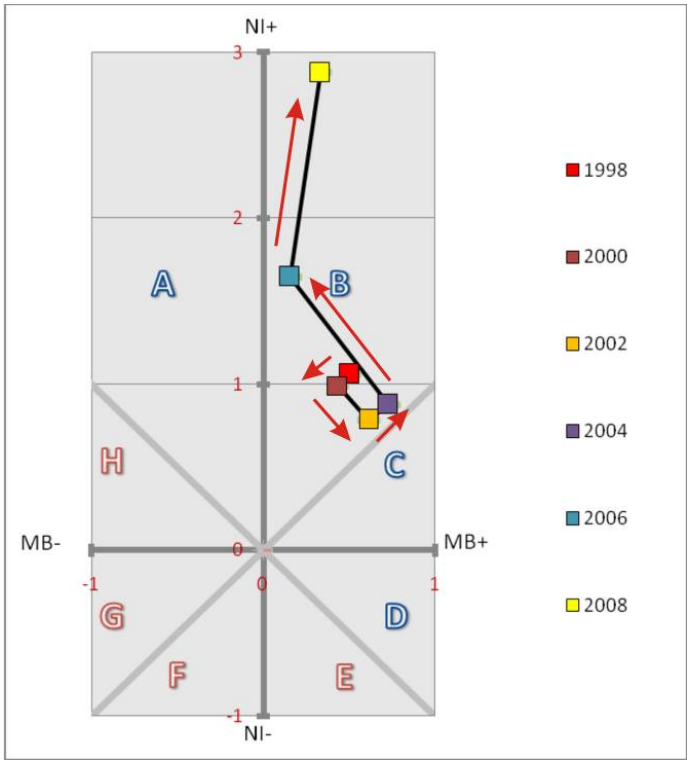


Fig. 59. Changes in population of Wielkopolska in 1998–2008 (1998=100%)
Source: own compilation based on Statistical Office data



MB –migration balance (in $^{o}/_{oo}$), **NI** – natural increase (in $^{o}/_{oo}$)

Fig. 60. Typology of population growth/decline in Wielkopolska in 1998–2008
Source: own compilation based on Statistical Office data

On the basis of population growth/decline analysis (as proposed by Webb) the demographic situation in particular years in Wielkopolska can be compared (Fig. 60). In the whole analysed

period (1998–2008) both migration balance and birth rate had positive values. The voivodeship was the most popular migration destination in 2002 and 2004. Also, in that time the birth rate reached its highest values. In subsequent years, however, this rate has had an upward trend, and in 2008 reached the value of nearly $3^{o}/_{oo}$.

4.2. Urban areas

Wielkopolskie has the largest number of cities in Poland at 109, but the share of urban population is lower than the average for the country (Table 39). In many cases the cities are small or medium-sized (Table 40), hence the urbanisation ratio in this region is lower than the national average. The largest city is Poznań(with 557,000 inhabitants, and in the whole agglomeration 869,000). It is also the capital of the voivodeship, with the greatest economic and socio-economic potential in the region (Stryjakiewicz et al. 2009).

Table 39. The main characteristics of urban areas in Wielkopolska

Voivodeship	*The number of cities*	*The number of small cities (less than 20 000 people)*	*Urban population (in %)*	*Average size of city*	*Area per 1 city (in km^2)*	*The number of cities per 1000 km^2*	*Dynamics of population in 1999–2009 in %*
Poland	897	677	61.1	25,982	348.5	2.9	-0.20
Dolnośląskie	91	71	70.5	22,283	219.2	4.6	-0.40
Kujawsko-Pomorskie	52	44	60.9	24,220	345.6	2.9	-0.38
Lubelskie	41	30	46.5	24,537	612.7	1.6	-0.36
Lubuskie	42	36	63.7	15,311	333.0	3.0	-0.30
Łódzkie	43	27	64.3	38,108	423.7	2.4	-0.50
Małopolskie	59	46	49.4	27,537	257.3	3.9	0.00
Mazowieckie	85	62	64.6	39,583	418.3	2.4	+0.33
Opolskie	35	29	52.4	15,474	268.9	3.7	-0.50
Podkarpackie	47	37	41.2	18,385	379.7	2.6	-0.12
Podlaskie	38	30	60.1	18,847	531.2	1.9	+0.04
Pomorskie	42	27	66.5	35,122	435.9	2.3	-0.18
Śląskie	71	35	78.2	51,198	173.7	5.8	-0.61
Świętokrzyskie	31	25	45.3	18,588	377.7	2.6	-0.49
Warmińsko-Mazurskie	49	38	59.9	17,449	493.3	2.0	-0.30
Wielkopolskie	**109**	**89**	**56.4**	**17,568**	**273.6**	**3.7**	**-0.08**
Zachodniopomorskie	62	51	68.8	18,775	369.2	2.7	-0.36

Source: Powierzchnia i ludność w przekroju terytorialnym w 2009 r., GUS, Warsaw

Tab. 40. Size of cities in Wielkopolska (2008)

Size of city	Number of cities	Population	Share in the population of Wielkopolska
Over 100 000	2	668 963	34.8
50 000-100 000	5	360 976	18.8
20 000-50 000	13	336 505	17.5
10 000-20 000	18	264 835	13.8
5 000-10 000	21	146 240	7.6
2 000-5 000	40	126 151	6.6
Till 2 000	10	17 371	0.9
Overall	109	1 921 042	100.0

Source: Central Statistical Office 2008

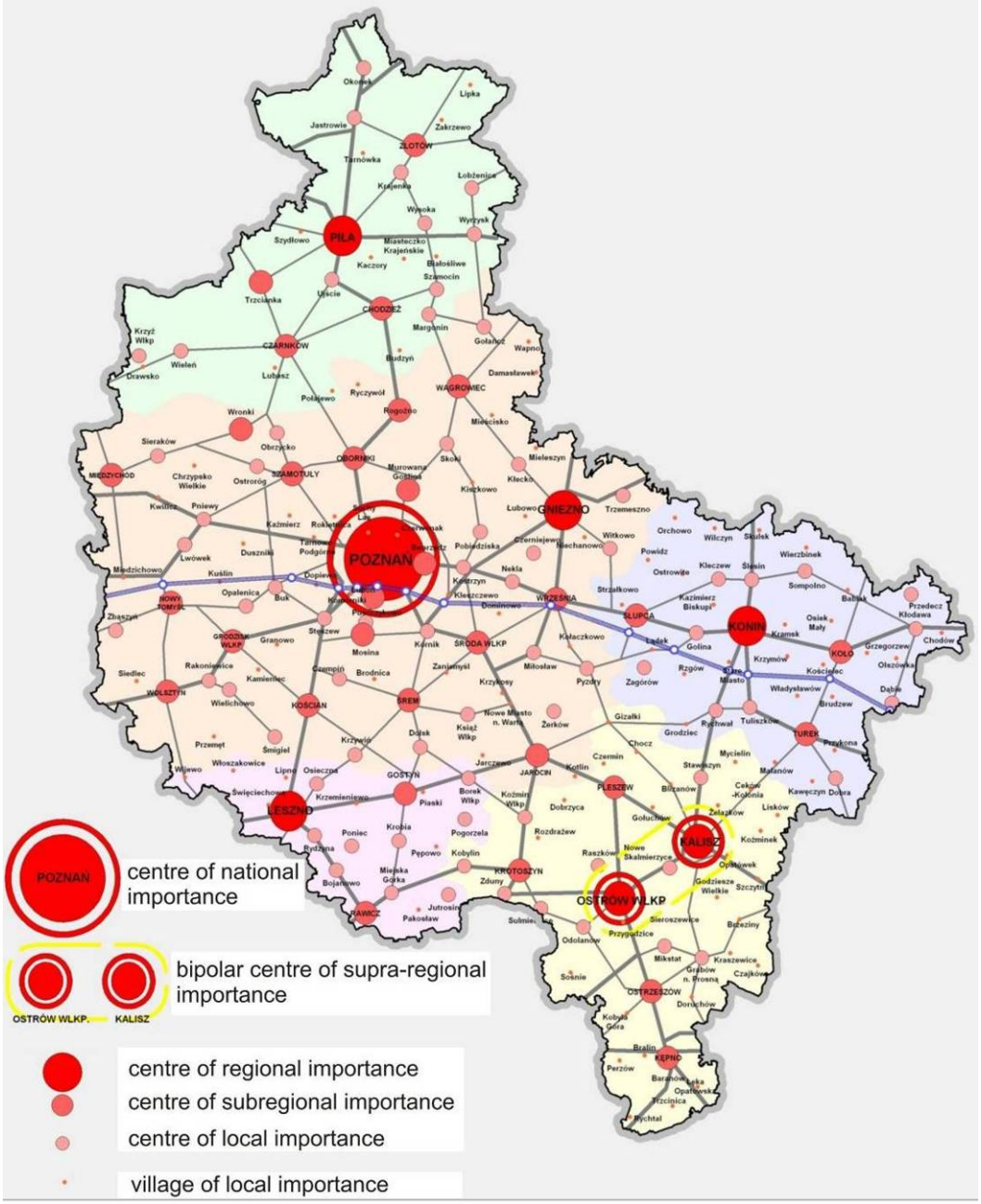


Fig. 61. Settlement system of Wielkopolskie voivodeship
Source: Spatial Development Plan of Wielkopolskie Voivodeship (2010)

Within the last 10 years the population decreased in 54 urban centres in Wielkopolska (nearly 50% of all cities). Peripheral and eastern cities were affected the most. In the case of Konin, Turek and Koło this was a result of strip mining of brown coal linked with the power industry. These activities have an unfavourable influence on the natural environment which translates into a lower standard of living (Konecka-Szydłowska 2009).

The highest increases in population (above 10%) were noted in urban centres near Poznań Luboń, Stęszew and Kórnik are commonly called 'bedroom cities' – their residents realise their needs (education, jobs, services) in Poznań (Fig. 62).

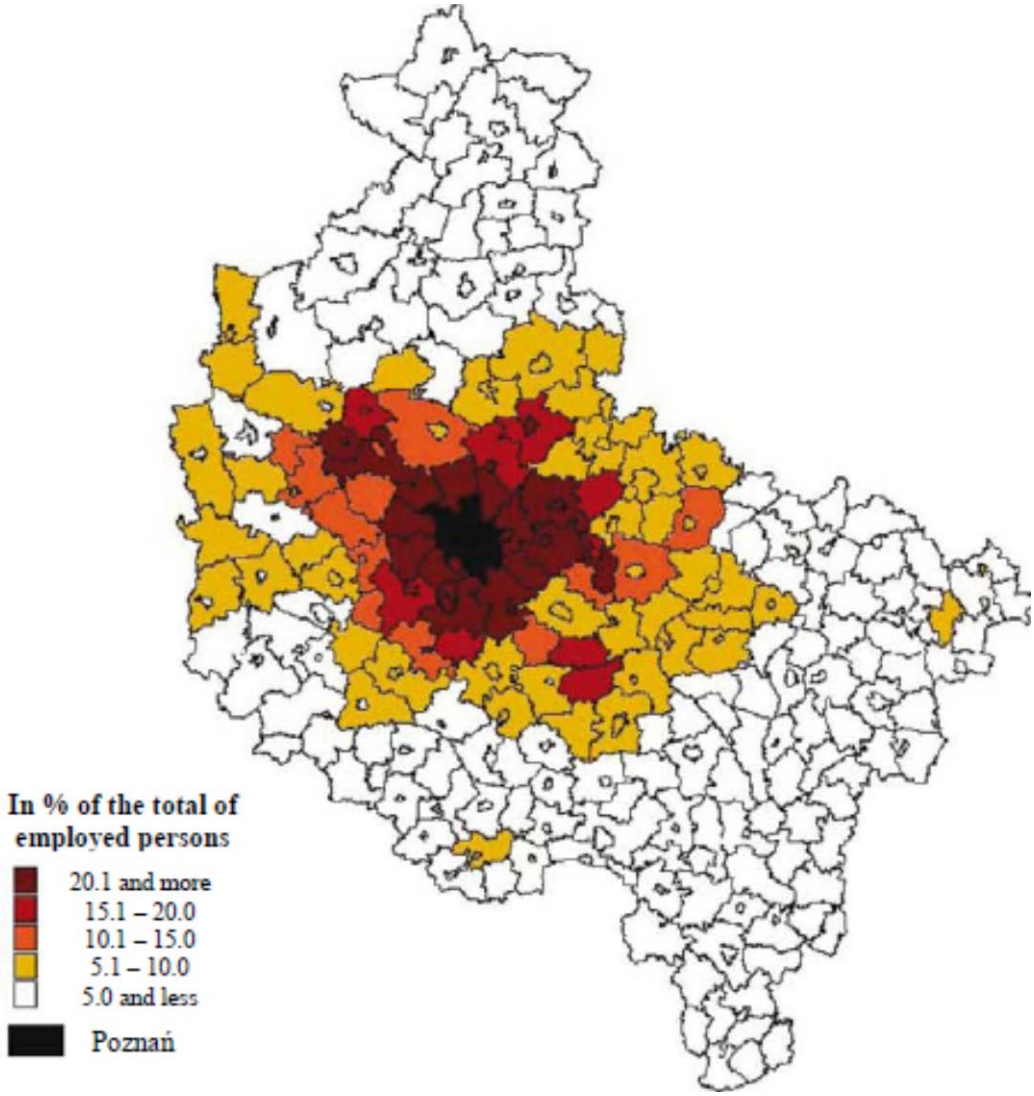


Fig. 62. People commuting to Poznań in 2006
Source: Central Statistical Office

Tab. 41. Chosen demographic characteristics of the largest urban areas in Wielkopolska in 2008

Characteristic	Poznań	Kalisz	Konin	Piła	Ostrów Wlkp	Gniezno	Leszno
Number of people	557 264	107 140	79 829	74 735	72 368	69 737	64 142
Migration balance	-5.60	-2.34	-7.33	-3.72	-2.07	-1.38	-1.45
Natural increase	0.69	-0.80	2.51	2.93	1.55	1.85	2.60
% of people of pre-working age	15.27	17.60	17.98	19.21	17.73	19.00	19.02
% of people of working age	66.51	64.18	65.82	66.44	65.78	65.30	65.88
% of people of post-working age	18.22	18.22	16.20	14.36	16.49	15.70	15.10

Source: Central Statistical Office

Because of the number of urban centres it was necessary to divide them into classes for the purposes of further analysis (Parysek 2005). The presentation of certain dependencies as well as differences and similarities was possible only in a generalized form. Two criteria were chosen for the analysis. The first one is the city-size criterion, commonly used in studies devoted to cities (Konecka-Szydłowska 2009). The second one is based on the dominant role of the Poznań agglomeration – urban areas were classified in accordance with their distance from Poznań.

For the purposes of the demographic analysis, urban areas of Wielkopolska were grouped into 4 classes and 5 sub-classes (compare Konecka-Szydłowska 2009), taking into consideration population:

- the capital of the region – Poznań
- large cities (50,000–200,000) — Kalisz, Konin, Piła, Leszno (former voivodeship cities until the administrative reform in 1999) and Ostrów Wielkopolski and Gniezno
- medium-sized cities – powiat cities and cities in Poznań's metropolitan area:
    - medium-large (20,000–50,000) – 13 cities
    - medium-small (10,000–20,000) – 18 cities
- small cities – district centres:
    - small (5,000–10,000) – 20 cities
    - very small (2,000–5,000) – 41 cities
    - micro-cities (below 2,000) – 10 cities

In order to emphasize further differences a second division of cities in Wielkopolska was introduced – depending on the distance from the region's capital and strong economic centre – Poznań. As a result cities were grouped into 4 classes (Fig. 63):

- Class A – cities within a distance of 25 km to the centre of Poznań – 9 cities;
- Class B – cities at a distance of 25–50 km – 26 cities;
- Class C – cities at a distance of 50–75 km – 30 cities;
- Class D – cities at a distance of more than 75 km – 42 cities.

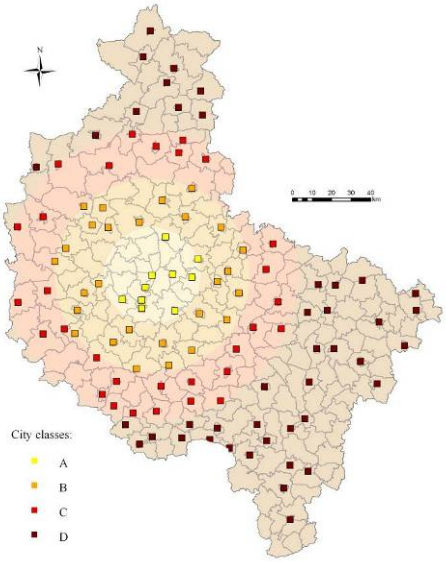


Fig. 63. Urban areas and their distance from Poznań
Source: own compilation

This approach enabled the presentation of the situation of urban centres with different socio-economic potential and demographic situation. This is particularly relevant when identifying the main migration tendencies.

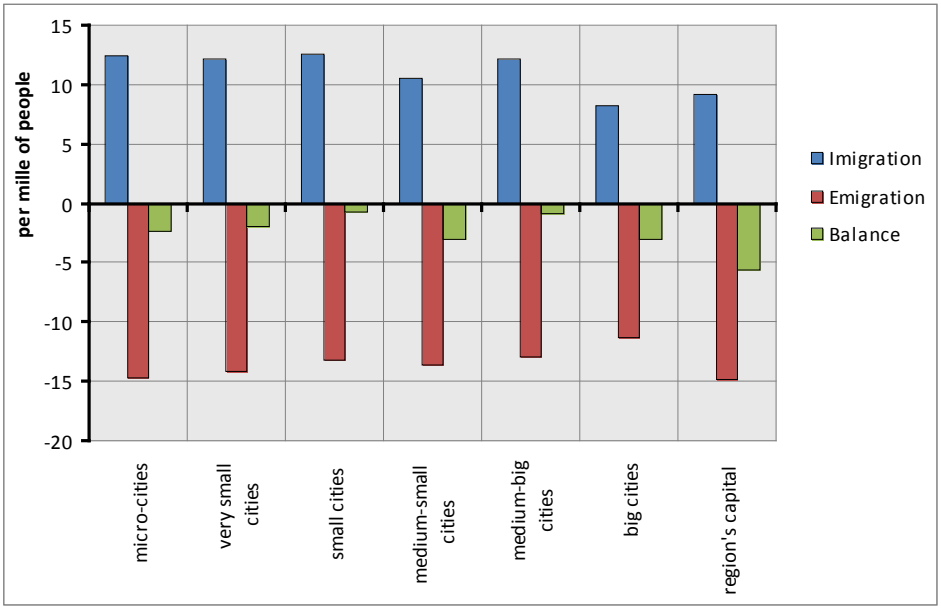


Fig. 64. Migrations in urban areas in the Wielkopolska region in 2008
Source: own compilation based on Statistical Office data

In Wielkopolskie all analysed classes of urban areas had a negative migration balance in 2008 (Fig. 64). The lowest decline was observed in medium-large and small cities, and the highest in cities with more than 50,000 inhabitants (large cities including Poznań). Very small cities and micro-cities experienced a moderate population decline. Their inhabitants were highly mobile compared with inhabitants of large cities. The most popular cities for immigrants

(approx. 12‰) were usually small cities (below 50,000). A lot of people emigrated from micro-cities, very small cities and the capital of the region (approx. 15‰).

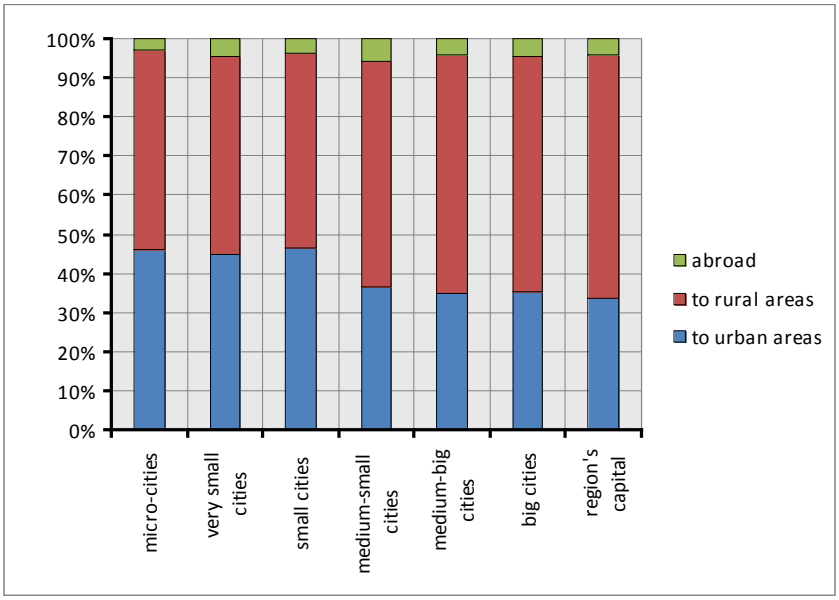


Fig. 65. Structure of emigration in urban areas (2008)
Source: own compilation based on Statistical Office data

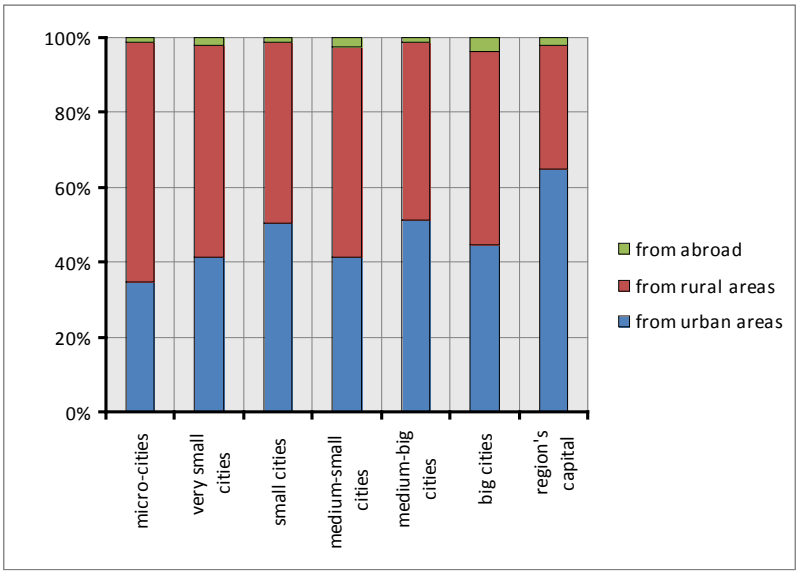
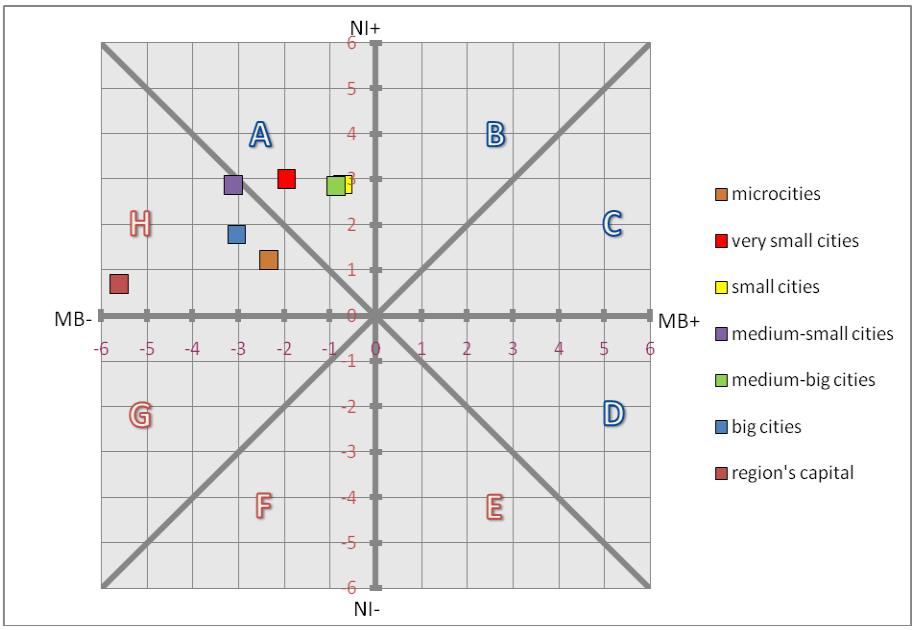


Fig. 66. Structure of immigration in urban areas (2008)
Source: own compilation based on Statistical Office data

In cities with more than 20,000 inhabitants the majority of people migrated to rural areas. In cities with less than 20,000 inhabitants the percentage of urban and rural migrations was similar. The largest number of people migrating abroad was in medium-small cities.

People came to small and micro-cities most often from rural areas (Fig. 65). In the immigration structure of the large cities and the region's capital people from the rural areas were dominant (Fig. 66). In other cases this structure was similar.



MB – migration balance (in $^{o}/_{oo}$), **NI** – natural increase (in $^{o}/_{oo}$)

Fig. 67. Typology of population growth/decline in urban areas in Wielkopolska in 2008 (city-size classification)

Source: own compilation based on Statistical Office data

Taking into consideration the typology of territorial units suggested by Webb (1963), different size categories can be grouped into two classes (Fig. 67, Table 42):

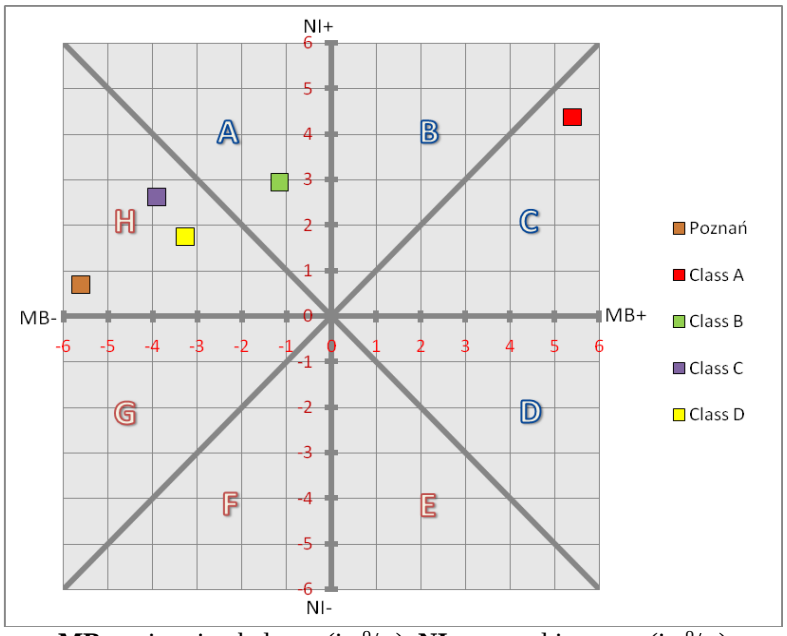
- Class A – includes very small, small and medium-large cities. They show population growth, achieved despite a negative migration balance. This is caused by a relatively high birth rate (c. $3^{o}/_{oo}$).
- Class H – includes four elements: micro-cities, medium-small cities, large cities and the capital of the region. In their case the birth rate also had positive values, but it was not enough to outweigh the unfavourable migration balance. As a result these size categories experienced a decrease in the total number of inhabitants. Poznań was strongly affected by this.

On the basis of a location classification, cities can be grouped into three classes (Fig. 68). Centres which achieved positive population growth are included in:

- Class A – includes a set of cities indicated by the letter B. The positive birth rate outbalanced the negative migration balance, which led to a small increase in the total population.
- Class C – includes a set of cities indicated by the letter A, meaning cities closest to Poznań. In these areas the birth rate and migration balance had positive values (above $4^{o}/_{oo}$). The second variable was of slightly more importance, but both of them turned out to be the highest in the analysis.

The remaining sets of cities (C and D) had a negative population growth (decline). They all belong to class H according to Webb's typology. This means that they have more births than

deaths, but this does not outweigh the negative migration balance. Poznań has the highest decline of population, mainly due to the fact that emigration exceeds immigration.



MB – migration balance (in ‰), **NI** – natural increase (in ‰)

Fig. 68. Typology of population growth/decline in urban areas in Wielkopolska in 2008 (location classification)

Source: own compilation based on Statistical Office data

Tab. 42. Demographic characteristics in urban areas of Wielkopolska in 2008

Class	*Number of people*	*% of region population*	*Migration balance*	*Natural increase*	*Total increase*
A	120 870	6	5.42	4.38	9.80
B	331 605	17	-1.16	2.93	1.77
C	284 244	15	-3.89	2.60	-1.29
D	620 858	33	-3.25	1.73	-1.52
Poznań	557 264	29	-5.60	0.69	-4.92

Source: Own compilation

The presented analysis shows that the centres situated in the vicinity of Poznań are developing the fastest way in demographic terms (Fig. 69). Typical of them is the high birth rate resulting from a partially different age structure (many inhabitants of reproductive age) and a positive migration balance. To a great extent this is a result of a relatively high standard of living in these centres and at the same time of Poznań's very good location, including in terms of jobs, trade facilities, schools, etc. (see Radzimski 2007).

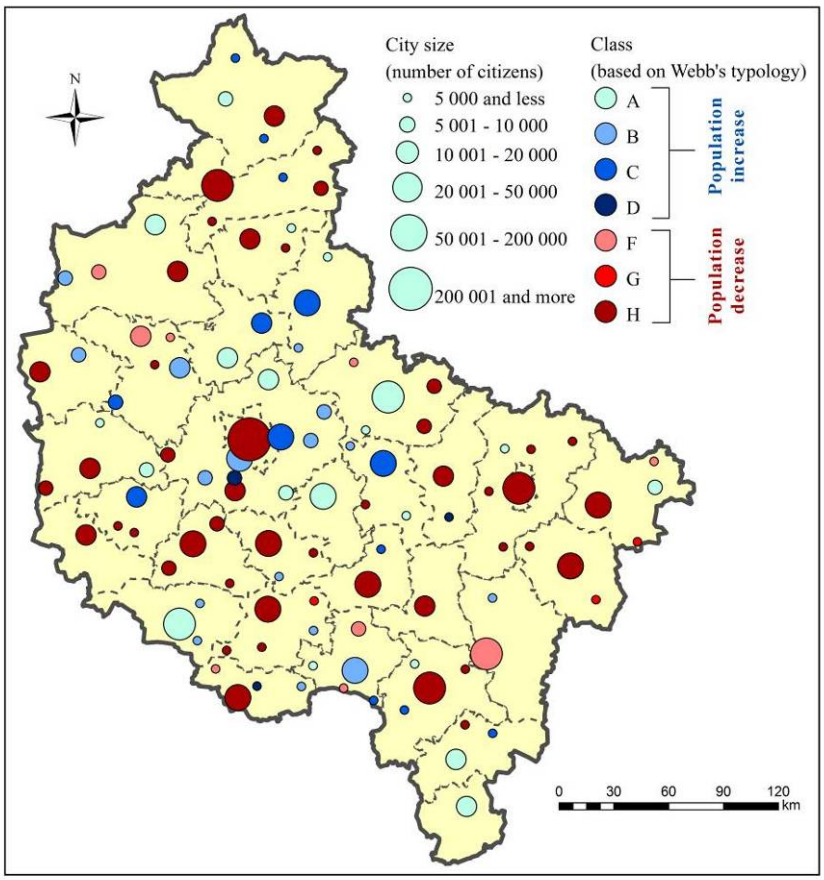


Fig. 69. Typology of the population growth/decline in urban areas in Wielkopolska between 1998 and 2008 (all cities)
Source: own compilation based on Statistical Office data

The popularity of cities near Poznań is proved also by the analyses concerning the cities most frequently chosen by immigrants. As many as 5 out of the 10 most popular destinations in Wielkopolska were cities near the region's capital. The smallest numbers of new inhabitants come to the cities on the borders of the region. This is extremely important for such cities as Kalisz or Turek, indicating that they are not attractive for newcomers and have no prospects for development in the future.

Similar tendencies are not visible when we analyse the centres with the largest decline in population. They are situated both near Poznań (e.g. Swarzędz) and at the borders (e.g. Gołańcz or Dobra).

The smallest numbers of people leave cities located in the south and centre of the region. In the case of Grodzisk Wielkopolski, Środa and Nekla this could be a result of relatively good access to Poznań and the relatively high development of these centres. In the southern part of Wielkopolska the low mobility of inhabitants may play a vital role.

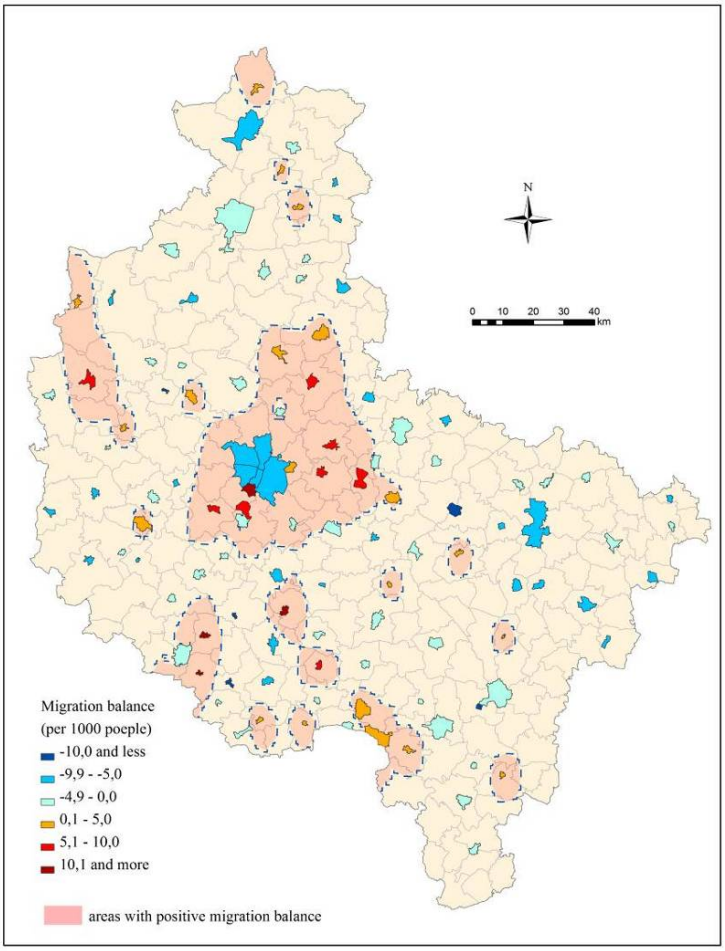


Fig. 70. Migration balance in urban areas in the Wielkopolska region in 2008
Source: own compilation

The migration balance for all urban areas in the region is presented in Fig. 70. From this it can be concluded that an outflow of inhabitants from urbanised areas is dominant. Popular destinations are located in the central part of Wielkopolska (apart from Poznań), but also in some areas in the peripheral parts of the region.

Large centres such as Poznań, Konin, Kalisz and urbanised areas in eastern Wielkopolska are losing the largest numbers of inhabitants. Also, in the northern part of the region cities with a negative migration balance are dominant.

4.3. Urban competitiveness evaluation

Because of the differences in size and location, cities in Wielkopolska have varied possibilities of development. Small cities have different problems and challenges than the region's capital or other large urban centres. Also very important are settlement density, transport possibilities, historical connections and other conditions. All these factors are responsible for the situation in which particular aspects of socio-economic growth are at different levels in individual urban areas in Wielkopolska.

To identify the strongest and the weakest areas of socio-economic development in individual urban areas, complementary analysis based on selected indexes was performed. Indexes were chosen according to the Silicon Valley Index methodology. The great number of variables was reduced through the use of Principal Component Analysis. As a result five main areas of socio-economic growth were selected. They would be helpful in estimating urban areas' competitiveness and in identification of the main problems of their development.

4.3.1. Demography – people

The first chosen area of socio-economic growth was named "people". It includes demographic characteristics such as migration balance, natural growth, population dynamics and the number of people at productive and post-productive age. Population potential could be one of the most important factors, which influences such important aspects for urban areas as local economy or local government budget. Demographic tendencies are also helpful in assessing future development possibilities for units.

On the basis of the PCA at powiat level two principal components were obtained explaining the total variance to levels of 47% and 37% (Table 43). The first obtained factor has a high positive correlation with population dynamics, migration balance and the size of households, and a negative correlation with daily migrations to work. It was named 'migration tendencies'.

Table 43. Principal Component Analysis for powiats in the category 'people'

Principal component	Correlated characteristics
Factor 1 (Migration tendencies)*	Positive correlation - migration balance per 1 000 people (r=-0.79) - the number of people per household (r=0.79) - population dynamics in 1998–2008 (r=0.70) Negative correlation - the number of daily migrations to work – balance (r=-0.71)
Factor 2 (Demographic potential)*	Negative correlation - number of people of productive age per total population (r=-0.80) - population dynamics in 1998–2008 (r=-0.67) - migration balance per 1 000 people (r=-0.56)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

The first obtained component has the highest values in the powiats near the largest urban centres (Fig. 71). Especially the powiats Poznański and Leszczyński are distinctive. As a result of urban sprawl many inhabitants of Poznań, Leszno, Konin or Kalisz move to these areas. People wish to enjoy the benefits of living outside the city with good access to all the kinds of services and jobs offered by large urbanized centres. The result is that the number of inhabitants of powiats is growing very fast.

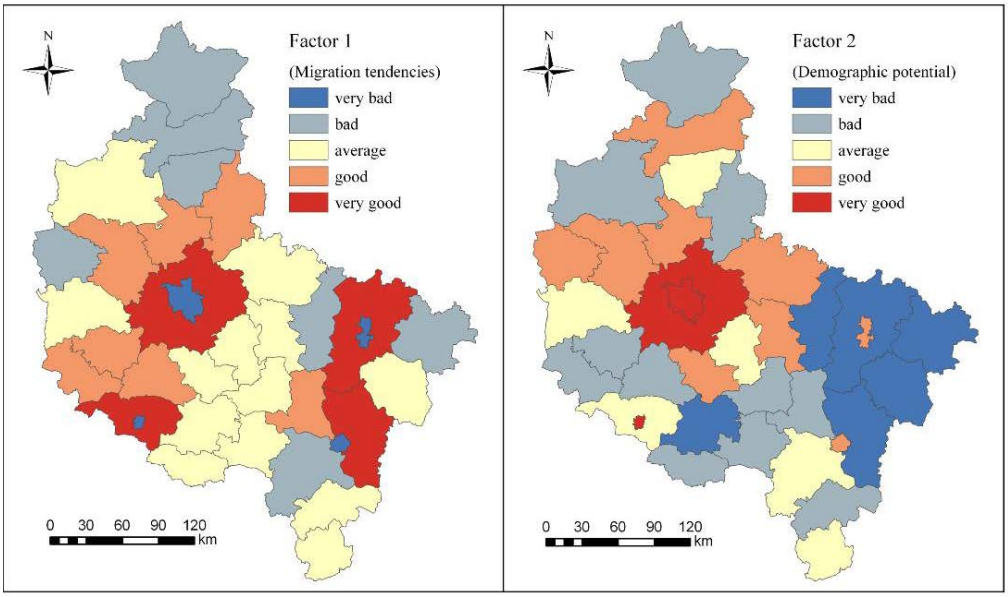


Fig. 71. Migration tendencies and demographic potential in powiats of Wielkopolska (2008)
Source: own compilation

The second principal component is negatively correlated with the number of people of economically productive age, population dynamics and migration balance. It was described as 'demographic potential'. This component indicates that the largest share of people at productive age is found in the powiat Poznański. This is connected with the fact that many people from this group tend to move out from Poznań to the suburban areas. The highest values are found in the south-eastern part of Wielkopolska.

The situation in particular urban areas is strongly connected with the tendencies in powiats. In the analysis such characteristics as population dynamics, migration balance, natural increase, and number of people of productive and post-productive age were selected. On the basis of PCA in urban areas in Wielkopolska two principal components were obtained, explaining the total variance to a level of 37% and 31% (Table 44). The first of them is strongly positively correlated with the number of people of post-productive age, and negatively with the number of people in productive age and with dynamics of local population. Consequently this factor was named 'age structure' (Fig. 72).

The most advantageous age structure was characteristic of small and middle-sized urban areas located near big cities. We may list especially units around Poznań such as Murowana Goślina (over 71% people of productive age), Luboń, Swarzędz and Stęszew. The population in these cities is relatively young and provides a favourable situation in the local labour market. This could be a good predictor for the future development of these units:

> *"Good age structure and a great number of young, active people are causing new small enterprises to appear very quickly."*
>
> *The Mayor of Murowana Goślina*

Table 44. Principal Component Analysis for urban areas in the category ‘people’

Principal component	Correlated characteristics
Factor 1 (Age structure)*	Positive correlation - number of people of post-productive age per total population (r=0.88, w=0.42) Negative correlation - number of people of productive age per total population (r=-0.64, w=0.22) - population dynamics in 1998–2008 (r=-0.60. w=0.19)
Factor 2 (Migration tendencies)*	Positive correlation - number of people of productive age per total population (r=0.52, w=0.17) Negative correlation - migration balance per 1 000 people (r=-0.83, w=0.44) - population dynamics in 1998–2008 (r=-0.66, w=0.28)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

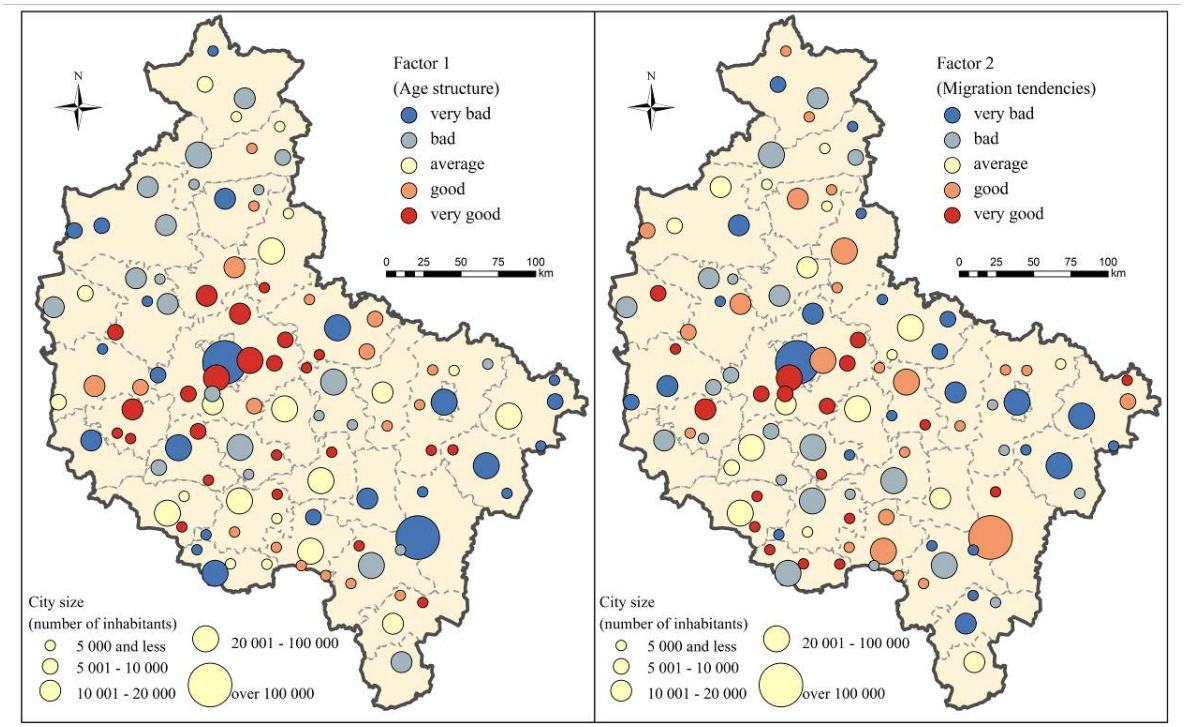


Fig. 72. Age structure and migration tendencies in urban areas in Wielkopolska in 2008
Source: own compilation

A difficult situation caused by a disadvantageous age structure in the local population is found in the largest cities in the region such as Poznań and Kalisz, and also in the units in the northern part of the region (Chodzież, Piła, Złotów). In the near future these areas could experience many problems with their local labour markets as well as with increasing expenditure on medical services and social care.

“Demography is the most serious problem and a great challenge for local authorities.”

Director of the Department of Development
City Council in Poznań

The second principal component has a statistically significant negative correlation with migration balance and population dynamics, and a positive one with the number of people of economically productive age. It was named ‘migration tendencies’ (Fig. 72).

This component shows the attractiveness of particular urban areas for new inhabitants. The increasing potential of people could be a good chance for a unit’s future development (especially for the job market). The best situation as regards highly positive migration tendencies was in urban areas around Poznań (total population growth in the last ten years was there very high – for example: in Kórnik 13.68%, in Kostrzyn 9.31% and in Pobiedziska 7.62%). They attract mainly former inhabitants of Poznań who are looking for better living conditions. The rapid increase in the number of people has brought these cities some problems with technical and social infrastructure. There have also appeared huge transportation problems on the lines linking these urban areas with Poznań. Popular migrant destinations also include small cities in the southern part of the region. The main reasons were the good economic situation and relatively high standard of living.

A much worse situation exists among middle-sized cities. Most of them are losing population. In Konin, Koło and Turek (eastern Wielkopolska) this is caused by deterioration of living conditions resulting from intensive coal industry. Poznań has also experienced a negative balance of migrations and declining population. This situation is characteristic especially for the central parts of the city and is connected with suburbanisation processes. Such disadvantageous migration tendencies could change the situation on the local job market and cause problems in other areas affecting socio-economic development.

4.3.2. Economic potential

Wielkopolska has one the strongest economies among the Polish regions. The most important role here is played by Poznań, where the most enterprises, R&D and foreign capital investment are located. Due to the concentration of universities and high schools there is also a great number of highly qualified workers. However this economic potential is concentrated mainly in the centre of the region, and other parts of Wielkopolska have a worse economic situation.

In the PCA such factors as unemployment rate, income per capita, number of working people, number of enterprises and employment dynamics were selected. On the basis of the PCA in powiats two principal components were obtained, explaining the total variance at a level of 51% and 25% (Table 45). The first one has a statistically relevant positive correlation with unemployment rate and a negative one with the number of enterprises and employment in enterprises, and was described as ‘economic strength’.

Table 45. Principal Component Analysis for powiats in the category ‘economy’

Principal component	Correlated characteristics
Factor 1 (Economic strength)*	Positive correlation - unemployment rate in % (r=0.72) Negative correlation - the number of working people per the total population (r=-0.85) - the number of enterprises per 1 000 people (r=-0.93)
Factor 2 (Employment dynamics)*	Positive correlation - income per capita (r=0.62) Negative correlation - dynamics of employment in 1998–2008 (r=-0.80)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

The first obtained factor takes its highest values in the economically weak regions with relatively high unemployment (Fig. 73). This situation is visible especially in the northern and eastern powiats of the voivodeship, far away from Poznań. The best situation in terms of the job market is found in the large cities of the region and in the powiat Poznański.

The second principal component has a high negative correlation with the dynamics of employment, and to a lesser degree positive correlation with income per person. It was named ‘employment dynamics’. This component is indirectly indicative of a drop in employment, which took place mainly in Poznań, Konin, Kalisz and the northern part of Wielkopolska. This is a result of the restructuring of some branches of industry and agriculture, which led to a minimal growth of average salaries in these areas. The lowest rates were recorded in areas where employment had increased significantly, i.e. in Poznański and in western and southern powiats.

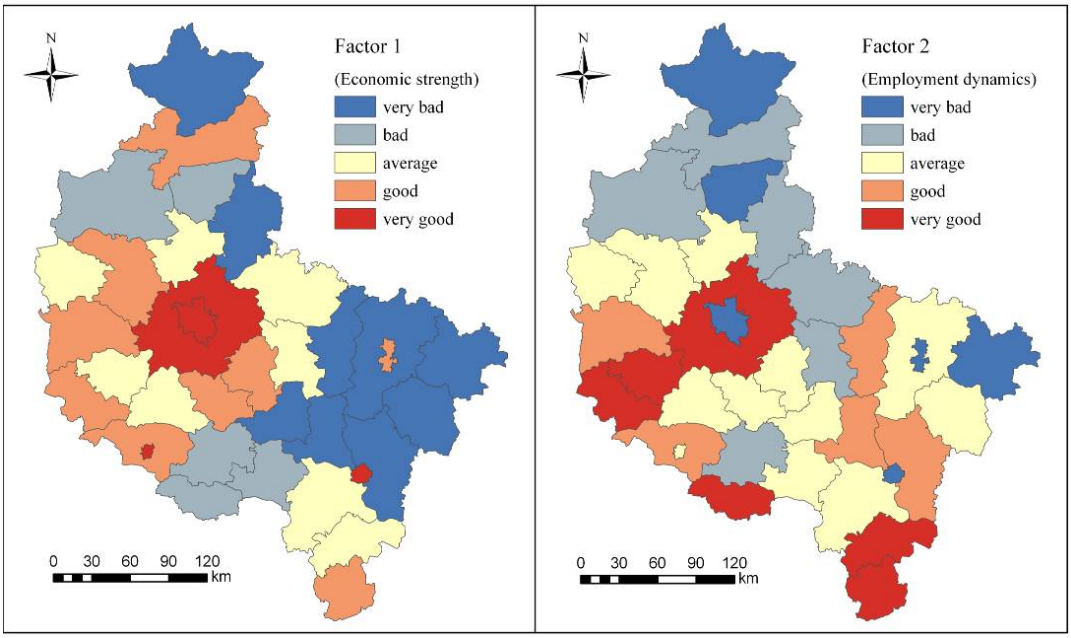


Fig. 73. Economic strength and employment dynamics in powiats of Wielkopolska (2008)
Source: own compilation

The local economy of the city, as one of the most important development factors, has special significance. To analyse urban areas in Wielkopolska, indices were chosen such as the number of working people, the number of enterprises, share of the service sector in the local economy, number of highly specialized services, number of new enterprises, daily migrations to work and employment growth. These helped identify the most important trends in the economy.

As the result of PCA analysis at this level, three principal components were obtained (Table 46). They explain the total variance at a level of 29%, 24% and 16%. The first obtained factor is highly negatively correlated with the number of working people, daily migrations to work, and also to a smaller extent with the numbers of new and all enterprises. It could be described as 'condition of the local labour market'.

Table 46. Principal Component Analysis for urban areas in the category 'economy'

Principal component	Correlated characteristics
Factor 1 (Condition of the local labour market)*	Negative correlation - the number of working people per the total population (r=-0.88, w=0.38) - the number of daily migrations to work – balance (r=-0.71, w=0.24) - the number of new enterprises per 1 000 people (r=-0.58, w=0.16) - the number of enterprises per 1 000 people (r=-0.51, w=0.13)
Factor 2 (The structure of the local economy)*	Positive correlation - the number of people working in the service sector per the total population (r=0.86, w=0.43) - the number of enterprises in the finance and insurance sector per the total number of enterprises (r=0.71, w=0.30)
Factor 3 (The level of entrepreneurship)*	Positive correlation - the number of enterprises per 1 000 people (r=-0.61, w=0.33) - the number of new enterprises per 1 000 people (r=-0.53, w=0.25) Negative correlation - the number of daily migrations to work – balance (r=-0.53, w=0.25)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

The best situation on the local labour market is found in the regional economic centre – in Poznań (Fig. 74). Most of the large and mid-sized cities also have advantageous conditions. The number of people in these units attracts investors offering services to the public and as a result creating new jobs. People from economically weaker areas often seek work in larger cities, which causes growth in daily migrations between these units.

The worst condition of local labour markets is found in mall cities. They have many problems in creating new jobs, because of their small demographic and economic potential. In these units unemployment often becomes a serious problem. In such cities as Przedecz, Dąbie, Czerniejewo and Tuliszków the share of working people in the whole population is only 11% (in Poznań it is 40%).

The second principal component is strongly positively correlated with the share of the service sector in the local economy and with the number of highly specialized services in the unit (Fig. 74). It has also negative correlation with employment growth. This factor was named

'structure of the local economy'. An advantageous structure of the local economy means that enterprises located in the unit are mainly connected with service sector and there are a lot of modern and highly specialized services (financial and bank services, insurance, investor support). Such a situation exists in the largest cities in Wielkopolska (Poznań, Kalisz, Piła, Konin, Koło, Turek). In smaller units the share of modern services is much lower, and most jobs can be found in common services (trade, gastronomy). In such cities many inhabitants are also still employed in agriculture.

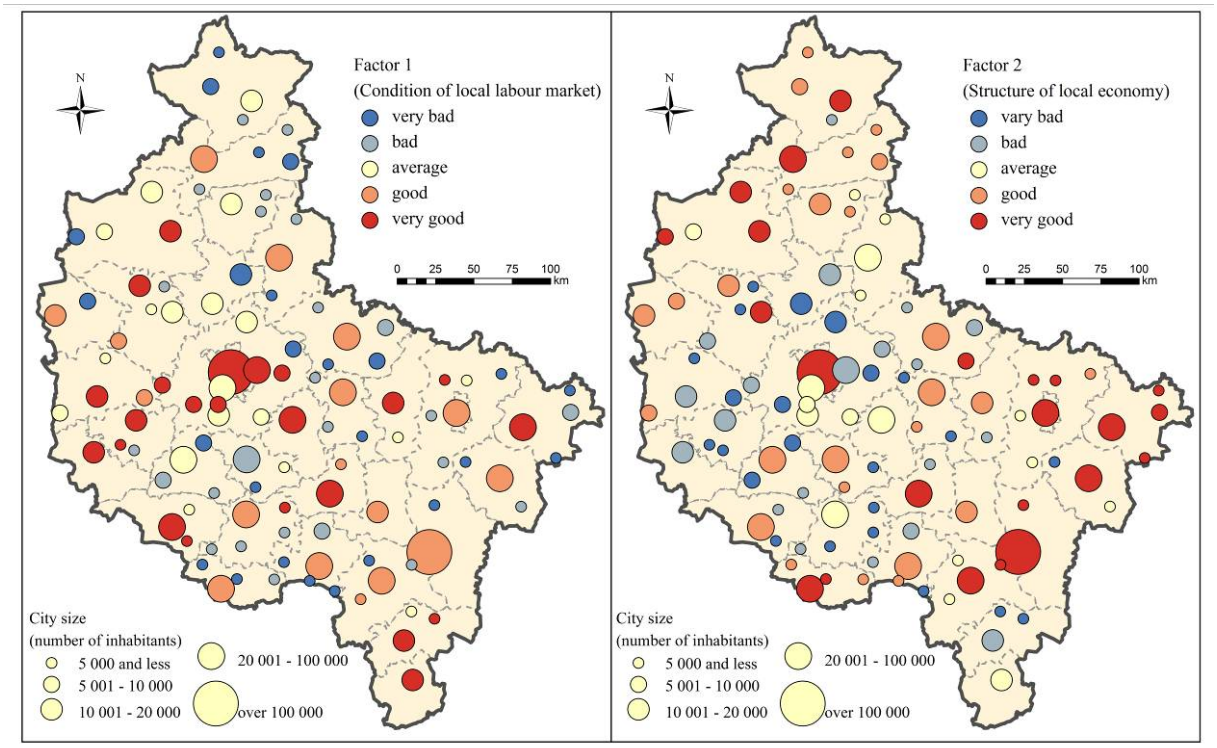


Fig. 74. Condition of local labour market and structure of the economy in urban areas in Wielkopolska in 2008
Source: own compilation

The third principal component has a negative correlation with the number of all enterprises and the number of new enterprises, and positive correlation with daily migrations to work. This factor was named 'level of entrepreneurship' (Fig. 75).

The highest level of local entrepreneurship is found in the centre part of the region. In Poznań and surrounding cities (Luboń, Swarzędz, Puszczykowo, Mosina, Pobiedziska, Murowana Goślina) there is a concentration of enterprises because of demographic and economic reasons. Of great importance is good access to a quality labour market (potential workers with good education and highly specialized skills). In other large cities in the southern part of the region entrepreneurship is also at a high level.

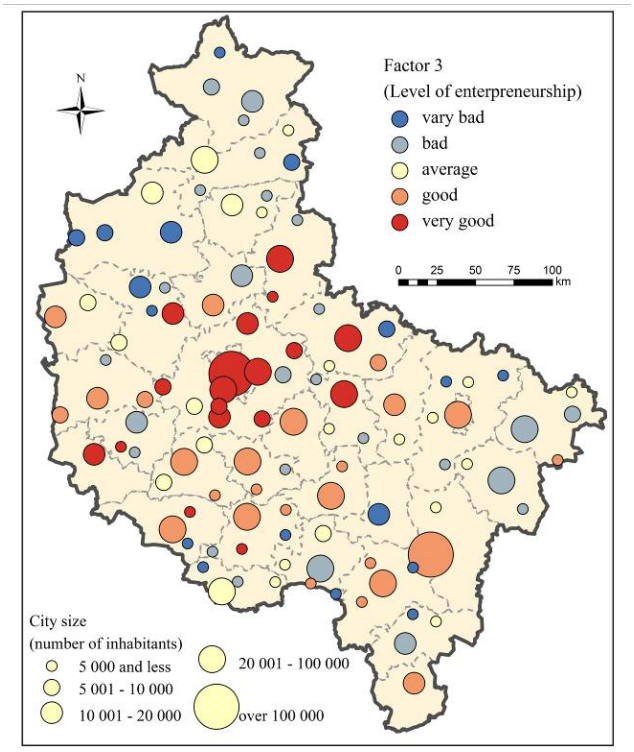


Fig. 75. Level of entrepreneurship in urban areas in Wielkopolska in 2008
Source: own compilation

The level of entrepreneurship is much lower in urban areas located in the northern part of Wielkopolska. The reasons for this situation are mainly the low level of education and relatively large distance to strong economic centres. These areas are mainly less developed and the economic situation is a result of historical factors.

4.3.3. Social infrastructure

The access to facilities often termed social infrastructure is very important for local quality of life. The level of medical or cultural services can strongly affect demographic trends. Increasing the range of social services is one of the aspects of socio-economic development of the unit and should be treated as a priority for local authorities.

In the category ‘society’ such elements as the number of beds in general hospitals, the number of visitors to cinemas, the number of art exhibitions, the number of libraries, the number of infant deaths and the number of places in social welfare institutions were selected. On the basis of the PCA two components were obtained, explaining the total variance at a level of 43% and 22% (Table 47). The first one is highly positively correlated with the number of cinema visitors, number of beds in hospitals, and art exhibitions. It shows also a negative correlation with the number of libraries. Based on this relationship it could be described as ‘access to culture and hospitals’.

Table 47. Principal Component Analysis for powiats in the category ‘society’

Principal component	Correlated characteristics
Factor 1 (Access to culture and hospitals)*	Positive correlation - the number of beds in general hospitals per 1 000 people (r=0.89) - the number of visitors to cinemas per 100 people (r=0.83) - the number of arts exhibitions per 10 000 people (r=0.70) Negative correlation - the number of libraries per 1 000 people (r=-0.84)
Factor 2 (Quality of medical care)*	Positive correlation - the number of places in social welfare homes and facilities per 10 000 people (r=0.84) Negative correlation - the number of infant deaths per 1000 births (r=-0.75)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

The first obtained component takes its highest values in the largest cities of the region (Fig. 76). This is indicative of the fact that in these areas people have the best access to cultural facilities such as cinemas or galleries, and to medical facilities. In general in powiats near large urban centres the ratio has lower values because of the fact that inhabitants of these areas often realize their cultural or medical needs within the short distance to Leszno, Konin, Kalisz or Poznań. On the other hand, inhabitants of smaller powiats have better access to libraries.

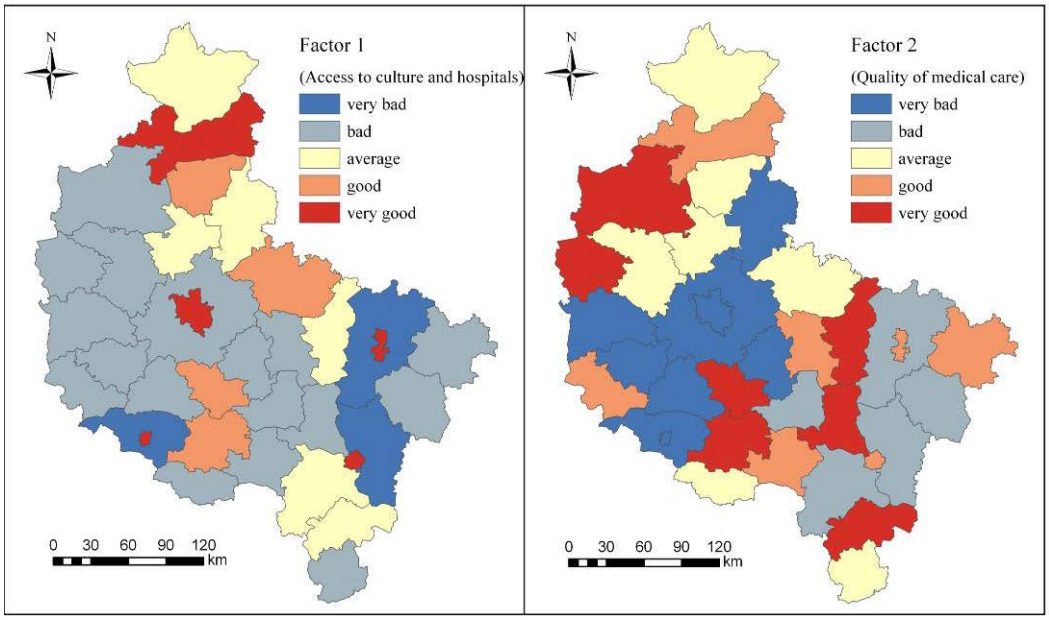


Fig. 76. Access to culture and hospitals and quality of medical care in powiats of Wielkopolska (2008)
Source: own compilation

The second component has a highly positive correlation with the number of vacancies in social care homes and a negative correlation with infant deaths (Fig. 76). It was defined as ‘quality of medical care’. This factor can be indicative of access to services involving social care as well as the quality of medical care. As expected, powiats with greater needs connected

with social care have more facilities for this purpose. The units with good medical care have low numbers of infant deaths.

To analyse the category 'society' at the level of urban areas in Wielkopolska, six characteristics were chosen. They relate to medical service accessibility – the number of health care facilities, the number of medical consultations, the number of people per one pharmacy, and also the commonness of cultural activities – the number of libraries and the number of enterprises active in culture. One characteristic also describes the level of school computerisation.

On the basis of PCA two principal components were obtained, explaining the total variance at a level of 45% and 17% (Table 48). The first of them is highly statistically correlated with all medical and cultural characteristics. Consequently it was named 'access to medical and cultural services' (Fig. 77).

Inhabitants have the best access to medical and cultural services in smaller cities (less than 5 000 people). They can reach health care facilities much more easily and waiting times are short. Places such as libraries, pharmacies and cultural centres are located at small distances from housing areas, so their accessibility is also much higher than in larger cities. It can also be noticed that in the southern part of the region access to medical and cultural services is much easier than in the northern part.

Table 48. Principal Component Analysis for urban areas in the category 'society'

Principal component	Correlated characteristics
Factor 1 (Access to medical and cultural services)*	Positive correlation - the number of people per 1 pharmacy (r=0.71, w=0.19) Negative correlation - the number of libraries per 1 000 people (r=-0.83, w=0.25) - the number of medical consultations per 1 000 people (r=-0.78, w=0.22) - the number of health care facilities per 1 000 people (r=-0.76, w=0.21) - the number of enterprises active in the culture per 1 000 people (r=-0.57, w=0.12)
Factor 2 (Computerization of schools)*	Negative correlation - the number of pupils with access to computer with Internet per the total number of pupils (r=-0.97, w=0.91)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

In larger cities access to health care, pharmacies, libraries and cultural services is much worse. The problem is the large number of people per one facility. It is often very hard to get to a doctor or a dentist. Distances from hospitals, libraries and so on are also much longer, so people need more time to reach them. On the other hand the quality of medical and cultural services in the largest cities is generally much higher than in smaller units. Only in such cities as Poznań, Kalisz and Leszno can people visit cinemas or theatres. Specialised hospitals and pharmacy centres are also located only in larger urban areas.

The second principal component has high statistical correlation with the characteristic describing the level of computerization in schools. It is a very important factor which reflects

the implementation of high-tech solutions in education. This component was named as ‘computerization of schools’ (Fig. 77).

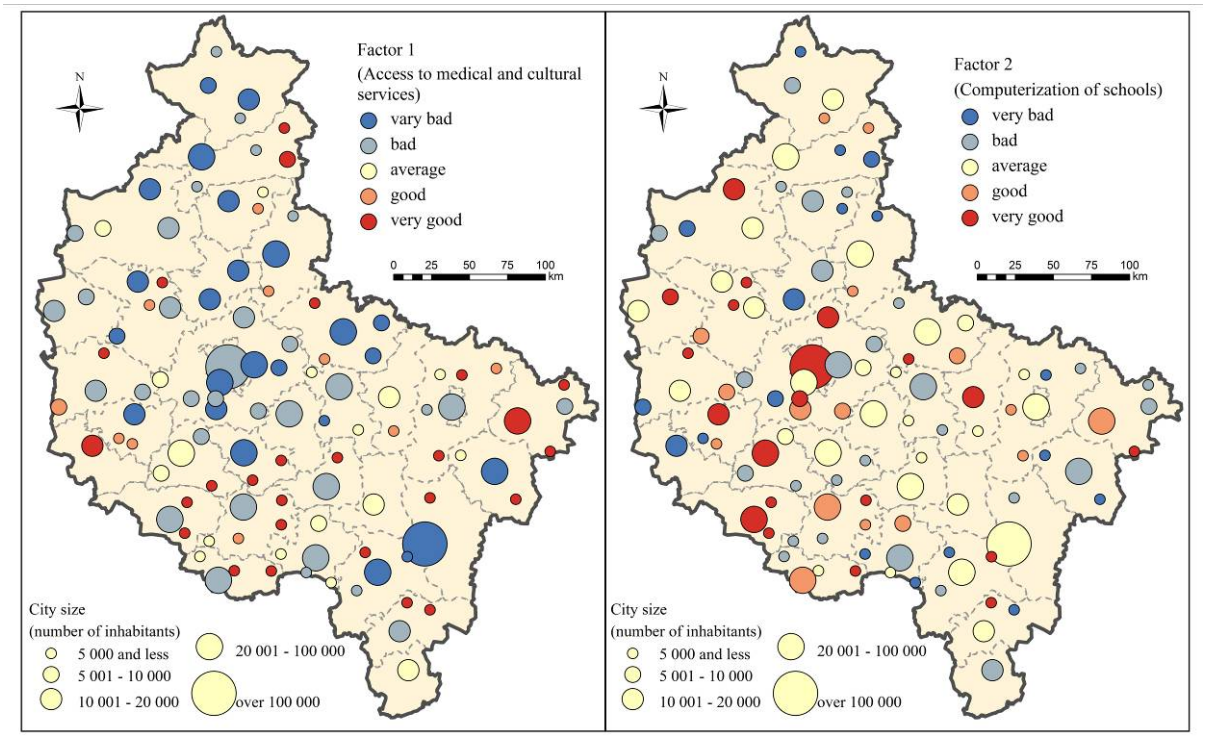


Fig. 77. Access to medical and cultural services and computerization of schools in urban areas in Wielkopolska in 2008
Source: own compilation.

The best access to information technologies is enjoyed by pupils in schools in Poznań and in some larger cities in the region such as Leszno and Kościan. In a few smaller cities (less than 5000 inhabitants) the computerization of schools was also at the highest level (Puszczykowo, Nowe Skalmierzyce, Trzcianka, Sieraków). But in most cities this factor was at an average or low level. This situation shows that only some local societies (represented by local authorities) are interested in investing in computer technologies. It seems that the other units do not see the possibilities and opportunities provided by early computer education.

4.3.4. Quality of place – technical infrastructure and housing

Sustainable and progressive socio-economic development of urban areas is impossible without investments in technical infrastructure and housing. As a result, local authorities are spending a great portion of local budgets every year on roads, sewers, and on preparation of land for future housing developments. Only such activities can attract new inhabitants and ensure the development of the whole unit.

In this category such characteristics as the number of new buildings and homes, the number of metres per person in homes, the number of public transport lines, the area of protected lands and the number of lodgings for tourists were selected. On the basis of the PCA for powiats in Wielkopolska, two principal components were obtained explaining the total variance at a level

of 41% and 26% (Table 49). The first one has statistically relevant positive correlation with the number of new homes and buildings and with home space per inhabitant. It was described as ‘housing development’.

The first principal component presents mainly the housing conditions for inhabitants (Fig. 78). The value of this ratio is attained in the powiats near large urban centres. It is there where the majority of the new housing developments and commercial buildings are constructed. A good housing situation is also present in Poznań and Leszno. Konin and Kalisz have a very poor housing situation, which indicates their lack of attractiveness or shortage of favourable areas for development.

Table 49. Principal Component Analysis for powiats in the category ‘place’

Principal component	Correlated characteristics
Factor 1 (Housing development)*	Positive correlation - the number of new buildings per 1 000 people (r=0.90) - the number of metres per 1 person in homes (r=0.77) - the number of new homes per 1 000 people (r=0.73)
Factor 2 (Quality of natural environment)*	Positive correlation - legally protected areas due to unique environmental value - in % of total area (r=0.72) Negative correlation - the number of public transport lines per 10 000 people (r=-0.61) - the number of new homes per 1 000 people (r=-0.58)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

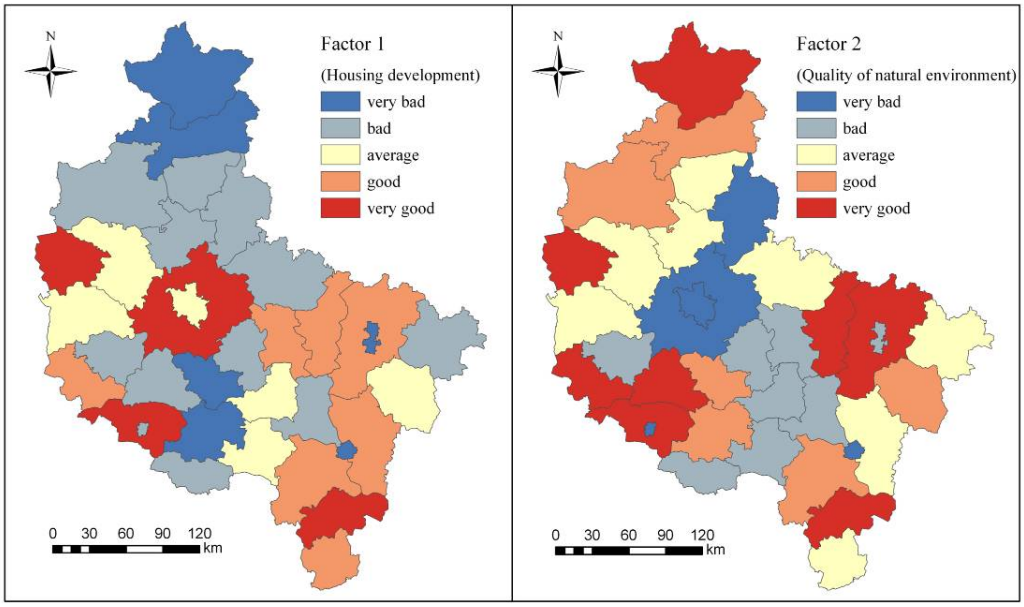


Fig. 78. Housing development and quality of natural environment in powiats of Wielkopolska (2008)
Source: own compilation

The second principal component shows a high positive correlation with the share of legally protected spaces in the total area of the unit, and also to a smaller extent a negative correlation

with the number of public transport lines. It was named ‘quality of natural environment’ (Fig. 78).

The second obtained ratio identifies units with valuable natural areas, however this entails smaller population density and as a result weaker availability of certain services (public transport) or lower housing development. In densely populated areas the strong human pressure on the natural environment is a serious problem:

> *“There are many conflicts today between housing development and environment protection and we should always look for a compromise.”*
>
> *Vice-director of the Department of Development*
> *City Council in Poznań*

The highest values of this component are found in powiats situated on the borders of the voivodeship, while in the central part of Wielkopolska (the most urbanised) it takes the lowest values.

To assess the level of this component in particular urban areas in Wielkopolska, six characteristics describing the number of new buildings were chosen: the number of new homes, the number of metres in homes per one inhabitant, and access to sewers, water supply and gas network. These indices make it possible to obtain (using PCA) two principal components which explain the total variance at a level of 31% and 26% (Table 50).

Table 50. Principal Component Analysis for urban areas in the category ‘place’

Principal component	Correlated characteristics
Factor 1 (Housing development)*	Positive correlation - the number of new buildings per 1 000 people (r=0.83, w=0.37) - the number of new homes per 1 000 people (r=0.82, w=0.36) - the number of meters in homes per 1 person (r=0.54, w=0.15)
Factor 2 (Access to technical infrastructure)*	Positive correlation - percent of people with access to sewerage system (r=0.78, w=0.39) - percent of people with access to water supply (r=0.63, w=0.26) Negative correlation - the number of new homes per 1 000 people (r=-0.57, w=0.21)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

The first principal component is positively statistically correlated with the number of new buildings and homes and also with the number of metres per person in homes. It was named ‘housing development’ (Fig. 79). The highest level of new housing development was found in the central part of Wielkopolska. Poznań and all cities around it still have improving housing conditions. This is strongly connected with migration tendencies and with growing expectations of people as regards their standard of living. In northern and eastern parts of the region housing development is much slower. Urban areas there are not very attractive places to live, due to their economic conditions. Also very important is the financial barrier – the

average monthly salary is much lower in these areas than in the central and southern parts of the region.

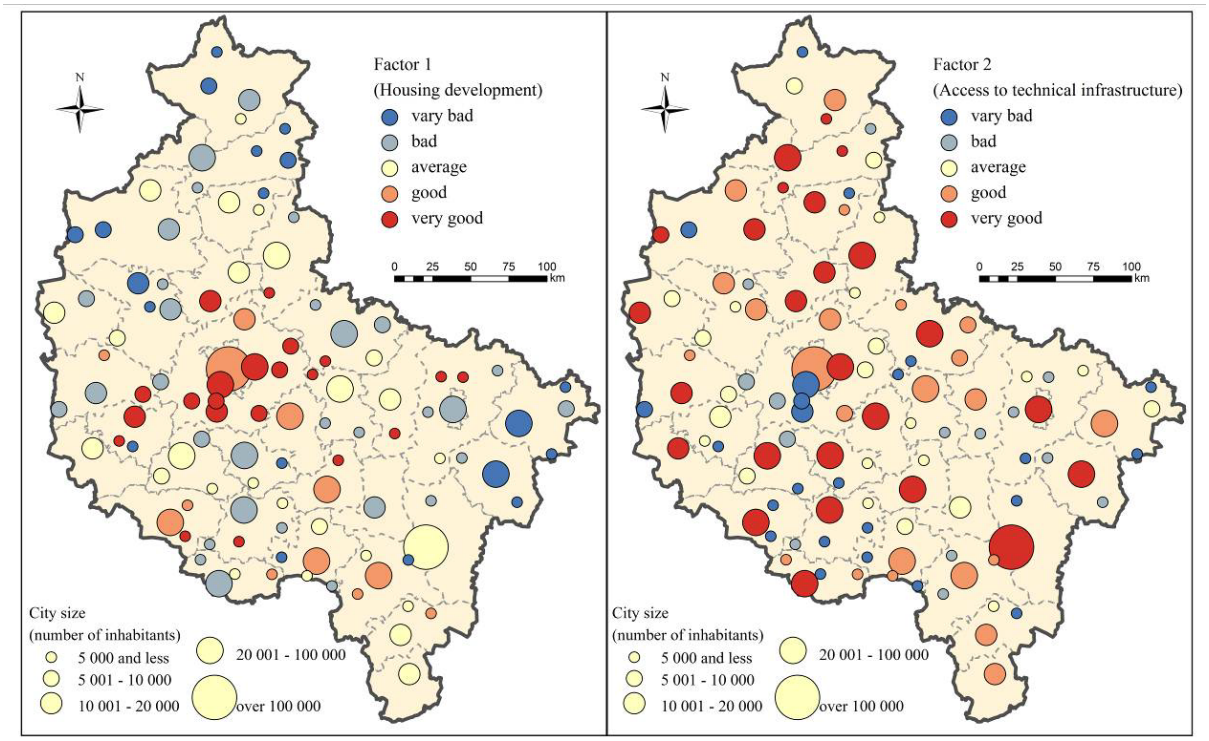


Fig. 79. Housing development and access to technical infrastructure in urban areas in Wielkopolska in 2008
Source: own compilation

The second principal component is positively correlated with the number of people with access to water supply and sewers, and negatively with the number of metres kin homes per person. As a result it was named ‘access to technical infrastructure’ (Fig. 79).

A better situation in terms of access to technical infrastructure is found in the large cities (more than 10 000 people). In such urban areas the condition of existing infrastructure is a result of investment processes lasting several decades. Most of these cities now have a stable number of inhabitants, and new housing areas are not very often created. Therefore there is little need to expand the current infrastructure. Local authorities spend more on maintenance of existing infrastructure. Some difficulties with access to technical infrastructure are characteristic for small and fast developing urban areas. This situation was confirmed during the interviews:

> *“The real problem in Luboń is the number of new housing areas – we need a lot of time and money to provide the basic social and technical infrastructure for all incoming residents.”*
>
> *Vice-mayor of Luboń*

Particularly most of the cities around Poznań (i.e. Luboń, Puszczykowo, Mosina, Stęszew, Buk) have a lot of problems with providing people with connections to the water supply or sewerage networks. This is due to the fast growing number of new housing estates in areas

which are unprepared for investment (mainly for economic reasons). The costs of new infrastructural investment are so high that these cities need a lot of time and funds to build the required infrastructure.

4.3.5. Governance and local activity

The conditions of local budgets in urban areas and the level of social activity are very important factors for the development of those areas. The financial situation in a local unit has a decisive role in investment possibilities. Only the good condition of a district's budget allows gradual improvement of living standards and development of the local economy. Also not to be underestimated is the role of local society in the processes of socio-economic growth. This has great importance for improving the level of culture or for developing local entrepreneurship.

Table 51. Principal Component Analysis for powiats in the category 'governance'

Principal component	Correlated characteristics
Factor 1 (Local budget condition)*	Positive correlation - local budget income in 2008 (r=0.97) - local budget expenditure in 2008 (r=0.97)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

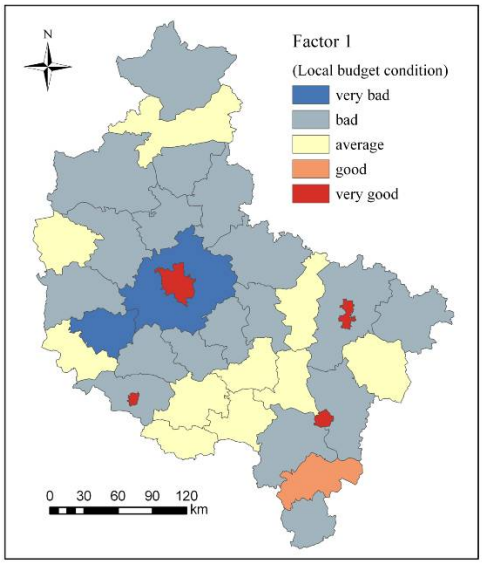


Fig. 80. Local budget condition in powiats in 2008
Source: own compilation

In the analysis, characteristics such as local budget income and expenditure and the number of non-profit organizations were chosen. At powiat level the PCA led to the obtaining of one principal component explaining the total variance to a level of 71% (Table 51). It has a high positive correlation with the income and budget expenditure of powiats per inhabitant, and was named as 'local budget condition' (Fig. 80).

The obtained component takes its highest values in the largest cities of the region – Poznań, Kalisz, Konin and Leszno (Fig. 80). Being the wealthiest units, they can afford much higher investment than other powiats. In addition, as cities with the rights of a powiat they have to finance both powiat and *gmina* tasks from their own funds. The southern part of Wielkopolska also has relatively high values of this ratio, while areas around Poznań and Konin have relatively low income and expenditure per inhabitant.

To analyse the category "governance" in urban areas four variables were chosen: the dynamics of budget income in the last 10 years, the dynamic of investment expenditure in the last 5 years, the number of non-profit organizations and the turnout in the last local elections in 2010. On the basis of PCA two principal components were obtained, explaining the total variance at a level of 32% and 30% (Table 52).

Table 52. Principal Component Analysis for urban areas in the category 'governance'

Principal component	Correlated characteristics
Factor 1 (Public activity level)*	Positive correlation - the number of non-profit organizations per 1 000 people (r=0.82, w=0.52) - the turnout in the last local government elections (r=0.76, w=0.45)
Factor 2 (Local budget condition)*	Negative correlation - dynamics of local budget income in last 10 years (r=-0.80, w=0.53) - dynamics of investment expenditures in local budget in last 5 years (r=-0.70. w=0.42)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

The first principal component has a strong positive correlation with two variables: the number of non-profit organizations and the turnout in the last local government elections. It was named as 'public activity level' (Fig. 81).

The values of this factor are the most favourable in smaller urban areas in the region (less than 5 000 residents). Especially in the southern Wielkopolska a lot of cities have very active local communities (Rydzyna, Jutrosin, Raszków). In smaller units it is easier for people to participate in 'town life'. Inhabitants can more easily identify with their city and take responsibility for its future development. It is also much easier to contact and communicate with the local authorities. As a result, there is a much higher number of voters people (more than 70% in Margonin) and a lot of local initiatives.

The opposite situation exists in larger cities. It is much more difficult for residents to identify with their city and to participate in the management of the local unit. The social distance between authorities and the society is also relatively higher, which may cause negative consequences in the future:

> *"Local government can change the city only to a certain extent – further changes require the integration of the whole local community towards the specified goals."*
>
> *Vice-mayor of Kościan*

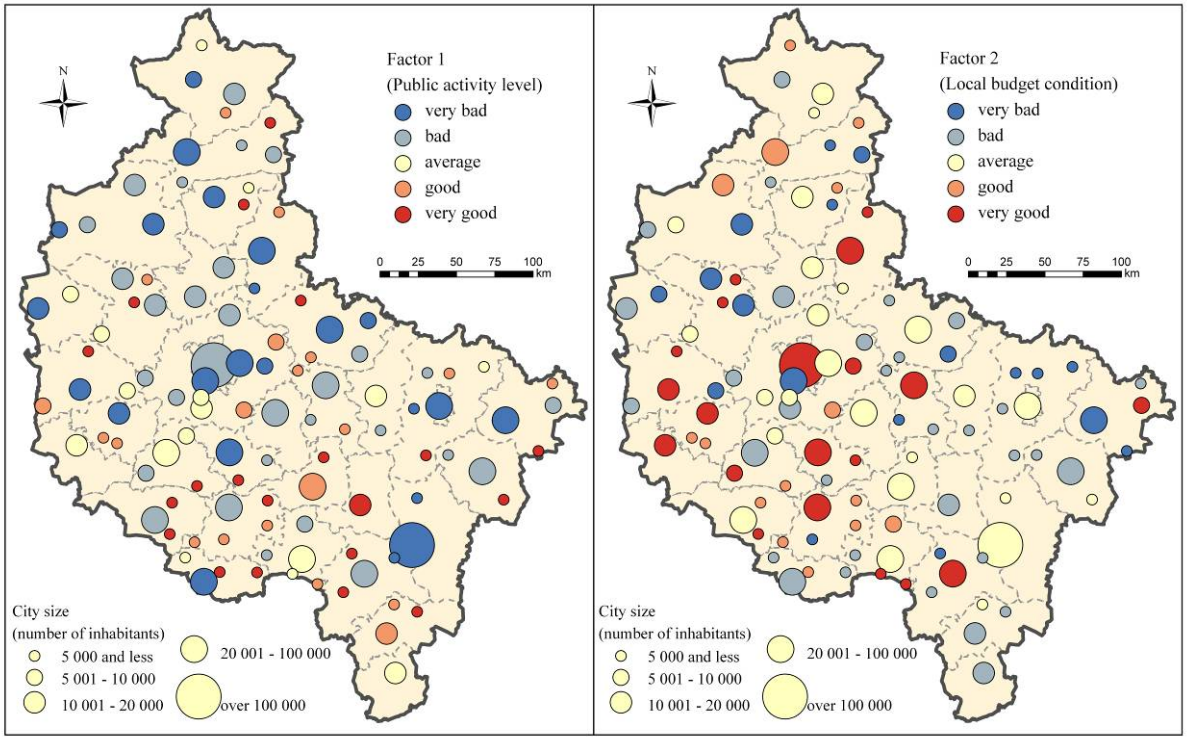


Fig. 81. Public activity level and local budget condition in urban areas in Wielkopolska in 2008
Source: own compilation

The second principal component is correlated negatively with two variables: the dynamics of the local budget income in the last 10 years and the dynamics of investment expenditure in the local budget in the last 5 years. Therefore it was named 'local budget condition' (Fig. 81).

The largest cities in the central part of the region have the best condition of local finances. Their incomes are relatively high because of the good economic situation (a lot of enterprises and enterprises with foreign capital, high level of entrepreneurship). Therefore, local authorities in these units have greater investment opportunities (including the possibilities of using EU funds). Smaller units in the whole region and larger cities in northern and eastern parts of Wielkopolska most often have weak conditions of local budget. Their incomes resulting from local taxes are much lower, because of the less developed local economy. The amount spent on new investment is effectively much lower.

4.3.6. General view

In order to summarize the part of the report related to urban competitiveness in Wielkopolska region, a synthetic index was constructed. Based on the Z-scores methodology[10] all chosen variables (the same as in the Principal Component Analysis – 28 characteristics) were

[10] Described in the part 1.3 of the report

standardized and one index of socio-economic growth was constructed. The results for particular urban areas were divided into five classes as shown in Table 53.

Table 53. The level of socio-economic growth in urban areas in Wielkopolska (2008)

The level of socio-economic growth		Index value	Urban areas (examples)			
			5 000 and fewer people	5 000 -10 000 people	10 000-20 000 people	More than 20 000 people
1	Very low	-0.50 and lower	Bojanowo, Okonek	Krzyż Wielkopolski Jastrowie, Wieleń	-	-
2	Low	-0.49 to -0.15	Nowe Skalmierzyce, Miłosław, Kobylin, Wysoka, Ujście, Sulmierzyce, Szamocin, Pyzdry, Przedecz, Tuliszków, Ostroróg, Golina, Sompolno, Stawiszyn, Dobra, Poniec, Wielichowo.	Wyrzysk, Trzemeszno, Kłodawa, Koźmin Wielkopolski, Sieraków, Witkowo, Śmigiel, Buk.	Złotów, Rogoźno, Wronki, Chodzież.	Turek, Śrem, Gniezno, Rawicz, Konin.
3	Average	-0.14 to 0.15	Zduny, Krajenka, Dąbie, Gołańcz, Krobia, Łobżenica, Czerniejewo, Obrzycko, Pogorzela, Odolanów, Zagórów, Kłecko, Skoki.	Czempiń, Zbąszyń, Pniewy	Pleszew, Szamotuły, Czarnków, Międzychód, Trzcianka, Mosina, Oborniki, Kępno, Gostyń, Grodzisk Wielkopolski, Słupca, Wolsztyn.	Kalisz, Kościan, Wągrowiec, Piła, Koło, Ostrów Wielkopolski, Krotoszyn, Września, Luboń
4	High	0.16 to 0.50	Lwówek, Dolsk, Nekla, Mikstat, Margonin, Miejska Górka, Rychwał, Książ, Wielkopolski, Kleczew, Ślesin, Krzywiń, Jutrosin, Raszków, Osieczna.	Pobiedziska, Opalenica, Kórnik, Puszczykowo, Kostrzyn, Stęszew, Murowana Goślina.	Nowy Tomyśl, Ostrzeszów.	Jarocin, Środa Wielkopolska, Leszno, Ostrzeszów, Swarzędz, Nowy Tomyśl, Poznań
5	Very high	0.51 and higher	Borek Wielkopolski, Grabów nad Prosną, Rakoniewice, Żerków, Rydzyna.	-	-	-

Source: own compilation

On the basis of the constructed index, the most and least developed areas can be extracted (Fig. 82 and Fig. 83). The main urban problem areas in Wielkopolska are cities located in the northern and eastern parts of the region. Among large cities (more than 20 000 people) the worst situation exists in Turek, Gniezno and Konin. The main problems of these areas are weak economic situation (especially the low level of entrepreneurship) and negative demographic tendencies. Therefore their perspectives for future development should be worrying for the local authorities. Among small cities the lowest values of the created index were recorded for cities located near the region's borders (Bojanowo, Okonek, Krzyż Wielkopolski, Jastrowie, Wieleń). Almost all the analysed categories of socio-economic development stood at a very low level there. Their peripheral location and the lack of good transport connections with the main economic centres of the voivodeship are the main factors behind the weak condition of these cities.

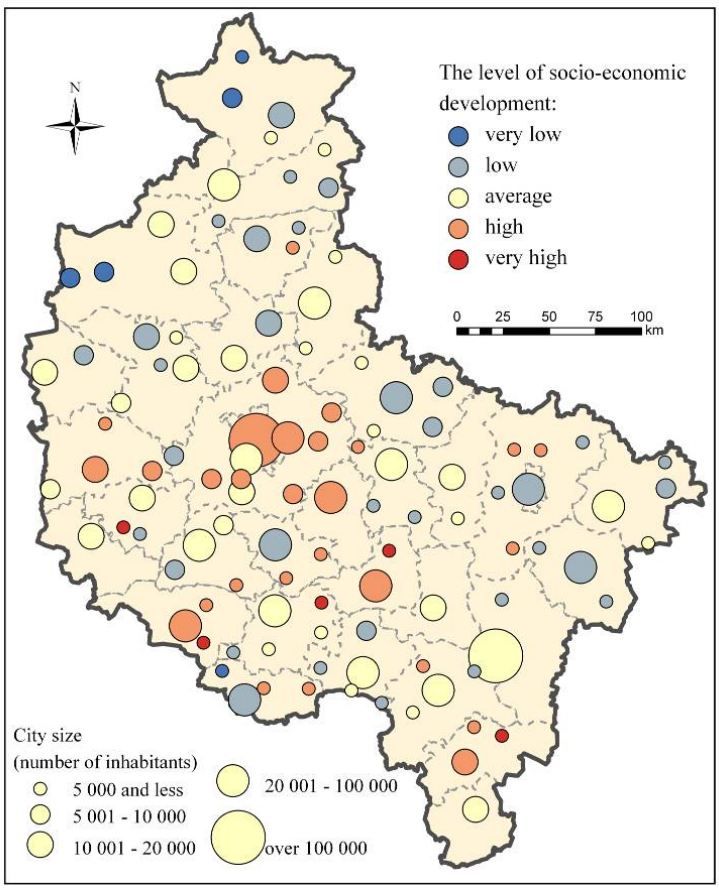


Fig. 82. The level of socio-economic development in urban areas in Wielkopolska (Z-scores index)
Source: own compilation

The central part of Wielkopolska and the most of the cities in the southern part of the region are areas with high values for the socio-economic indicators of development (according to the Z-scores index). Demographic tendencies, housing development and the economic situation are especially strong points of these areas. The highest values of the synthetic index were achieved by small cities in the southern part of the region (Rydzyna, Żerków, Rakoniewice). In these units almost all analysed aspects were at a high level. The main advantage of these cities was their favourable location near important regional centres (Leszno, Ostrów Wielkopolski) or near important transport routes (national roads, railway lines).

Poznań and the cities in Poznań powiat achieved high values for most of the analysed characteristics. Therefore the level of socio-economic development was defined there as 'high' (only in Luboń and Mosina was it 'average'). Poznań has a particularly good position in the category 'economy' (condition of the local labour market, level of entrepreneurship and structure of the local economy). Weak points of the city are demographic characteristics (age structure and migration tendencies), access to medical and cultural services and the level of public activity. The authorities of the urban areas in Poznań's powiat have the greatest problems with technical infrastructure and access to medical and cultural services. The strong points of these urban areas are migration tendencies, age structure, housing development and local entrepreneurship.

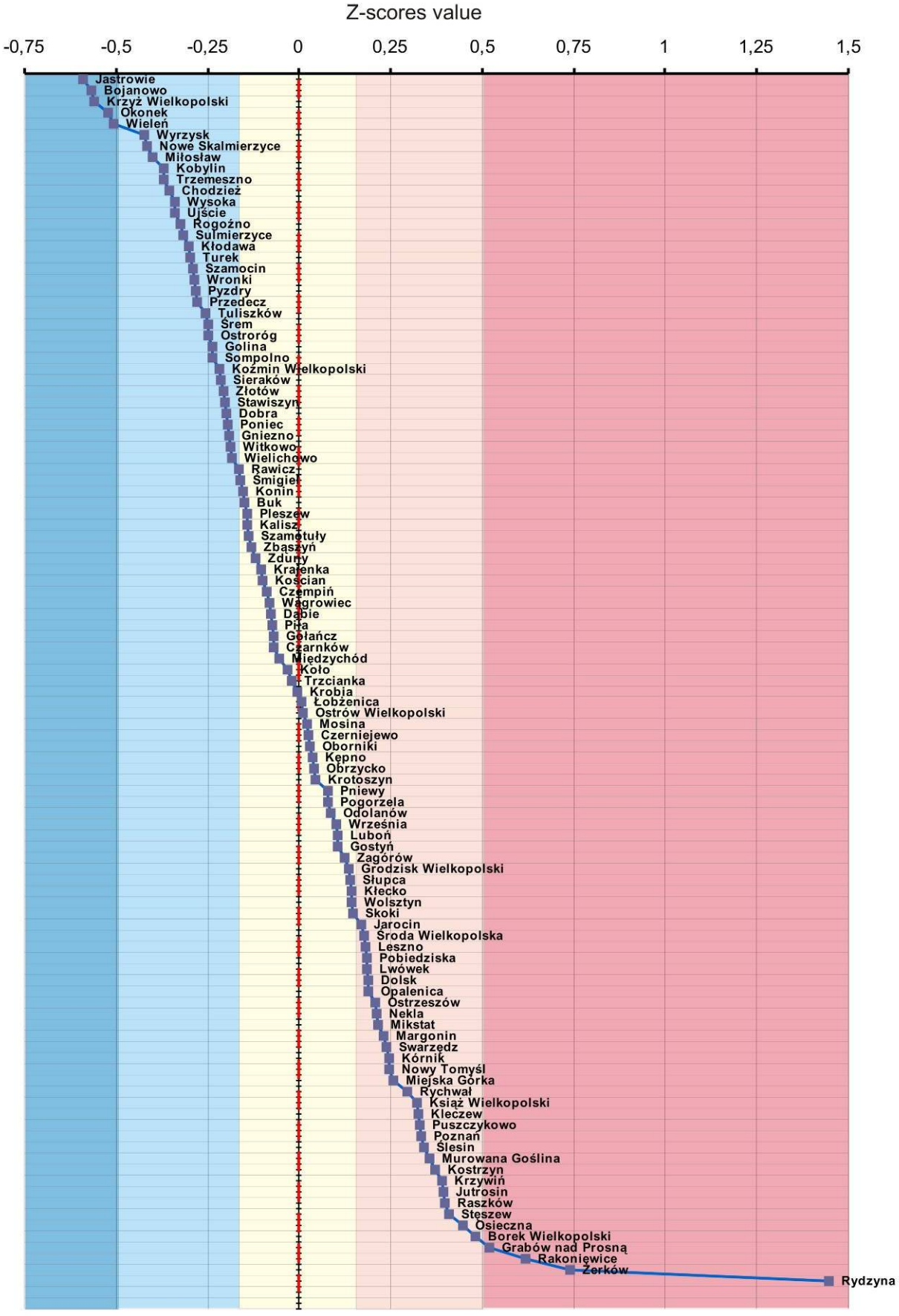


Fig. 83. Z-score values for urban areas in Wielkopolska
Source: own compilation

4.4. Poznań Metropolitan Area as a model region for the Urban Development Funds

4.4.1. Development path of Poznań

Poznań is one of the oldest Polish cities. It originated in the 10th century when a ducal stronghold was built on the right bank of the Warta river where it cuts through moraine hills. The lowland relief of the area, the presence of the river and its tributaries, and the pattern of the main trading routes in this part of the continent were only a few of the advantages of this location. By the end of the 10th century the stronghold had assumed the role of capital and residence of Poland's first two sovereigns (Mieszko I and Boleslas the Brave). In 968 a bishopric was established there and a cathedral erected. The stronghold eventually became cramped for space and in 1253 (in the reign of Przemysl II) new ground was delimited for its expansion on the left bank of the Warta.

As early as the 14th century Poznań became a very important trading centre, with its location on the crossroads of main trading routes, connecting the northern and southern parts of Europe and the whole continent with fast developing Asian countries. The advantages resulting from this location and the privileges given to the town (freedom from market taxes and the right to mint its own currency) by King Ladislas Jogaila opened up prospects for the development of trade and handicrafts, which began to produce for much wider markets.

In the 15th century Poznań was one of the major and better-known trade and craft centres in Central Europe. However, the most pronounced development of the town occurred in the 16th century, the so-called golden age in the town's history. At the time Poznań manifested a rapidly developing economy and culture, as evidenced by architectural monuments still surviving today, such as the Renaissance town hall. Poznań also played the role of an important education centre. Due to efforts of local leaders and scholars, the Lubrański Academy was established, which was the second centre of higher education in Poland (after the Jagiellonian University in Cracow). However, Cracow, enjoying significant privileges, effectively prevented the development of any educational competition in Poland. Still, the founding of the Academy represented the first step towards opening a university in Poznań. Regrettably, the subsequent political situation and division of Poland made further development impossible and renewed attempts to open a university were not possible until the beginning of the 20th century.

The 1660s until the mid 18th century was a tragic period for the city: it was repeatedly destroyed, burned and plundered by Swedish troops. Nor were the inhabitants spared from natural disasters and epidemics.

Wars waged by Poland in the 17th and the beginning of the 18th centuries inhibited Poznań's development. In 1793, together with entire Wielkopolska, the city was incorporated into Prussia and gradually became the largest stronghold city on the eastern periphery of the state. This restricted the city's growth potential for 80 years, since any town-planning and economic

projects had to be accepted by the Prussian military authorities. Traces of the occupation are visible even today, particularly in the architecture and town-planning layout of the city centre. A number of representative buildings were erected intended to stress the German character of the city, including the Kaiser Castle, a symbol of Prussian rule over the city and the whole of Wielkopolska. Despite the obstacles, the Polish community was also able to erect buildings of spiritual and cultural importance which have survived until today. They include the Raczyński Library, the Polish Theatre, Poznań Association of Friends of Arts and Sciences, and the Hotel Bazar, which used to be the hub of Polish economic and social life. This was a time of the development of journalism; Polish journals were published and bookshops and printing offices established. They proved that the attempts at Germanisation undertaken by the occupants had failed, and Polish society turned to organic work, involving first of all self-organisation in all walks of life, from the church through science and culture to the economy. At the time Poznań became an important centre of Polish scientific and socio-political thought. Without doubt, the economic growth which started in the 1840s and continued until the First World War prompted the development of the region. Unfortunately after the unification of Germany in 1871 attempts at Germanisation became more intense, e.g. the Polish language was forbidden in schools and offices, and Polish societies were closed. The policy (termed Kulturkampf) was introduced by Otto von Bismarck, who succeeded in setting up anti-Polish organisations (e.g. Hakata) and the Colonisation Commission, whose objective was to purchase land from Polish farmers and colonise it with a German population.

From the mid-19th century, Poznań gradually adapted to the new conditions of a capitalist economy. It became a centre of the agricultural processing industry, metallurgy and equipment construction. In 1855 Hipolit Cegielski opened his factory and became a symbol of the economic vitality of Polish society. In 1890, the construction of the largest Hugger Brothers' Brewery was completed, which after radical redevelopment in 2003 has been transformed into the Stary Browar centre of shopping, arts and business. Following the opening of railway connections with Berlin and major Polish towns, the city became an important railway junction. In 1831 a water-supply system was built, and in 1857 a gas works opened.

The period brought Poznań enormous territorial expansion. Technological progress and a new strategy of military planning led to the demolition of walls around Poznań.

An insurrection (the Wielkopolska Uprising) broke out in 1918 and resulted in liberation from German rule. The city entered a period of dynamic growth, which included the establishment of the Poznań University (1920). The University from its very beginning provided a high level of education due to the recruitment to its staff of the best scholars from all over Poland. The economic development of Poznań at the time was mainly due to the entrepreneurial skills of its citizens, who established companies and opened new factories. Also the existing institutions adapted to the new conditions, e.g. the Cegielski works modified its production to meet the requirements of the market. A crucial role in the economic development of the city was played by the International Trade Fair, preceded by the National Exhibition, at which products from all the regions of the liberated Poland were presented. The first Fair took place

in 1921 and initially was only of domestic significance, but in 1925 it became the international event we know today. The Fairs became a symbol of the strong economic position of the city, and the significant participation of foreign exhibitors put them among the leading trade events in Europe. The Fairs continue to develop today.

The economic development of Poznań in the 1920s and '30s manifested itself also in growing population numbers. In the first years after independence a significant migration of population took place, which resulted in a basic reconstruction of the national and social character of the city. There was a mass inflow of highly educated individuals from the south of the country. The immigrants took positions in administration and education, while Polish re-emigration from Berlin and Westphalia brought many tradesmen, manufacturers, small businessmen and others. Within ten years (1921–1931), the number of the city's inhabitants increased by one-third (Fig. 84), while its administrative area almost doubled, from 3,405 ha to 6,737 ha.

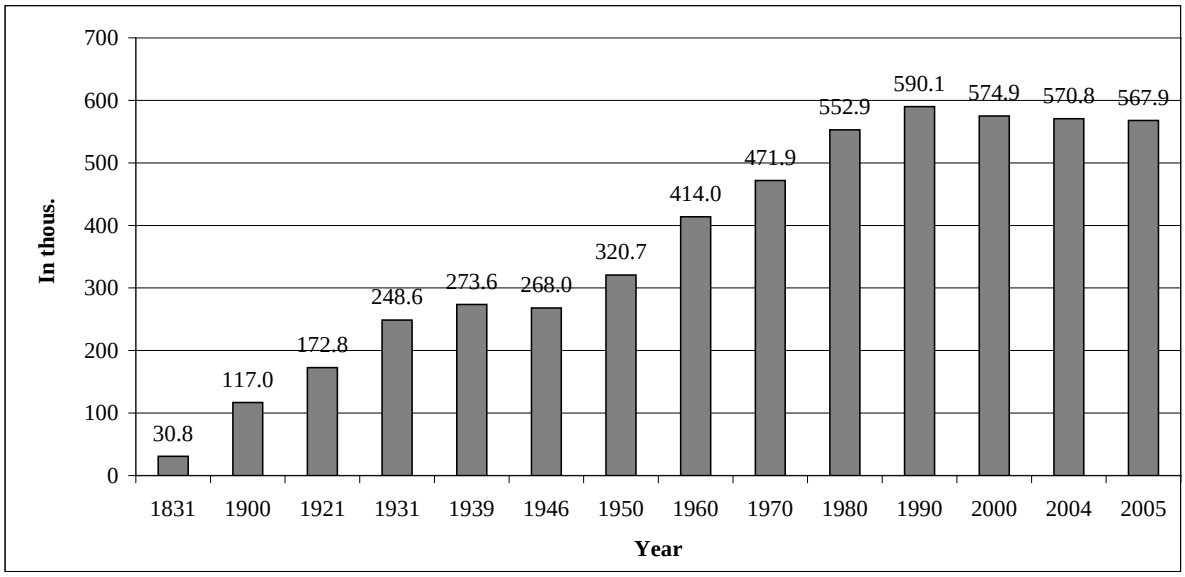


Fig. 84. Number of Poznań's inhabitants
Source: Statistical Office in Poznań, 2006

The progressive industrialisation affected the employment structure among Poznań's inhabitants. In 1931, almost 36 per cent, the most numerous group, of those employed worked in industry, mostly in foundries, the metal industry and the electrical instrument industry (Table 3.1). At the time industry in Poznań was based largely on small businesses. They were located mainly in the centre of the city and formed the beginnings of a creative sector in Poznań.

A significant number of inhabitants found employment in trade, which played an important role in the economy of Poznań at the time. The role of trade manifested itself in the above-mentioned annual National and International Fairs organised since 1921. A group of renowned Poznań merchants established the Society of Traders at the beginning of the 1920s. This began the modernisation of the systems of trade in Poland.

Although Poznań's growth was curbed by the international crisis of the 1920s/1930s, by the mid-1930s the city's economy was on an upward path again. But for the Second World War, the positive tendency in the city's economy could have been sustained. At the beginning of the war Poznań was taken by the Germans and annexed to the Third Reich within the Province of Wartegau. Arrests, deportations and ruthless repression seriously diminished population numbers.

In 1945, the Red Army recaptured the city, but the Russians' ruthless attacks and the strong resistance put up by the Germans left the city centre in rubble. However, Poznań soon rose from the war-inflicted ruins. In 1946 the city's population amounted to 268,000. This population included only a small part of the highly educated group from before the war. Those who survived the occupation were to determine the city's future. The 'socialist industrialisation' programme resulted in the appearance of a great number of new industrial plants. Unfortunately, social development lagged behind economic advances. Living conditions continued to deteriorate, and as a result in 1956 there was an uprising by industrial workers demanding freedom, work and bread, brutally suppressed by the authorities (76 fatalities). This bloody worker uprising of Communist times marked the beginning of cracks in the totalitarian system and its later changes.

Difficult housing conditions were among the effects of the difficult socio-economic situation. The war caused the destruction of numerous buildings, and the rebuilding of a sufficient number of houses turned out to be a long process. At the same time many people looking for a job settled in the developing Poznań and the number of inhabitants per home grew rapidly.

In the 1960s a huge housing project was launched (in a situation of a serious deficit of dwellings) and Poznań returned to the right bank of its river. Two large estates of blocks of flats appeared and marked the start of quantitative development of the city. Its manifestations included a dynamic increase in the population numbers and the city's spread beyond its administrative limits. The increase in the population figure was not only due to a high natural increase (12.5 per mille in 1960, 8.5 per mille in 1970), but also due to migration. The living conditions in the city were far better than in the countryside and, in addition, this was where work was available and there was hope of obtaining a flat (sometimes after more than a decade of waiting).

The economic development of Poznań was mainly connected with the growing significance of industry, which continued to employ the highest number of inhabitants (Table 3.2). There were numerous state-owned factories located in the city (e.g. the Hipolit Cegielski Works, renamed the Joseph Stalin Works at the time, and the Rolling Stock Repair Works), which were the main employers.

In the 1960s Poznań was not only an industrial centre, but also fulfilled important social and administrative functions. At the time some development of the creative sector could already be noted, mainly due to the potential of the city's higher education institutions, including Adam Mickiewicz University, the University of Economics, Medical School and Poznań

Technical University, all offering high standards of study. They attracted students not only from Wielkopolska but also from all over Poland. This enhanced the importance of Poznań within the country. At the same time Poznań began to develop its metropolitan functions.

The events of the early 1980s and the rise of the independent trade union Solidarity also affected Poznań. The freedom-seeking activities and effective resistance to the authorities by Poznań inhabitants reflected, to a certain extent, the capacity to collaborate and to self-organise in the fight against the communist regime. Unfortunately the introduction of martial law restricted these activities. A certain opportunity to make use of the creative potential of society appeared after the collapse of communism in 1989.

The change in the political regime caused the city's development to take a qualitative rather than quantitative turn after 1990. The transformation process experienced by the Polish economy (as well as by the economy of the Poznań Metropolitan Region) proved to be extremely difficult for most of society. The restructuring of institutions or their privatisation was accompanied by a marked decrease in employment. The proportion of people employed in industry began to decrease in favour of service activities.

The beginning of the 1990s and the introduction of a free-market economy revived the enterprising skills among the inhabitants of the Poznan Metropolitan Region (PMR). This resulted in a rapid increase in the number of new private businesses, mostly in services (about 60 per cent). They included companies offering trade, financial intermediation, repairs, household servicing and classified services (ESC) as well as other services and communal, social and individual activities. Some of them could be defined as belonging to the creative sector of the economy, as they relied on the knowledge and expertise of their creators.

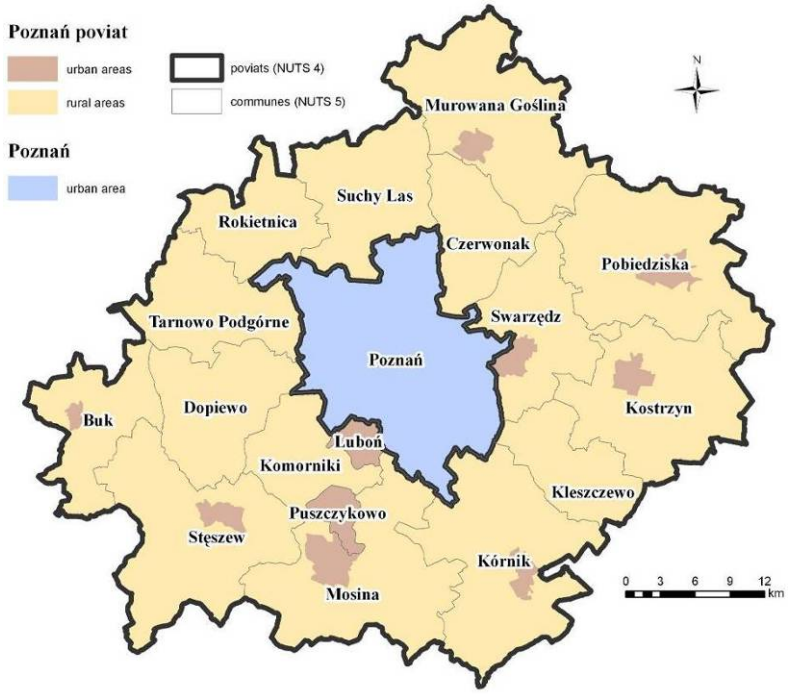


Fig. 85. Administrative division of the Poznań Metropolitan Region
Source: own compilation

Economic changes also affected the spatial development of the PMR. Suburbanisation processes began to develop, which was manifested by a decrease in the number of city residents to the advantage of neighbouring districts. The migration of Poznań inhabitants from the centre to neighbourhood areas was accompanied by growing investment in single-family housing in the suburban areas. This indicated the rising financial status of PMR inhabitants. Their income sources also included creative work.

At the beginning of the 21th century Poznań, the capital of Wielkopolska, was one of the most important centres of growth in the Polish urban system. Poznań is ranked as the fifth city in Poland in terms of population (557,000). It has the status of city with powiat rights, i.e. it has the functions and responsibilities both of a gmina (NUTS 5) and a powiat (NUTS 4). For statistical and organizational purposes it is usually divided into 5 districts or into smaller auxiliary units with district councils. The Poznański powiat, which surrounds the city on all sides, is often referred to as the metropolitan area (Fig. 85). It consist of 17 gminas, of which two are urban (only urban area), 8 urban-rural (city plus rural area) and 7 rural (only rural area). The population of the powiat amounts to 311,000, and the largest cities are Swarzędz (30,000) and Luboń (29,000). The powiat also includes one of the largest villages in Poland, Koziegłowy (11,000), situated on the border of Poznań in the gmina of Czerwonak.

4.4.2. Growth and decline analysis

Significant discrepancies between Poznań and the powiat of Poznański can be observed in the population age structure (Fig. 86). First and foremost, attention must be paid to the very unfavourable shape of the age pyramid of the population, which is of regressive type in Poznań. The youngest generations are low in number, and this is not a result of a period of population decline. On the other hand there is a relatively high number of older people of post-productive age. Also worthy of attention is the high number of young people aged 20–34. This is the generation of the baby boom, strengthened by many immigrants coming to the city for education and jobs.

In the powiat trends are different. The young generation is much more numerous. This could be the effect of migrations of young families to these areas. They perceive suburban areas as potentially better to raise their children. Inhabitants older than 65 are much less numerous. For people in this age group easier access to medical or recreational services provided by Poznań plays the most significant role. Hence not many of them decide to live in the gminas remote from Poznań (transport problems).

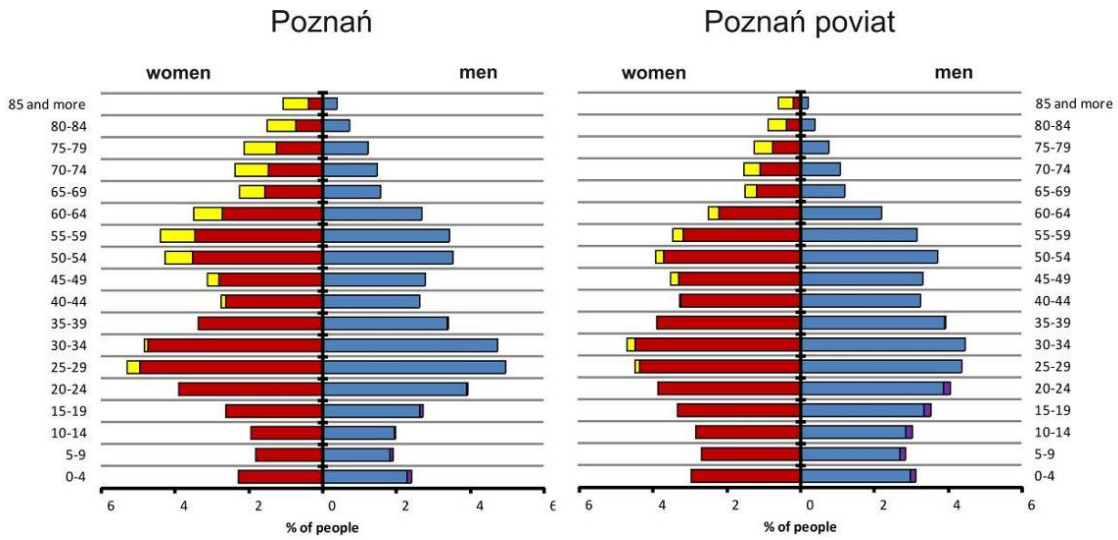


Fig. 86. Age structure in Poznań and Poznański powiat in 2008
Source: own compilation based on Statistical Office data

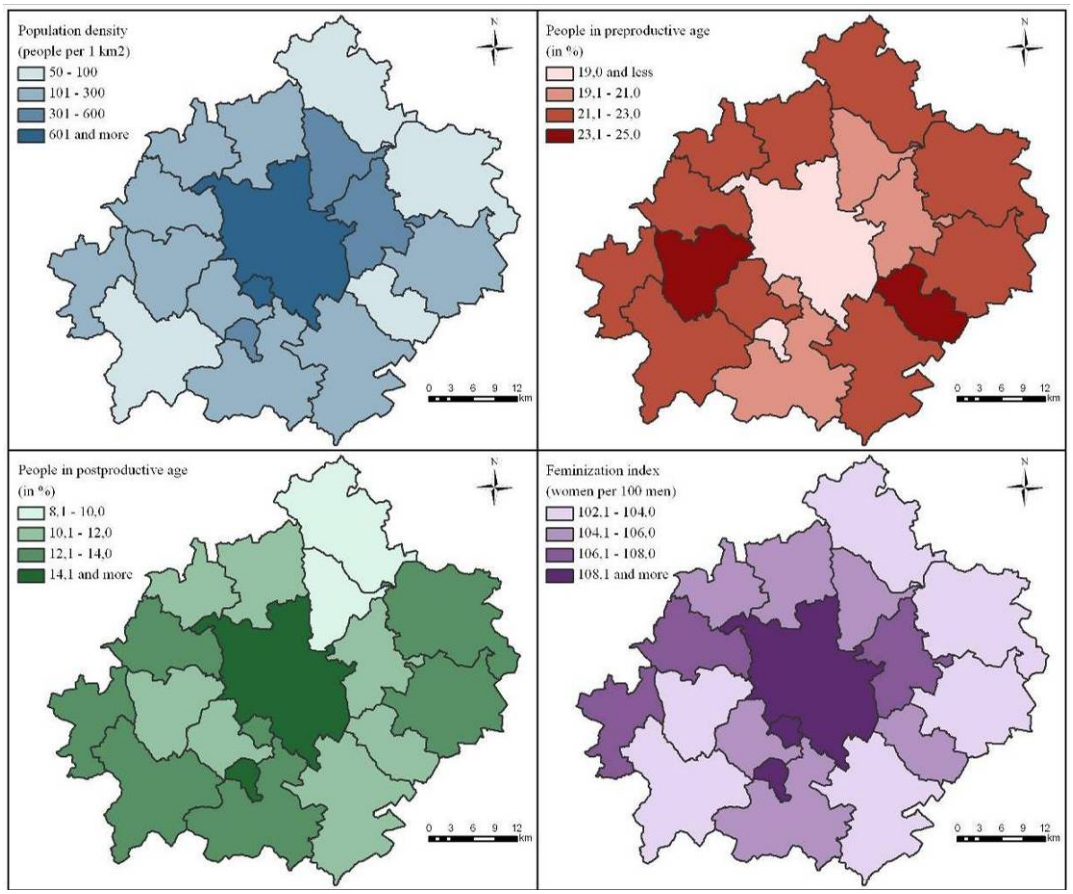


Fig. 87. Chosen demographic characteristics in the Poznań Metropolitan Region in 2008
Source: own compilation based on Statistical Office data

Poznań dominates in terms of population density (2125 people per km^2; Fig. 87). This is also high in the gminas of Luboń (2128) and Puszczykowo (592). Gminas not bordering on Poznań are weakly populated (c. 100 people per km^2).

There are also many differences in terms of age structure (Fig. 87). The smallest percentages of people of pre-productive age live in Poznań (15% of the total population) and Puszczykowo (18%). This is a result of a huge number of older people who are past their reproductive age. Most suburban gminas have a huge percentage of young and middle-aged people, which translates into a considerable percentage of people of pre-productive age (21–24%).

Table 54. Migrations in the Poznań Metropolitan Region in 2008

Territorial unit	Number of people	Immigration (per 1000 people)				Emigration (per 1000 people)				Migration balance
		Total	from urban areas	from rural areas	from abroad	Total	to urban areas	to rural areas	abroad	
Poznań powiat	**311 390**	**32.3**	**26.4**	**5.9**	**0.1**	**13.7**	**6.9**	**6.6**	**0.2**	**19**
Luboń	28 524	30.4	25.7	4.6	**0.0**	16.9	6.0	**10.5**	0.3	14
Puszczykowo	9 489	21.1	18.1	**3.0**	**0.0**	11.3	7.0	4.3	**0.0**	10
Buk	12 115	12.9	8.1	4.8	**0.0**	13.0	5.5	7.5	**0.0**	0
Czerwonak	25 056	27.5	23.8	3.7	**0.0**	15.6	9.3	5.9	0.5	12
Dopiewo	16 109	55.2	44.9	10.2	0.1	10.4	5.2	5.2	**0.0**	45
Kleszczewo	5 848	25.0	19.8	5.1	**0.0**	11.5	5.8	5.6	**0.0**	14
Komorniki	16 939	**68.4**	**59.5**	8.7	0.2	14.2	7.8	6.4	**0.0**	**54**
Kostrzyn	16 138	22.6	15.1	7.5	**0.0**	13.2	7.8	5.2	0.2	9
Kórnik	19 449	35.7	29.9	5.8	0.1	11.5	6.3	5.1	**0.0**	24
Mosina	26 140	24.8	20.7	3.8	**0.4**	11.2	5.0	5.9	0.3	14
Murowana Goślina	16 174	20.1	13.3	6.7	0.1	17.1	**10.6**	6.5	**0.0**	3
Pobiedziska	17 211	28.8	21.7	7.0	0.1	11.3	6.7	4.4	0.2	18
Rokietnica	10 935	62.0	48.8	**13.0**	0.2	**8.5**	**4.3**	**4.0**	0.2	53
Stęszew	14 286	15.7	10.5	5.2	**0.0**	9.1	**4.3**	4.8	0.1	7
Suchy Las	14 368	38.1	33.7	4.5	**0.0**	15.7	9.8	5.9	**0.0**	22
Swarzędz	42 257	30.0	24.3	5.6	0.1	**18.4**	7.9	10.3	0.2	12
Tarnowo Podgórne	20 352	35.3	30.3	5.0	**0.0**	10.8	5.1	5.4	0.3	24
Poznań	**557 264**	**9.2**	**6.0**	**3.0**	**0.2**	**14.8**	**5.0**	**9.2**	**0.6**	**-6**

13.0 – the highest rates, **9.2** – the lowest rates

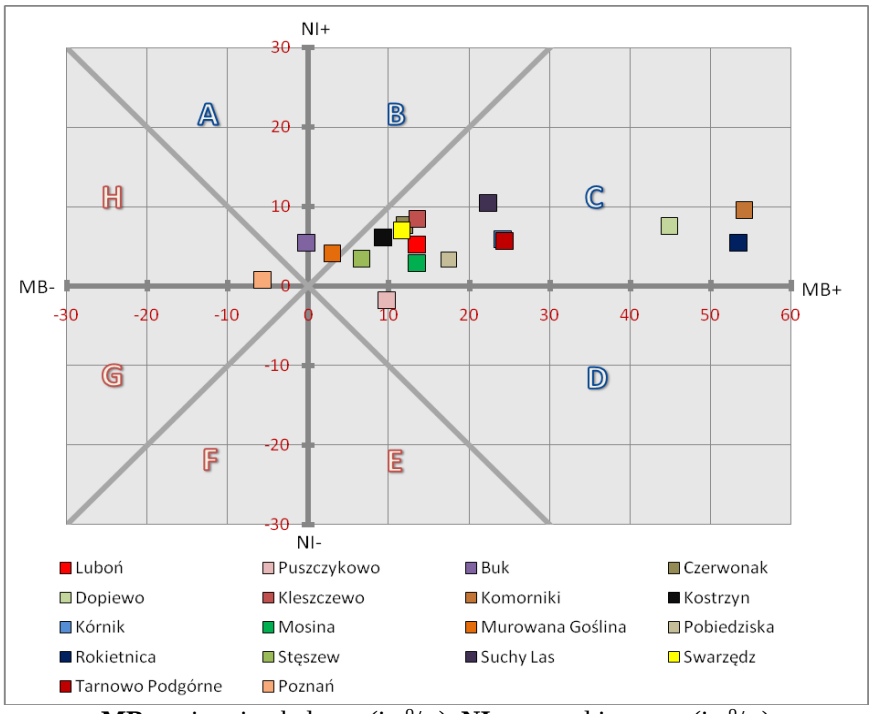
Source: Own compilation

Migration tendencies in Poznań and surrounding gminas are presented in Table 54. The tendency for outflow of Poznań's inhabitants is clearly visible. All remaining gminas noted a positive migration balance. The most popular destinations included Komorniki, Rokietnica and Dopiewo, where the population increased by 5% in 2008. Smaller population increases were noted in the areas more remote from Poznań – Buk, Murowana Goślina and Stęszew. These gminas do not border directly on the region's capital.

It was mainly people from the urbanized areas who moved to the gminas of the Poznański powiat. Certainly a major share of these migrations involved people from Poznań. As concerns emigration tendencies, the popularity of urban and rural destinations was at a similar level. Inhabitants of Luboń and Poznań most readily moved to the country, while people from Murowana Goślina, Suchy Las and Czerwonak most frequently chose to move to the city.

All gminas in the powiat had positive population growth in 2008. On the basis of Webb's typology they can be grouped into four classes depending on the features of the achieved growth (Fig. 88):

- Class A – includes one gmina – Buk. A positive birth rate balanced a minor negative migration balance in this unit and led to a population increase.
- Class B – includes one element – Murowana Goślina. Also in this unit both analysed variables were positive. However, in this case birth rate was more important in the population increase.
- Class C – includes the largest number of centres in the powiat (14). Both birth rate and migration balance had positive values, however the second variable had the dominant role (owing to very high values).
- Class D – includes only one urban gmina – Puszczykowo. In 2008 it had a slight population decline mainly because of the huge share of older people in the age structure. A high positive migration balance balanced this loss and led to a population increase.



MB – migration balance (in $^{o}/_{oo}$), **NI** – natural increase (in $^{o}/_{oo}$)

Fig. 88. Typology of population growth/decline in the Poznań Metropolitan Area
Source: own compilation based on Statistical Office data

Only Poznań had a population decline in 2008. On the basis of Webb's typology it can be classified in class H. In this centre, despite the positive birth rate, the negative migration balance led to an overall population decline.

Out of all metropolitan centres Poznań experienced to the greatest extent the phenomenon of suburbanisation and depopulation (see Heffner, Marszał 2007). The city's population has dropped within the last 4 years by approx. 4%, meaning 21,000 people have moved out of Poznań (Fig. 89). At the same time, surrounding gminas of the Poznański powiat noted a considerable growth, by 25% or nearly 63,000. Migration of Poznań's inhabitants only in part

contributed to this growth. The majority of inhabitants came from other parts of the voivodeship and the country, which translates into huge potential and attractiveness of the metropolis (Beim, Tolle 2008).

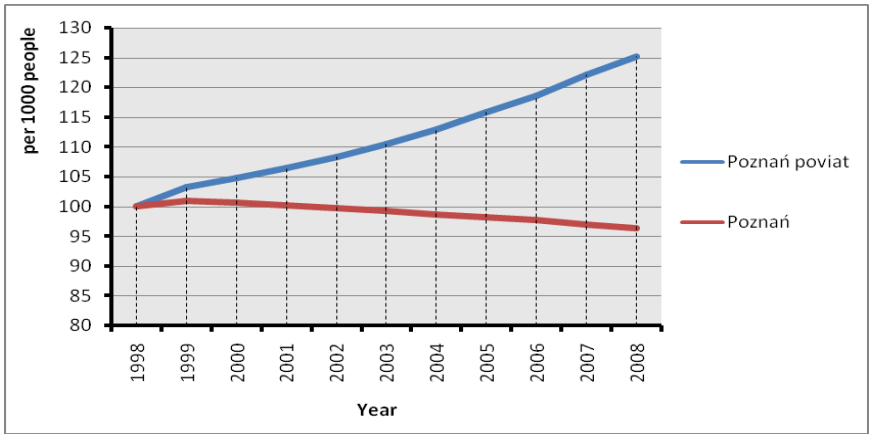


Fig. 89. Dynamics of changes in population in Poznań Metropolitan Region (1998=100)
Source: own compilation based on Statistical Office data

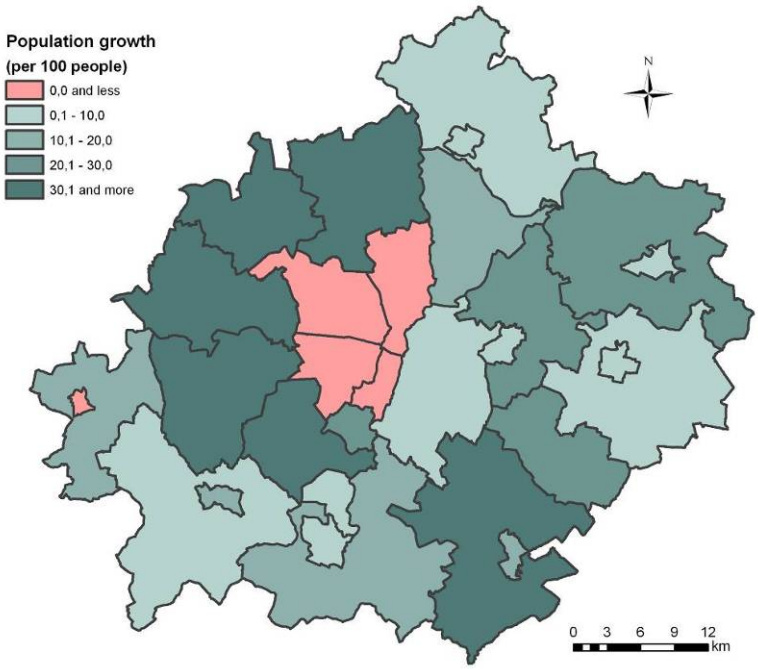


Fig. 90. Population growth in the Poznań Metropolitan Region from 1998 to 2008
Source: own compilation based on Statistical Office data

The highest population growth in the gminas of the Poznański powiat was noted in the gminas near Poznań and with a large amount of land for development (mainly in the rural areas; Fig. 90). Among the fastest developing gminas were the rural ones – Dopiewo (41% in the last 10 years), Suchy Las (40%), Komorniki (36%) and Tarnowo Podgórne (32%). Also the gmina of Kórnik experienced growth by more than 30% in its rural areas.

A much slower pace of development within the last 10 years was recorded in the gminas not bordering directly on Poznań. Population growth in Buk, Murowana Goślina, Puszczykowo, Stęszew and Kostrzyn did not exceed 10%. In the case of the gmina of Buk, in its rural areas

there was even a population decline, but the positive population growth in the urban area led to an overall population increase of 4%.

Poznań has experienced a considerable decline of population within the last decade. Its population decreased in all districts, but the smallest decline was noted in the eastern part – Nowe Miasto, mainly owing to the large amount of land for development. Districts which experienced the highest losses include south-western Grunwald (-10%) and northern Stare Miasto (-7%).

A demographic prognosis published in 2004 by the Central Statistical Office forecasts that until the end of 2030 the population of Poznań will continue to fall (Statistical Bulletin – Poznań, 2005). In the years 2002–2030 this decline will amount to 16%. In the age structure the share of people of pre-productive age will decrease (by approx. 6%) as well as the share of people of working age (by approx. 7%). The number of people of post-working age will increase by approx. 13%.

To the end of 2030 the number of inhabitants in Poznań Metropolitan Region will remain at the same level. This is a result of the trend for further growth in the population of the gminas in the powiat of Poznański. According to the prognosis this growth will amount to approx. 34% in the years 2002–2030.

4.4.3. The competitiveness of the Poznań Metropolitan Area

The Iron Curtain inhibited the position of Poznań (and other cities and metropolitan regions of East-Central Europe) in European networks. What we can observe now (after 1989) is the process of formation of metropolises in this part of the continent. An important feature of a metropolis is the nature and range of its spatial links, which involve the flows of information, money, goods and services, persons, etc. The flows have a special character, because they largely take place among metropolitan centres. Today metropolises are the principal nodes of the emerging global urban system that has started to embrace national settlement systems, including that of Poland.

Generally, four hierarchical levels of metropolitan places are distinguished: worldwide, continental, subcontinental, and national (Parysek 2002, 2004, 2005). Warsaw is mentioned as one of the major metropolises on the European continent (Taylor, Walker 2001), with other Polish cities regarded as lower-ranking. Poznań is turning into another such metropolis. It is the seat of a growing number of branches of international economic and financial corporations, and offers international air, rail and coach connections. It is the venue of an increasing number of commercial fairs and exhibitions for firms from all over the world. Poznań scientific institutions co-operate with a growing number of renowned world research centres, and the city plays host to international scientific congresses. City centre retail outlets are in the process of transforming from frequently visited shops strongly connected with the neighbourhood (grocer's, butcher's, baker's, greengrocer's, etc.) to up-market shops geared to the needs of visitors rather than local residents. Many city centre tenement houses have been

renovated and modernised. The Poznań international airport has a very modern terminal. All this is evidence that Poznań is in the process of developing both metropolitan functions and metropolitan spatial structures. One can hope that the metropolitan function will strengthen, the more so as Poznań is the largest city situated midway between Berlin and Warsaw, and one that has passed with flying colours through the difficult period of the socio-economic transformation.

Poznań and its region try to capitalise on their location, for example by opening towards Poland's western neighbour and developing cross-border co-operation. The city closely follows such concepts as that of the Berlin-Poznań-Warsaw trajectory (Domanski 1999) or of a new Central European mini-pentagon based on the Berlin-Dresden (or 'Saxon Triangle' including also Leipzig, Halle and Chemnitz)-Wroclaw-Poznań-Szczecin network of metropolises (Krätke 2001). These ideas, however, do not always find favour with the central authorities. Hence the future position of the Poznań metropolitan region will depend heavily on political decisions and the degree of decentralisation of the Polish power system.

Another issue depending on centrally-made decisions is the role of Poznań's awica airport. The dynamics of air operations and volume of passenger traffic (Table 2.3) can be treated as a measure of the growing internationalisation of Poznań, and their spatial structure as an indicator of the directions of links. Predominant are flights to German cities (Munich and Frankfurt; there is also a convenient rail connection to Berlin) and London. The remaining air links go either via Warsaw or Berlin. The reluctance of the central authorities to develop regional airports may be a significant factor slowing down Poznań's process of metropolitanisation.

Fortunately, limitations of this kind have not brought about any major slackening in growth dynamics so far. The Poznań metropolitan region is located within the so-called Central European banana, an area of accelerated growth. In relation to the whole of Europe, however, the growth potential of the Polish cities (including Poznań) is rather small. In a report on the European Regional Economic Growth Index (EREGI) published by Jones Lang LaSalle in October 2006, embracing 91 large cities of Europe, Poznań took 52nd place (after Warsaw, 44th, but before other Polish cities: Kraków was 71st, Wrocław 74th, Katowice 81st, Gdańsk-Gdynia-Sopot 83rd, Łódź 84th, and Szczecin 89th). Worth noting, however, is the fact that among the cities of post-communist East-Central Europe Poznań was ranked sixth, recording the steepest growth in this group: in comparison with the year 2005 it had moved up by 24 places (while Warsaw dropped by 23 places).

In order to present the level of diversification of certain elements indicating socio-economic development, PCA was carried out on for the gminas of the Poznań Metropolitan Area. Five categories were analysed– people, economy, society, place and governance.

In the first category – 'people' – five demographic characteristics were analysed. They referred to migration flows, changes in the number of population, the number of people of productive age, and housing conditions. As a result of the PCA two factors were obtained

which explain the total variance at a level of 38% and 25% (Table 55). The first one shows a high negative correlation with the population change in the last 10 years and with the migration balance. It was named ‘migration tendencies’.

Table 55. Principal Component Analysis for urban areas in the category ‘people’

Principal component	Correlated characteristics
Factor 1 (Migration tendencies)*	Negative correlation - population dynamics in 1998–2008 (r=-0.95, w=0.48) - migration balance per 1 000 people (r=-0.92, w=0.45)
Factor 2 (Accommodation conditions)*	Positive correlation - the number of people of productive age per total population (r=0.68, w=0.37) Negative correlation - the number of people per household (r=-0.80, w=0.51)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

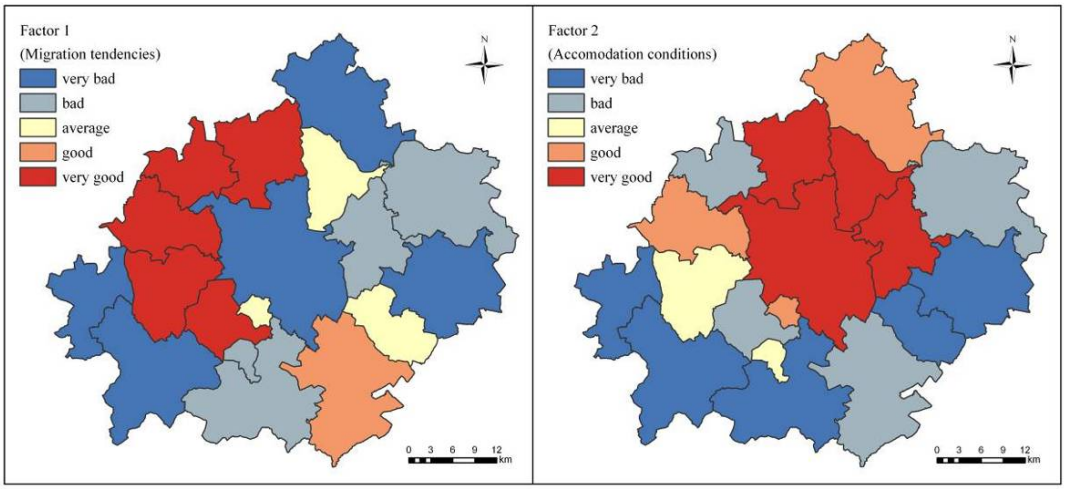


Fig. 91. Migration tendencies and accommodation conditions in PMR in 2008
Source: own compilation

On the basis of the first obtained factor it can be concluded that the best population situation is currently found in the gminas situated to the north and west of Poznań – Dopiewo, Komorniki, Tarnowo Podgórne, Rokietnica and Suchy Las (Fig. 91). Many middle-aged people in a good material position and looking for a higher standard of living move out to these areas. The least favourable seems to be the demographic situation of Poznań and to a lesser degree of the gminas not directly bordering on the region’s capital. Here the dynamics of growth and popularity among migrants are at a considerably lower level. This situation could lead to many economic and social problems in the future, and so local authorities are trying to overcome this negative tendency:

> *“The real problem in Poznań is demographic tendencies. The migration balance is negative mainly because of the lack of valuable housing resources. For a great amount of young people after graduation, it is very difficult to find even a small flat. That is why we try to organize marketing campaigns to encourage them to stay – i.e. “live in Poznań”. Together with the development of housing for the young this is the only possible way to stop the outflow of young people from Poznań.*

Vice-director in the Department of Development,
City Council in Poznań

The second factor has statistically relevant negative correlation with the size of an average household, and a positive one with the number of people of working age; it was named 'accommodation conditions'. These conditions are the best in Poznań and in gminas in the northern part of the analysed area (Fig. 91). The number of people of working age is also high in these units. This may affect the local labour market in the near future.

The availability of statistical data concerning entrepreneurship and the jobs market at gmina level is very limited. As a result, it was necessary to limit the analysed variables to 4. They describe the situation on the labour market and for entrepreneurship in the analysed units. As a result of data reduction after applying PCA two such components were obtained (Table 56). The first of them explains the total variance to a level of 56% and is highly positively correlated with the number of employed and employment dynamics and negatively with unemployment rate. It was consequently named 'local market conditions'. The second principal component (explaining the total variance to a level of 30%) has significant correlation with the number of new enterprises and was named 'level of entrepreneurship'.

Table 56. Principal Component Analysis for urban areas in the category 'economy'

Principal component	Correlated characteristics
Factor 1 (Local market condition)*	Positive correlation - dynamics of employment in years 1998-2008 (r=0.85, w=0.32) - the number of working people per total population (r=0.82, w=0.30) - the number of new enterprises per 1 000 people (r=0.51, w=0.12) Negative correlation - unemployment rate (r=-0.77, w=0.27)
Factor 2 (The level of entrepreneurship)*	Positive correlation - the number of new enterprises per 1 000 people (r=0.79, w=0.52)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

Interestingly, Poznań did not return satisfactory results in the analysis (Fig. 92). The gmina of Tarnowo Podgórne turned out to be dominant in terms of economy, owing to the fact that many new investments were located there. Kórnik, Komorniki and Suchy Las also have good economic situations. Gminas located far from Poznań have to deal with the problem of attracting new investors to create new jobs, hence their inferior position. In the case of some gminas their lower level of entrepreneurship results from other strategies of development chosen by these units or small area of land for development:

> *"Our possibilities of fast development in the future are not very good because of the lack of potential land for investment projects."*
>
> *Vice-mayor of Luboń*

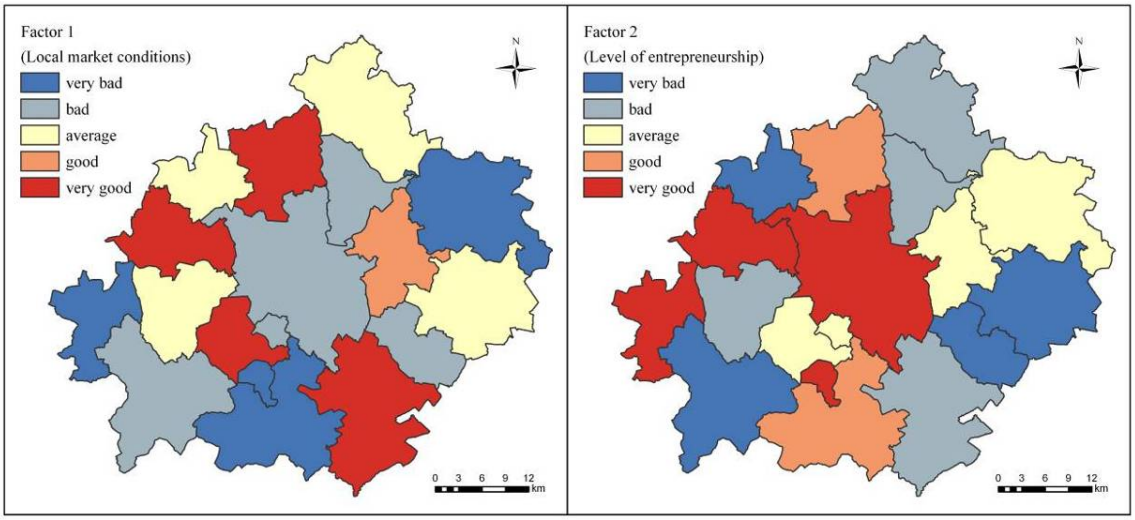


Fig. 92. Local market conditions and the level of entrepreneurship in PMR in 2008
Source: own compilation

For the category 'society' four variables were chosen. They relate to the situation of health care and culture in the analysed area. As a result of PCA the number of components was reduced to two. They explain the total variance at a level of 74% (46% and 28%; Table 57). The first one has a high negative correlation with the number of medical outlets and the number of social welfare homes and facilities. It was described as 'access to medical care'. The second one has a statistically relevant correlation with the number of medical consultations and the number of libraries, and can be named as 'access to libraries' or 'access to doctors' (Fig. 93).

Table 57. Principal Component Analysis for urban areas in category 'society'

Principal component	Correlated characteristics
Factor 1 (Access to medical care)*	Positive correlation - the number of places in social welfare homes and facilities per 1 000 people (r=0.81, w=0.35) - the number of health care facilities per 1 000 people (r=0.80, w=0.34)
Factor 2 (Access to libraries and to doctors)*	Positive correlation - the number of medical consultations per 1 000 people (r=0.71, w=0.45) - the number of libraries per 1 000 people (r=0.70, w=0.44)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

Poznań dominates in terms of access to medical services, because it has the largest amount of hospitals and medical facilities. Also people from outside the city tend to use the services of its clinics and hospitals. Obviously, owing to the almost total absence of cinemas in the Poznański powiat, Poznań dominates in terms of this cultural element. However, access to libraries there is much more difficult than in the suburban gminas. The large cultural and social offerings of Poznań could be destructive for the development of services and social infrastructure in surrounding gminas:

"The most important threat for the future of our unit is the growing role of the central city. Poznań and its service offering – cultural, medical, commercial – should supplement that of our own city."

Director in the Department of Development
City Council in Swarzędz

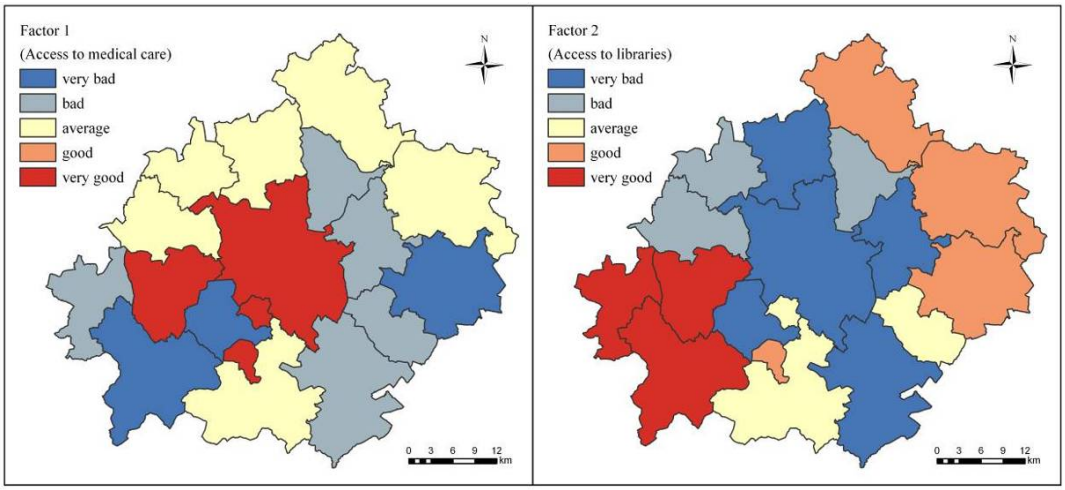


Fig. 93. Access to medical care and to libraries in PMR in 2008
Source: own compilation

For the category 'place' eight variables were chosen. They describe such problems as accessibility of technical infrastructure, housing development and environmental quality. The PCA enabled a data reduction to three principal components, which explain the total variance at a level of 30%, 25% and 17% (Table 58).

Table 58. Principal Component Analysis for urban areas in the category 'place'

Principal component	Correlated characteristics
Factor 1 (Housing development)*	Positive correlation - the number of new buildings per 1 000 people (r=0.91, w=0.34) - the number of new homes per 1 000 people (r=0.91, w=0.34) - the number of metres in homes per 1 person (r=0.72, w=0.21)
Factor 2 (Access to sewerage system and water supply)*	Positive correlation - the percent of people with access to sewerage system (r=0.83, w=0.34) - the percent of people with access to water supply (r=0.69, w=0.23) Negative correlation - legally protected areas due to unique environmental value in % (r=-0.64, w=0.20),
Factor 3 (Access to gas network)*	Negative correlation - percent of people with access to gas system (r=-0.76, w=0.43) - the number of lodgings (for tourists) per 1 000 people (r=-0.65, w=0.31)

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

The first principal component has a high positive correlation with characteristics related to housing conditions: the number of new homes and new buildings and the number of metres in homes per 1 person. It was named 'housing development'. The second has a statistically relevant positive correlation with access to sewerage and water supply and a negative one

with the area of legally protected territories and the number of lodgings for tourists. It was describes as ‘access to sewerage system and water supply’ (Fig. 94).

The best housing conditions are found in such gminas as Dopiewo, Rokietnica and Komorniki as well as Tarnowo Podgórne and Suchy Las (Fig. 94). Many new residential areas are build usually with high standards. Inhabitants of Poznań very often move there in order to improve their housing conditions (Kaczmarek, Mizgajski 2008). In Poznań itself there is less and less land for housing developments.

The second principal component has a statistically relevant positive correlation with access to sewerage and water supply and a negative one with the area of legally protected territories and the number of lodgings for tourists. It was describes as ‘access to sewerage system and water supply’. The second ratio has its highest values in Poznań, Swarzędz, Luboń, Czerwonak and Kostrzyn. In these units access to technical infrastructure is particularly good. This is a result of the systematic investment process. The other units have a worse situation. The lack of finances in local budgets and fast development of new housing areas are the main factors which give local authorities problems with ensuring that people have access to the water supply and sewerage system.

The third factor is correlated with access to the gas system and the number of lodgings, and was named ‘access to gas network’. Access to the gas network is highest in Poznań, Kórnik, Puszczykowo, Tarnowo Podgórne and Stęszew. These gminas are systematically investing in gas infrastructure.

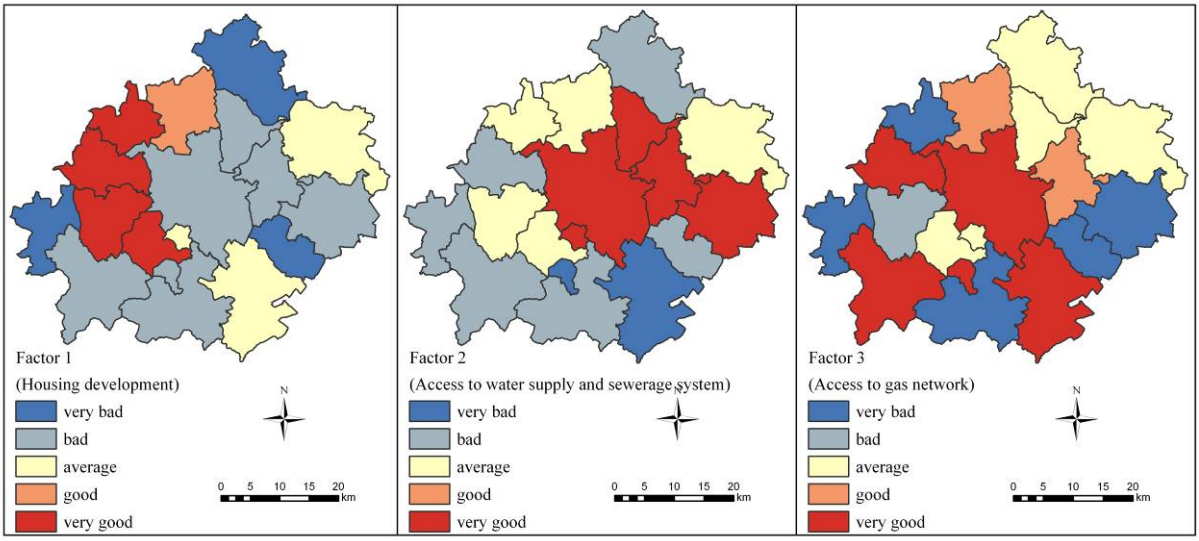


Fig. 94. Housing development and access to technical infrastructure in PMR in 2008
Source: own compilation

For the category ’governance’ three variables connected with budget condition and activity of the local society were chosen. On the basis of the PCA, one principal component was obtained (Table 59). It explains the total variance to a level of 75% and it is highly positively correlated with income and expenditure of gmina budgets; it was named ‘local budget condition’.

Table 59. Principal Component Analysis for urban areas in the category 'governance'

Principal component	Correlated characteristics
Factor 1 (Local budget condition)*	Negative correlation - administrative district incomes per 1 person (r=0.96, w=0.41), - administrative district expenditures per 1 person (r=0.96, w=0.41), - the number of non-profit organizations per 1 000 people (r=0.64, w=0.18).

* The factor was named after the highest number of strongly correlated characteristics

Source: own compilation

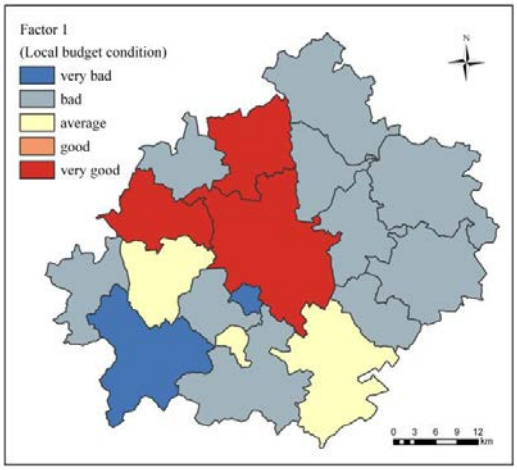


Fig. 95. Local budget condition in PMR in 2008
Source: own compilation

In terms of expenditure and income the best situation is found in dynamically developing and economically strong units such as Tarnowo Podgórne, Suchy Las and Poznań (Fig. 95). The lowest incomes and expenditures were noted in the north-eastern and southern gminas.

The above-mentioned analysis indicates considerable differences between Poznań and the surrounding area. Demographic tendencies connected with suburbanisation are especially significant – they shape the age structure. Poznań is dominant in terms of access to specialised services such as advanced medical care, cinemas, and institutions of higher culture. Inhabitants of other gminas need to come to Poznań for such services. However, the accessibility of libraries and recreational areas is not so good in the region's capital.

The gminas bordering on Poznań are developing very fast, especially Tarnowo Podgórne, Dopiewo, Komorniki, Rokietnica, Kórnik and Suchy Las. Not only do Poznań's inhabitants move there, but the gminas also tend to attract economic investment (owing to the good investment conditions and good road connections to Poznań) at the expense of Poznań (see also Stryjakiewicz et al. 2007). As a result these gminas have high local budgetary income, and hence invest in the improvement of technical and social infrastructure. This translates into improved standard of living for inhabitants.

In recent years the first talks between representatives of Poznań's authorities and the gminas have begun regarding the creation of a formal Poznań Metropolitan Area. Such a legal entity

could introduce a cohesion policy concerning the most important local issues. In 2007 the Poznań Agglomeration Council was formed and in 2010 a Green Book with the main directions for development was presented. In the publication, there were presented 5 strategic axes to be realized in the shorter term (up to 2020):

1. Land and environmental management.
2. Infrastructure and transport organization.
3. Economy and job market.
4. Social services.
5. Integrated management and territorial marketing.

These programmes deal with the most significant problems of the Poznań agglomeration. It seems that integration of the area and a joint decision-making process about the most important issues concerning development are the only answer to the current problems. The reluctance of some local authorities to see their competences reduced and to focus on interests important for the whole agglomeration may be an obstacle; therefore a reasonable compromise needs to be sought:

> *"Integration within the metropolitan borders – yes, but only on equal terms."*
>
> *Director of Department of Development*
> *City Council in Swarzędz*

This initiative is certainly a chance for Poznań and the surrounding gminas for fast socio-economic development (Billert 2001). If the elements of the programme are realized, both inhabitants and local entrepreneurs will benefit from it, and the capital of the region may benefit on a national scale. Up to now every gmina has been focused on its own interests and had its own development directions. The results of this include the demographic problems of Poznań and the transport problems of inhabitants of suburban gminas. Only cooperation and joint actions within these fields provide an opportunity to reverse the unfavourable trends:

> *"Integration and cooperation with Poznań and other gminas in Poznań powiat are extremely difficult, but there is no other option for the future."*
>
> *Vice-mayor of Luboń*

4.5. Objectives of urban investment strategy

The analysis of demographic trends and competitiveness of urban areas in Poland and the case study analysis of Poznań Metropolitan Area constitute a sound basis for defining objectives of the investment strategy for urban areas in Poland. Proposed areas of intervention and investment, presented in Table 60, are grouped around elements defining the competiveness of urban areas: economy, innovativeness, people, society and governance.

Table 60. Objectives of urban investment strategy

Economy

	Correlated characteristics (indices)	Investment objectives
Economic situation	• unemployment rate • GDP per capita • number of employees per 100 people • income per capita • number of enterprises with foreign capital per 1 000 people • number of enterprises per 1 000 people • employment dynamics 1998–2008	**Fostering economic activity:** • attracting foreign direct investment; • fostering SMEs. **Strengthening workforce base:** • adjusting education offering to the development of the labour market (new types of jobs); • promoting flexible employment; • preparing for inward and outward migration of employees – multiculturalism in the workplace; • creating jobs for young talent – conditions which give them a start in the working environment, allow them to go abroad to get experience and encourage them to come back ; • employment and demography – 'making it easier' for young people in employment to start a family (flexitime, part time etc.).

Innovativeness

	Correlated characteristics	Investment objectives
The level of innovativeness	• innovation financing per 1 person • employment in R&D - % of working people • R&D financing per 1 person • number of patents 10 000 people	**Fostering innovation:** • creating a regional system of innovation financing and promotion; • promoting cooperation between business, academia and city; • developing modern academic centres; • investing in innovation in new, niche market segments.
Education of technical specialists	• number of technology students – % of total	**Strengthening links between academia and markets:** • promoting increase in number of technology students; • adjusting education offering to the

		needs (including future ones) of the labour market.

People

	Correlated characteristics	Investment objectives
Migration tendencies	• migration balance per 1 000 people • population dynamics 1998–2008 • number of daily migrations to work – balance	**Increasing attractiveness of the city:** • tackling development and competitiveness issues related to economy, innovativeness, society, governance and place; • fostering natural growth – improving social infrastructure (kindergartens, playgrounds, family-friendly public areas), family-friendly companies, information campaigns regarding available support for families.
Demographic potential	• number of people per household • number of people of productive age per total population • number of high schools graduates per 1 000 people	**Fostering talent:** • improving pre-school education for equalling of chances and better educational results in the next stages of education; • diversification of education – offering a variety of education programmes for different types of talent; • promoting niche qualifications and specialisation; • promoting technical education (compare with innovativeness); • introduction of e-learning and distant learning; • promoting life-long learning; • increasing co-operation between academia and business; • running programmes supporting job-creation.

Society

	Correlated characteristics	Investment objectives
Security level	• crime detection rate in %	**Safer city:** • improving levels of conventional

	• number of crimes per 100 people	personal safety (related to health and property); • improving rates of crime prevention and detection; • managing risks related to natural disasters; • integrating crisis management systems; • redesigning the social help system in order to help those in need without inducing inherited poverty.
Quality of medical care	• number of places in social welfare homes and facilities per 10 000 people • number of infant deaths per 10 000 births	**Towards a healthier city:** • introducing preventive programmes promoting healthy life style; • promoting regional centres of specialist medical competences; • supporting medical universities operating in the city.
Access to medical services	• number of beds in general hospitals per 10 000 people	**Responding to demand for medical services:** • promoting competitive pay and work conditions in order to ensure the right supply of the medical services.
Access to cultural facilities	• number of cinemas per 10 000 • number of visitors in cinemas per 100 people • number of art exhibitions per 10 000 people • number of libraries per 1 000 people	**City open to culture:** • organising artistic events of local, regional and national importance; • promoting art-related education for the general public of all ages; • increasing participation levels (subsidies and promotion for cultural events).

Governance

	Correlated characteristics	**Investment objectives**
Local budget condition and community's activity	• administrative district income per 1 person • administrative district expenditure per 1 person • turnout in the last local government elections • number of non-profit	**Improving efficiency and effectiveness of the local government:** • reducing red-tape burden; • fighting corruption; • improving service levels; • introduction and promotion of e-governance platforms for service improvement;

	organizations per 1 000 people	• building lasting co-operation with voluntary and non-for-profit organisations.

Place

	Correlated characteristics	Investment objectives
Housing development	• number of new homes per 1 000 people • number of new buildings per 1 000 people • number of lodgings (for tourists) per 10 000 people	**Regeneration of the inner city - adjusting space to the needs of inhabitants:** • creation of new, affordable and useable housing (e.g. town houses – semi-detached houses with gardens – as alternative to settlement in suburbia); • modernisation of existing housing stock; • promotion of multifunctional development of the centre. **Urban sprawl prevention and/or management:** • strengthening the inner city (see above); • promoting dense urban development alongside the existing urban infrastructure. **Prevention of speculative real estate investments**
Public space	• the number of people per 1 enterprise • the number of new buildings per 1 000 people	**Improvement of quality and safety of public spaces:** • making the best of the city's location and scenery – e.g. river, hills, lakes etc. – making it accessible, usable and enjoyable; • creating an attractive and vibrant centre for work and leisure; • strengthening local centres of the individual urban quarters; • more green spaces; • systematic maintenance of the public spaces; • visual arts for public spaces;

		• proportional/balanced saturation with sport, art and shopping centres; • functional parking areas; • reducing air and sound pollution; • inclusiveness - adjusting public space to the needs of the disabled and elderly.
Commercial development	• number of people per 1 enterprise • the number of new buildings per 1 000 people	**Development of plots for commercial investment:** • creating a portfolio of plots for commercial investment; • defining guidelines for environment-friendly investments; • maintenance and development of infrastructure for commercial investments. **Brownfield vs. greenfield development:** • regenerating brownfields; • attracting investors to use them rather than greenfields; • re-use of old industrial buildings for culture, sport, commerce and business.
Access to public transport	• number of public transport lines per 10 000 people; • legally protected areas due to unique environmental value in %.	**Prioritising public transport:** • limiting access of private cars to city centres; • creating exclusive/ priority lines, flexible tariffs and connections for public transport modes; • developing railway transport within the city; • integrating regional and intra-city railway services; • introducing innovative transport solutions such as electric and hybrid buses.

The areas of intervention presented in Table 60 are described in general terms, because there is no space for a 'one size fits all' approach in urban development, and each city needs to tailor and prioritise projects according to its particular needs and broader development

strategy. For example, the list of investment objectives for Poznań Metropolitan Area should include:

- increasing the amount of new housing offered to young graduates to keep the talent in the cities;
- development of the necessary infrastructure in the urban areas with new housing development;
- development of a sustainable transportation policy based on less expensive investment in the road and individual infrastructure more in public transportation, mainly trains (revitalisation of railway stations with Park&Ride areas, modernisation of the existing railway infrastructure), trams and buses;
- revitalisation of the central districts of the main cities – more friendly public spaces, limited noise in the city centre due to implementation of more restricted-traffic areas, modernisation of old houses in the historical centres of cities.

5. Summary and conclusions

The purpose of the report was to enable the definition of types of intervention that should be included in integrated plans for sustainable urban development in the context of the demographic transformation and competitiveness of urban areas in Poland. In this respect, the report's conclusions are meant to help to inform investment strategies for the Urban Development Funds and hence be instrumental in fostering sustainable urban development.

Three consecutive parts of the report present analysis of the demographic transition and competitiveness of urban areas in Poland with a special focus on Wielkopolska as a model region, and the relevant urban investment strategy for the country.

In relation to the first part of the analysis, which presents the demographic situation of Poland and its urban areas, the concluding remarks are as follows:

1. The population of Poland was increasing from 1946 (23 660 000, of which the urban population accounted for 34%) until 1996 (38 294 000, urban population 61.9%). Since 1997 the total population has been decreasing, however in cities the rate of decrease is slower. The indices of growth rate per 1000 people in cities show fluctuations in growth; however they remain positive values.
2. Important elements of the decreasing population of the whole of Poland in 2008 were, primarily, a negative migration balance, and a low but positive natural increase. In the case of Polish urban areas the decreasing population was an effect of a negative migration balance as well as a natural increase, the most important role being played by the negative natural increase value.
3. The negative migration balance, the major factor behind the decrease in the population in Poland, was mainly conditioned in 2007 by the outflow of workers abroad in search of a better standard of living, in which an important role was played by the availability of jobs. The destinations of emigrants were the old member states of the European Union. The immigrants from abroad were mainly from the former states of the Soviet Union, and their reasons for coming to Poland included family circumstances as well employment opportunities. The origins of the Polish emigrants were mostly the western, south-western and north-eastern regions of the country (Lubuskie, Dolnośląskie, Opolskie, Śląskie, Pomorskie and Warmińsko-Mazurskie). On the other hand most of the immigrants were located in Mazowieckie, mainly in Warsaw, and in the eastern part of Poland (mainly in Podlaskie).
4. An important result of the analysis was the identification of directions of internal migration between urban and rural areas. 1998 was the first year when the direction of migration changed and the number of people migrating from cities to the countryside exceeded migrations from the countryside to the city. This process has continued, and in 2008 the value of the indicator was -2.1 per 1000 people (internal migration -1.7 and external -0.4 per 1000 people). In 1988–2007 in Warsaw, Kraków, Poznań, the Tricity, Wrocław, Łódź, Bydgoszcz and Toruń a decrease or slight increase was recorded, while the surrounding gminas recorded a considerable population increase.

The increase of population in suburban areas was caused not only by migration from the central city. A typical urbanisation process involving the inflow of people from rural and peripheral areas had also a great impact.

5. The city which generates the most short- and long-term migration is Warsaw. However, not only the core of the Warsaw metropolitan area generates this migration, but also the gminas which surround the city.
6. In the period 1998–2008, with the progressing negative population age structure and decreasing number of women of reproductive age, a negative natural increase is expected in Poland. This is a consequence of the decreasing and very low number of births in the 1990s and at the beginning of the twenty-first century.
7. In urban areas in Poland, in the period 1998–2008 the negative natural increase will be mostly determined by the continuation of the unfavourable changes in the relation between the number of births and deaths (in 2007 the natural increase was -0.9 thousands, and in 2035 it will be -123 thousands).
8. According to the prognosis of the Central Statistical Office, by 2020 in Poland a dominant part of the total quantity of migration will be accounted for by external (foreign) migration. The same pattern will be followed in the urban areas. For Poland the negative migration values (migration index) are expected to continue until 2019, while for urban areas the end of the unfavourable migration balance is projected for 2020.
9. According to the prognosis of the Central Statistical Office, by 2035 there is expected to be a significant decrease in the population of working age (18–59/64) in Poland. After 2010 the pre-working age population will decrease (by 13%) and there will be a relatively high increase in the post-working age population (by 9%). All these processes will affect the total dependency ratio.
10. According to the National Spatial Development Concept 2030 (NSDC; 2006) of the Committee for Spatial Economy and Regional Planning at the Polish Academy of Sciences, there will be a strong bias (polarisation) between the metropolitan regions and their peripheries. This means the existence of developed agglomerations – the centre (pole) of the development in the central part of the country and the areas of poverty (the post-socialist collective farming areas in the north-west and eastern part of Poland).
11. The NSDC 2030 is based on the assumption that over the next 20 years the spatial policy will lead to the development of a polycentric metropolitan network that forms a co-related and open network of metropolitan centres, to which other voivodeship and regional centres are attached and which is connected to the European metropolitan network. The polycentric metropolitan network will consist of:
    - Warsaw and the largest metropolitan centres,;
    - other voivodeship cities;
    - the network of subregional and local centres.

    The Concept defines the directions of activities to increase the international competitiveness of Polish cities:
    - intensification of functional relationships between the major nodes of the settlement network;

- support for the development of the metropolitan functions of cities;
- integration between functional areas and the core of the metropolitan area.

The second part of the report includes territorial diagnostics and analysis of the competitiveness of urban areas in Poland. The concluding remarks are as follows:

1. The structure of the settlement system in Poland has developed since the tenth century and was strongly affected by historical events. It was in the 13th and 14th centuries that settlement structures in Poland developed the most. During this period the concept of the city was systematised in Polish law. Because of the fact that Polish law was based mainly on the German model, most cities were planned according to Magdeburg rights and settled with German settlers. In the years 1772–1795 Poland successively lost parts of its territory and independence, and finally disappeared from the political map of Europe. Development and industrialisation of such cities as Łódź, Sosnowiec and Warsaw took place in the 19th century. A mass migration of population from the overcrowded and poor countryside to the cities began during this period (Węcławowicz 2003). The dynamic development of urbanisation was stopped by the First World War (1914–1918). Many urban areas in Poland were directly affected by military action. In 1918 Poland regained its independence, and after that the country was faced with the task of reintegration of the urban network. During the period between World Wars I and II, the western cities in Poland were developing at a very rapid pace. The period between 1945 and 1989 was characterised by a varied pace of development in different categories of cities. Some of them were expanding, while others experienced periods of stagnation or decline. The greatest growth of large cities took place in the 1950s (about 5% per annum) and in the 1970s (4% p.a.). Small towns (less than 20 thousand inhabitants) experienced a period of prosperity at the beginning of the 1950s, when the population was increasing at an average rate of 5% per year. Subsequent years, however, saw their gradual decline, mainly due to the outflow of population to larger centres or emigration abroad. Medium-sized towns (20–100 thousand inhabitants) had a low rate of development until the1970s. From the 1980s their population began to increase slightly faster (about 2% per annum), which can be partly explained by the fact that some of these centres gained the status of *voivodeship cities* in 1973 (Korcelli, Gawryszewski, Potrykowska 1992). A great number of economic and social processes affected cities in Poland during this period, and changed their internal structure significantly. This was particularly visible in the large urban centres that are essential in the settlement system of the country. Large, homogeneous areas with an insufficient service base began to appear. Cities had their own specific functions (Jałowiecki, Szczepański 2006). The division into residential and industrial areas was becoming visible, which caused the destruction of historical structures and generated numerous social (see Karlowicz 1978, Malick 1978, Jałowiecki, Szczepański 2006) and transport problems (due to the necessity to commute from distant residential areas to workplaces). The most important production functions were located in preferential areas (Węcławowicz 2003). The residential areas were located on the outskirts and often featured the modernist and socialist

realist architecture of this period. Similar blocks of flats built from large concrete slabs were dominant. However, investment in infrastructure and in the development of the public service sector (e.g. public transport) did not keep pace with the general growth.

2. Of particular importance for organising the country's settlement network and regional processes was the introduction of administrative reform in 1999. It was decided to return to the three-level territorial division that had existed before World War II, i.e. *voivodeships*, *powiats* and *gminas* (corresponding to the levels of NUTS 2, NUTS 4 and NUTS 5 respectively). The territorial division established in 1999 considerably improved the functioning of the administrative sphere in Poland. It made it possible to develop a coherent and rational regional policy. The new division initiated and forced new mutual cooperation within the settlement system of the country. Not without significance is the fact that the new administrative structure is better matched to European standards and facilitates processes of management and distribution of EU funds (Kaczmarek 2005). The development of the regional or subregional centres of growth such as metropolitan areas or cities depends strongly on the socio-economic situation of their regions – voivodeships in Poland's case.
3. According to the analysis, a good economic situation is also found in Dolnośląskie, Wielkopolskie, Pomorskie and Śląskie (Fig. 38). In the case of the first three of these voivodeships their good economic situation is related to the dominance of the strong growth centres – the metropolises of Wroclaw, Poznań and the Tricity (Gdańsk, Gdynia, Sopot). In the case of Śląskie the situation is mainly the effect of the mining industry heritage based on the profits from coal and the huge socio-economic potential of the population (the highest urbanisation ratio and the highest population density in the country). According to the analysis, the economically weakest regions in Poland include the eastern voivodeships such as Warmińsko-Mazurskie, Podlaskie, Lubelskie, Świętokrzyskie and Podkarpackie. In case of these voivodeships, central government assistance was necessary to improve their economic competiveness, e.g. implementation of the EU-financed programme called Development of Eastern Poland (Narodowe Strategiczne Ramy Odniesienia 2007–2013). The objective of the project was to increase the competitiveness of these regions mainly through building the necessary technical and social infrastructure.
4. It can be concluded that the voivodeship with the best situation in terms of the category "people" is Mazowieckie. A relatively good demographic position for the socio-economic situation is also found in Wielkopolskie, Pomorskie and Małopolskie. The weakest situation is found in small voivodeships without a strong urban centre, i.e. Opolskie and Świętokrzyskie. The situation of the south-eastern regions is also not favourable as they have a high economic burden of population (a low number of people of economically productive age).
5. Analysis of housing development shows the dominance of voivodeships close to the sea, mainly owing to their rich tourist base. Tourism (mainly in the highlands) is also very important for Małopolskie. Kraków, apart from being a robust economic centre, is also an interesting place for tourists, and attracts creative people, even from abroad, causing a demand for new homes. Moreover, apart from being one of the most important cultural centres in Poland, the city offers a high quality of life (Korzeniak,

Rozenau-Rybowicz, Zborowski 2008). Mazowieckie and Wielkopolskie also have much to offer tourists – in this case mainly the business tourism. Warsaw and Poznań are also strong economic centres attracting new inhabitants. New homes are being built as a result of the desire of the current inhabitants to improve their standard of living.

6. Commercial development reached the highest values in Mazowieckie, Wielkopolskie (owing to the high development of trade and building industry) and in the weakly populated Podlaskie. The weakest development of these elements can be observed in Zachodniopomorskie and Świętokrzyskie. Access to public transport is the highest in the voivodeships of southern and eastern Poland. The lowest accessibility is in Śląskie, Łódzkie and Zachodniopomorskie, due to the high density of the public communication network.
7. On the basis of the analysis conducted, and studies by the Institute of Geography and Spatial Organization of the Polish Academy of Sciences and ESPON, it can be stated that only nine urban centres have more than regional and supra-national functions (Warszawa, Bydgoszcz-Toruń, Kraków, the Tricity, Wrocław, Poznań, Katowice, Łódź and Szczecin) and they can be considered as the metropolitan areas. None of them is located in the eastern part of Poland. Even the capitals of the regions of the eastern part of Poland were not able to develop a functional links beyond the administrative borders of the regions.
8. Since the beginning of the socio-economic transformation numerous problems have arisen in the urban agglomerations. The decrease in the number of their inhabitants seems to be the most important one. It is conditioned by the negative trends in population growth rate (resulting from the modern model of the family), as well as the negative migration balance. Large cities are no longer an attractive place to live for many people. Highly developed suburban areas often offer a higher standard of living. This is reflected in lower land and housing prices, lower taxes, and the greater prestige of having one's own accommodation. The quality of the natural environment in those areas is much better. The smaller concentration of population causes a lower level of pollution and noise and more green spaces, and increases the living space. Because of the simultaneous development of road networks in the suburban areas and widespread access to motor transport, these elements outweigh the benefits of living in the centre of a large city.
9. Equally worrying is the rapid ageing process in the population living in urban areas. Already a large proportion of residents is no longer of productive age, and this process will also be further intensified because of the migration of younger age groups to suburban areas. This situation generates a need for additional investment in the sphere of public life such as health, public transport, and social assistance. Many new social problems have occurred. In addition, the size of the labour market is decreasing and so is the economic potential of the society. In the next few years, local authorities will have to firmly tackle these issues.
10. Among the most important regional centres of growth the majority experienced a loss of population within the last decade. Only the population of Warsaw and Kraków increased (by 5.3% and 1.8% in the last 10 years). In the last year only Warsaw

managed to maintain this trend, with a slight increase of population (0.2%). Being the strongest economic centre in Poland, Warsaw is still a popular migration destination for people hoping to improve their standard of living and find jobs.

11. Katowice and Łódź lost the largest amount of inhabitants (11.7% and 8.0% in the last 10 years). It seems that this was influenced by the diminishing importance of these two industrial urban centres (Katowice with mining and metallurgy and other related industries, Łódź with the textile industry). Due to the weakening of industry, unemployment increased, causing problems of a social nature. Kraków and Warsaw may have contributed to the outflow of inhabitants in those cities. Their economic potential may have attracted people there to find jobs and a better standard of living. This can be somehow confirmed by the fact that the metropolitan areas of Katowice and Łódź did not develop – in the case of the Silesian conurbation there was a significant outflow of inhabitants, while in the suburban zone of Łódź the number of inhabitants was almost unchanged.
12. Among the cities which experienced population decline are Poznań, Bydgoszcz, Toruń and the Tricity. However, this decline is influenced by different conditions. In some of the city centres the population decreased, but at the same time it increased by 20% in the suburban zones (e.g. in Poznań). These expanding zones are good examples of the urban sprawl process. Still, the dominant positions of the cities as metropolitan regions (city and surrounding gminas) increased in the regions.
13. According to the Ministry of Regional Development (2009) in the Polish settlement system large urban agglomerations will remain the growth centres for the country's economy. The role of those located in the western part of the county will become more important and they are projected to be sources of the spatial diffusion of economic development. Their strong economic potential will be diffused along the major economic corridors created by the functional links between all the voivodeship capitals and adopted by the smaller territorial units in the lower settlement hierarchy. Therefore, the smaller cities will remain within the area of influence of the large agglomerations.
14. However, not all large cities are performing well in the new socio-economic conditions. On the basis of the chosen characteristics a Z-scores index for the main regional centres was constructed. It made it possible to assess the general level of socio-economic growth in these urban areas. The resulting ranking is presented. The dominance of Warsaw is clearly visible. Above-average values are also recorded for Kraków, Poznań, Katowice and Wrocław. Other cities have less favourable statistics. They face a number of problems in various fields, especially in terms of the labour market or technical infrastructure.
15. In terms of population change, the best situation in 2008 was found in Warsaw. The city had the highest population increase in 1998–2008 (5.34%) out of all nine metropolitan regions. According to this evaluation one can expect that the population of the Polish capital will continue to increase. However, the projection of the Central Statistical Office is not so promising, and it forecasts that starting from 2010 the population of Warsaw will be decreasing. Warsaw also recorded very good values of indices related to the migration balance per 1000 people (22.79). The other indices

related to that factor also placed Warsaw in a more favourable position than the other cities analysed.

16. According to the analysis based on the second principal component – demographic potential – a very good situation was identified in Bydgoszcz-Toruń, Poznań and Szczecin. In these three cities an important role is played by the number of people of working age per total number of population. In all three cases the value of this indicator was above 66%. This is a promising sign for the development of the local economy, which has a reserve of human capital at working age. However, these three cities are characterised by a low natural increase index, which might limit this potential.
17. The second component of the category "social infrastructure" is access to cultural facilities. A very good situation was found in Katowice, Kraków and Łódź. The high values of indicators such as number of arts exhibitions per 1000 people (in Kraków 6.84, in Łódź 5.33) proves how important these cities are on the cultural map of Poland. The situation of the Tricity, Bydgoszcz-Toruń, and Wrocław, where access to cultural facilities is very limited, needs improvement. All of these metropolises have unique values such as a historical old town which provides an valuable area for cultural events. There is also a need for revitalisation actions that stimulate the development of the new cultural facilitates (e.g. small cinemas or theatres located in regenerated post-industrial buildings, etc.). A good example of a regeneration process of an old industrial area is the revitalised mill island located in the river canal in Bydgoszcz. An important part of this process was the assignment of new functions to the old storage houses located on the island (e.g. Museum of Leon Wyczółkowski, restaurants, hotel). These are functions which do not always need to be subsidised from the local and regional government budget, but can also bring a profit; however, they have to be a part of the revitalisation process, located in an attractive central place in the city and functionally linked with other facilities.
18. In terms of quality of place a very good situation was found in three cities: the Tricity, Kraków and Warsaw. Special attention should be paid to Warsaw, where 111.5 new homes per 1000 people were built in 2008. This number shows the capacity of the local economy in terms of the supply generated by construction companies and developers as well as demand from the capital's inhabitants. At the same time, home prices per square metre are the highest in Warsaw (from 6610 zloty/m^2 or 1694 €/m^2 in Wesoła district to 11090 zloty/m^2 or 2844 €/m^2 in the city centre; www.snajp.pl 2010). The availability of these homes is limited to inhabitants with monthly salaries significantly above the national average, i.e. 3345 zloty (€846.17 Euro). Therefore, in the main Polish cities, such as Warsaw, Kraków, Tri-city, but also in the six others, there is a need to provide social housing or more favourable mortgage credit to those with below-average salaries. Even cities like Warsaw, Tri-city and Kraków, which generally perform very well in terms of quality of place, struggle with a lack of public transport (the number of public transport lines per 10 000 people is 8.01, 8.62 and 9.18 respectively). These cities need new solutions related to public transportation and the elimination of congestion during rush hours.

19. In terms of the economic situation Warsaw has a dominant position. Second place is taken by Poznań, mainly due to the low unemployment rate (1.8) and a high number of enterprises per 1000 people (167.3). Katowice is also a strong centre in terms of economy, mainly because of the concentration of industry (mining, extraction of raw materials). Łódź and Bydgoszcz-Toruń have the worse results, due to relatively high unemployment rates (6.8 and 5.5 respectively) and a low level of entrepreneurship (126.6 and 124.8 respectively). In the case of Łódź there is still a strong influence from the textile industry which existed until the beginning of the 1990s but collapsed after the introduction of the market economy. Workers in Łódź are still undereducated and struggle with the problem of accommodation to the new socio-economic situation. Therefore the city faces the problem of making structural changes in its human capital to become more economically competitive. The education of people of working age should be better suited to market needs. There is a need to introduce life-long learning for the young as well as for people of working age.

In relation to the third part of the analysis on territorial diagnostics and competitiveness of urban areas in Wielkopolska the following concluding remarks were defined:

1. Main problems of urban centres in Wielkopolskie voivodeship:
- deteriorating demographic situation (increasing number of post-working people and emigrants) and low level of working activity of people of working age in the main cities of the region (Poznań, Kalisz, Konin);
- high level of the regional and local level budget expenditure has an influence on the low level of education and infrastructure – lack of capital for new investments especially related to infrastructure and social housing;
- underinvestment in transportation infrastructure;
- the largest problems mentioned in the interviews are: 1) how to stop the outflow of inhabitants from the main cities to the rural areas; 2) how to find capital to invest in the new infrastructure (mainly transportation, but also sewage system and water supply); 3) how to cooperate with the public investors under the umbrella of public-private partnership investments.

2. Suburban areas of the main city centres – key challenges for local government:
- provision of access to technical infrastructure for residents and land preparation for new housing and business developments;
- development of a coherent and sustainable transport system (including renovation of railway lines, revitalisation of train stations, integration of different transport modes, development of new road connections);
- extension of the local cultural offering (competitive with that of the centre of the agglomeration e.g. Poznań);
- development of social infrastructure – investment in human capital through the life-long learning process;
- use of the environmental potential of the voivodeship to develop tourism and recreation promotion.

3. Other areas (e.g. peripheries of the voivodeship):

- economic problems in the eastern and northern-east parts of the region – low entrepreneurship activity and negative demographic tendencies (ageing society and outflow of the young people),
- very good level of socio-economic development in the small cities in the southern part of the voivodeship (Rydzyna, Rakoniewice, Zerków, Grabów).

4. Revitalisation:
   - existence of large supply of post-industrial areas in the cities, apart from Poznań, e.g. Kościan: "Kościan is a specific unit – it is a city which in the last decades was strictly an industrial area. After transition almost all industrial plants have collapsed. As a result in the city centre we have now a lot of brownfields. Therefore the need for revitalisation processes is huge" (a part of the interview with a representative of the local authority);
   - demand for revitalisation of railway stations in cities (possible areas of commercial space, headquarters of local government authorities, etc.) and restitution of train transportation in the daily migration of workers to the main centres of the region (voivodeship);
   - depopulation of historical city centres (Poznań and Murowana Goślina);
   - a need for a strategic objective and involvement of the society in the revitalisation process ("Local government can change the city only to a certain extent – further changes require the integration of the whole local community under the specified goals. There is a need for a strategic vision of the revitalisation process. We have prepared such a vision which contains the programme for the coming decades." (part of the interview with a representative of the local authority);
5. Future threats to urban areas:
   - "there are only a few possible factors which could stop the development path of our gmina: growing bureaucracy, irrational changes in the Polish legal system and possible financial crisis at national level." (part of the interview with a representative of the local authority);
   - further depopulation of the big cities can cause further transport problems in the main city centres of Wielkopolska and can have a negative influence on the natural environment of the region (e.g. Wielkopolska National Park in the vicinity of Poznań);
   - growing budget debts of local authorities affect their investment capacity.

The territorial diagnostics and analysis of the competitiveness of urban areas in Poland presented in the three parts of the report form a basis for defining types of intervention that should be included in integrated plans for sustainable urban development. The proposed areas of intervention, listed below, are grouped around elements determining the competiveness of urban areas (defined and analysed in Chapter 3): economy, innovativeness, people, society and governance.

1. Areas of intervention in the category 'Economy':

Boosting economic activity:
- attracting foreign direct investment;
- fostering SMEs.

Strengthening the workforce base:

- adjusting the offering of education to the development of the labour market (new types of jobs);
- promoting flexible employment;
- preparing for inward and outward migration of employees – multiculturalism in the workplace;
- creating jobs for young talent – conditions which give them a start in the work environment, allow them to go abroad to get experience and encourage them to come back;
- employment and demography – 'making it easier' for young people in employment to start a family (flexitime, part time etc.).

2. Areas of intervention in the category 'Innovativeness':

Fostering innovation:
- creating a regional system of innovation financing and promotion;
- promoting cooperation between business, academia and the city;
- developing modern academic centres;
- investing in innovation in new, niche market segments.

Strengthening links between academia and the market:
- promoting an increase in the number of technology students;
- adjusting the offering of education to the needs (including future ones) of the labour market.

3. Areas of intervention in the category 'People':

Increasing the attractiveness of the city:
- tackling development and competitiveness issues related to economy, innovativeness, society, governance and place;
- fostering natural growth – improving social infrastructure (kindergartens, playgrounds, family-friendly public areas), family-friendly companies, information campaigns regarding available support for families.

Fostering talent:
- improving pre-school education for equal opportunities and better educational results in the next stages of education;
- diversification of education – offering a variety of education programmes for different types of talent;
- promoting niche qualifications and specialisation;
- promoting technical education (compare with innovativeness);
- introduction of e-learning and distant learning;
- promoting life-long learning;
- increasing co-operation between academia and business;
- running programmes supporting job-creation.

4. Areas of intervention in the category 'Society':

Safer city:
- improving levels of conventional personal safety (related to health and property);
- improving rates of crime prevention and detection;
- managing risks related to natural disasters;
- integrating crisis management systems;

- redesigning the social help system in order to help those in need without inducing inherited poverty.

Healthier city:

- introducing preventive programmes promoting healthy life style;
- promoting regional centres with specialist medical competences;
- supporting medical universities operating in the city.

Responding to demand for medical services:

- promoting competitive pay and work conditions in order to ensure the right supply of medical services.

City open to culture:

- organising artistic events of local, regional and national importance;
- promoting art-related education for the general public of all ages;
- increasing participation levels (subsidies and promotion for cultural events).

5. Areas of intervention in the category 'Governance':

Improving the efficiency and effectiveness of local government:

- reducing the red-tape burden;
- fighting corruption;
- improving service levels;
- introduction and promotion of e-governance platforms for service improvement;
- building lasting co-operation with voluntary and not-for-profit organisations.

6. Areas of intervention in the category 'Place':

Regeneration of the inner city - adjusting space to the needs of inhabitants:

- creating new, affordable and useable housing (e.g. town houses – semi-detached houses with gardens – as an alternative to settlement in suburbia);
- modernising existing housing stock;
- promoting multifunctional development of the centre.

Urban sprawl prevention and/or management:

- strengthening the inner city (see above);
- promoting dense urban development along the existing urban infrastructure.

Prevention of speculative real estate investment.

Improvement of the quality and safety of public spaces:

- making the best of a city's location and scenery – e.g. river, hills, lakes etc. – making it accessible, useable and enjoyable;
- creating an attractive and vibrant centre for work and leisure;
- strengthening the local centres of particular urban quarters;
- more green spaces;
- systematic maintenance of public spaces;
- visual arts for public spaces;
- proportional/balanced saturation with sport, art and shopping centres;
- functional parking areas;
- reducing air and sound pollution;
- inclusiveness – adjusting the public space to the needs of the disabled and elderly.

Development of plots for commercial development:

- creating a portfolio of plots for commercial development;
- defining guidelines for environment-friendly developments;

- maintenance and development of infrastructure for commercial developments.

Brownfield vs. greenfield development:

- regenerating brownfields;
- attracting investors to use them rather than greenfields;
- re-using old industrial buildings for culture, sport, commerce and business.

Prioritising public transport:

- limiting access of private cars to city centres;
- creating exclusive/priority lines, flexible tariffs and connections for public transport modes;
- developing railway transport within the city;
- integrating regional and intra-city railway services;
- introducing innovative transport solutions such as electric and hybrid buses.

The areas of intervention presented are described in general terms based on the understanding that a city's development projects should be tailored to its particular needs and broader development strategy. For example, the list of investment objectives for Poznań Metropolitan Area should include:

- increasing the amount of new housing offered to young graduates to keep talent in the cities;
- development of necessary infrastructure in urban areas together with the new housing development;
- development of a sustainable transportation policy based on a decrease in expensive investment in the road and individual infrastructure and an increase in public transportation, mainly train (revitalisation of train stations with Park&Ride areas, modernisation of the existing railway infrastructure), tram and bus transportation;
- revitalisation of the central districts of the main cities – more friendly public spaces, reduced noise in the city centre due to implementation of more car vehicle-restricted areas, modernisation of old houses in the historical centres of cities.

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Appendix 1. Interview structure

I. Short presentation of the interviewer and the main ideas of the INURBS project

II. Starting questions:

- position, functions and main tasks in current work for the institution

- the main tasks of the institution

III. Significance of the city/territorial unit

- Cloud you describe significance of the city/territorial unit in regional and country scale? Is it important center of economic growth?

- What are the strongest and the weakest fields in city/territorial unit in comparison with other cities/territorial units?

- What are the main threats for the unit and its competitiveness?

- What are the main competitors (in Poland or in other countries) for the unit and for the local enterprises?

IV. Demography

- Could you evaluate a current demographic situation in the city/territorial unit?

- What are the main opportunities and threats for the city/territorial unit in the current demographic situation?

- What is the local government of the city/territorial unit planning to do to overcome bad demographic tendencies?

V. Socio-economic growth

- Could you assess the level of the socio-economic growth in the city/territorial unit?

- Could you shortly describe following fields which could characterize the level of socio-economic growth in the city/territorial unit:

- Governance (i.e. efficiency of local and governmental administration, development of the e-services)
- Entrepreneurship (i.e. the number of enterprises, structure of enterprises activity)

- Innovativeness (i.e. number R&D institutions, development of new technologies)
- Technical infrastructure (i.e. development of the public transport, roads, electricity and heat supply system, telephone networks, internet access)
- Social infrastructure (i.e. level of the health care system, development of the social security system)
- Labour market (i.e. structure of employment, unemployment rate)
- Human capital (i.e. quality of education, number of high schools and universities)
- Standard of living (i.e. quality of the environment, level of security, quality and number of cultural institutions)

- What are the fields of the mentioned above that are the strongest points of the city/territorial unit and what are the weakest in your opinion?

- In which fields could the city/territorial unit success in the future?

- Is current socio-economic development of the city/territorial unit congruent with the sustainable development principles?

VI. Strategic programmes for development

- Could you name strategic programmes which have the biggest influence on socio-economic development in the city/territorial unit?

- How are these documents connected with the programmes financed from UE funds?

- What is the role of external funds in financing projects from local strategic programmes?

VII. Perspectives and challenges for the cities/territorial units

- What are the main development objectives for the local government of the city/territorial unit?

- What are the main barriers of accomplishing these objectives?

VIII. Problematic areas

- Which places and areas in the city/territorial unit could be named “problematic areas” and why?

- What are the solutions, which governance is implementing (or is going to implement), to solve the main problems in these areas?

- What are the ideas implemented to maintain an old infrastructure in the unit?

- What is the role of central authorities in financing an old infrastructure and new infrastructural investments?

IX. Revitalization

- Are in the city/territorial unit any plans to revitalize problematic areas with degenerated housings, infrastructure and with bad socio-demographic structure? If yes, could you name them?

- What are the main problems of the revitalization process?

- What are the perspectives of the revitalization programmes in the future?

X. JESSICA program

- Do you think, that financial mechanism proposed by JESSICA program could be useful in the processes of revitalization and urban development?

- What problems do you foreseen in the future in implement JESSICA mechanisms?

XI. Comments

- Do you have any additional comments to problems and subjects which were discussed during this interview? Would you like to add something else?

Questionnaire
Name and position
Name of the institution