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MODELS FOR THE SPATIAL DEVELOPMENT OF MEDIUM-SIZED CITIES IN POLAND IN THE ERA OF TRANSFORMATION AS EXEMPLIFIED BY PUŁAWY, PŁOCK AND SIEDLCE

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A b s t r a c t

Post-1990, urbanisation in Poland took on new forms and features not very clearly on display in urban space before that time. Alongside a dynamic process of suburbanisation encompassing ever-greater areas around large cities, there has also been a phenomenon attesting to the occurrence of similar trends of the expansion of built-up areas with urban functions into areas around small and medium-sized urban centres. Taking shape are new wedges of urban construction pushing their way into suburban and rural areas. These are arising along access roads leading between the smaller cities and the large regional centres. It is not only services and industry that are located along these (as was shown in the classical model after Hoyt), since there are also estates of single-family or multi-family housing. The aim of the work described here has thus been to analyse the processes referred to as they are exemplified by the Polish towns or cities of Płock, Siedlce and Puławy. The comparative method deployed in this work is to lead to a proposal for a model of the development of Poland's urban centres of medium size.

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MODEL ROZWOJU PRZESTRZENNEGO ŚREDNICH MIAST W POLSCE W OKRESIE TRANSFORMACJI NA PRZYKŁADZIE PUŁAW, PŁOCKA I SIEDLEC

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S ł o w a k l u c z o w e: średniej wielkości ośrodki miejskie, modele ekspansji przestrzennej, transformacja urbanistyczno-przestrzenna, Polska.

A b s t r a k t

Urbanizacja w Polsce po 1990 r. przybrała nowe formy i cechy, które wcześniej nie były silnie eksponowane w przestrzeni miast. Obok dynamicznego procesu suburbanizacji, obejmującego coraz to większe obszary wokół dużych miast, pojawiają się zjawiska świadczące o występowaniu tendencji ekspansji zabudowy o funkcjach miejskich na tereny wokół miast małych i średnich. Coraz więcej domów jednorodzinnych, magazynów i hurtowni, supermarketów i salonów sprzedaży itp. powstaje na terenach do niedawna rolniczych, które pierścieniem otaczają średniej wielkości miasta. Kształtują się nowe kliny zabudowy miejskiej wcinające się w tereny podmiejskie i wiejskie. Wzdłuż dróg wyjazdowych z mniejszych miast do dużych ośrodków regionalnych powstają nie tylko usługi i przemysł (jak to było pokazane w klasycznym już modelu Hoyta), lecz także osiedla mieszkaniowe domów jedno- i wielorodzinnych. Celem pracy jest analiza tych procesów na przykładzie Płocka, Siedlec i Puław. W pracy zastosowano metodę porównawczą i przedstawiono próbę określenia procesów rozwojowych na wybranych przykładach oraz syntezę w postaci modeli.

Introduction

Unlike a village, a town or city is an area of much more-diversified internal structure, physiognomy and functions; and this can be seen to apply to some extent even to small or medium-sized urban centres (i.e. those ranging from small towns through to larger towns and small cities), notwithstanding the inevitably more-limited diversity of land-use, function and social structure to be found in such centres, as opposed to in large cities. While the subject literature has tended to see small and medium-sized urban centres treated as contiguous but uniform areas of settlement not especially diversified in functional and spatial terms (Bański, 2007), there seems little doubt that processes also ongoing in the towns or cities of this group are ensuring ever-greater diversity where both function and forms of land-use are concerned.

In presenting the functional and spatial structure of an urban area use is *inter alia* made of graphic images, which – as abstract models – allow for generalisation regarding urban processes and forms of physical development. Geographers have been more than ready to adapt the Chicago models to

meet their needs, with most analyses of the spatial structure of cities around the world basing themselves around these concepts. However, the realities of the 21st century, and the uninterrupted processes of change and transformation ongoing in urban space, necessitate updating in response to a question as to just how adequate the above models can prove, in encapsulating the logic and structure of today's towns and cities. In essence, can these models actually go on being applied to the presentation and analysis of urban morphology?

Among these and other issues, there appears a further question as to whether there are models for the medium-sized urban centre that allow the processes ongoing within it to be properly presented and understood. Any entitlement to join that particular discussion would first be founded upon analysis of changes in morphology and structure that real-life cities in the above category have actually been experiencing, in recent years.

Actors and animators associated with changes in the spatial structure of small and medium-sized urban centres

For many decades now, scientific disciplines including but not confined to geography and spatial planning have been looking at urban processes, and most especially those concerned with the transformation of city space and the expansion of its urbanised area into non-built-up areas (often even agricultural). Detailed analysis of the development of towns or cities in different parts of the world made it possible for many descriptive and analytical or mathematical models of such urban entities to be devised, with these then serving as a basis for theoretical research, as well as the drawing up of strategies and plans for spatial development. In the geography of cities, many relevant studies appeared between the early 1970s and the end of the 1990s. The most new ideas and concepts concerning graphic models of urban space undoubtedly emerged in the 1970s and 1980s, thanks to German geographers, who admittedly based their analyses on models from the Chicago School, most especially Hoyt's sectoral model (Czerny, 2014). In turn, among the "Anglo-Saxon" models, the best-known is the concept for the spatial structure of urban areas developed for South America by Griffin and Ford (Czerny, 2014); while in regard to the French School, the key work is that of Batallon (Czerny, 2014).

The last quarter-century of the 20th century brought urbanisation processes of a particular dynamic, in both the developed world and poor countries experiencing far-reaching economic change. In many countries, the 1970s brought the emergence of institutions and government agencies tasked with promoting work to regulate land-use processes in urban areas and to introduce physical development plans (Stöhr, 1975). This was also true of comprehensive projects

involving urban infrastructure, in particular solutions regarding access to – and the scope of – urban transport. It was, for example, at this point that innovative work began on the building of a system of fast buses in Curitiba, Brazil – of a kind that many other cities around the world continue to implement and apply through to this day. New solutions also include the construction of aerial tramway systems within the city-transport context. This is a solution mainly adopted where cities are located in the mountains (as in the cases of Medellin, Colombia, and La Paz, Bolivia, for example). In Europe, systems of tramlines have also tended to be modernised and made more attractive. In turn, nothing less than futuristic are solutions applied to the operation of city transport, and the design of the means thereof, in the city of Montpellier, France[1]. The remodelling and development of transport infrastructure has represented a response to cities' huge needs to integrate their different parts, as well as a desire for the forms by which use is made of space to achieve a higher level of cohesion and organisation.

So it is that the recognition and analysis of forms of spatial management and the internal structures of cities are among topics taken up most frequently by those researching urban geography. Hoyt's Model and modifications thereof are used in presenting the socio-functional structure of towns and cities in various parts of the world, with this taken to make clear the validity of this kind of conceptualisation being used in spatial research. Indeed, through to the late 1990s, the use of descriptive and analytical models was widespread, in line with an apparent conviction that there was no better way of conveying the complex structure of the objects studied, and no more effective available explanation as to processes and phenomena ongoing within them.

In fact, however, many of the models of city spatial structures devised in the 1970s and 1980s are of nothing more than historical relevance now (Göbel, 2015). Exceptionally dynamic processes leading to the spillover and sprawl of urban construction have been combining with associated functional and spatial fragmentation to ensure that neither Hoyt's original concept nor subsequent derived versions therefore were any longer capable of offering simple explanations for complicated real-life structures. Nevertheless, this may still prove a suitable moment for descriptive and analytical models to be applied more widely to medium-sized and small urban centres, given that both size and internal structure in this case ensure a lesser degree of complexity than applies to large cities.

A feature characteristic for the spatial development of urban centres of medium size selected for study is the way that built-up areas extend into suburbs.

[1] Here, the colour-scheme and designs used for the different tram lines went so far as to shape the identity of different districts of the city. Symbols for air, earth, water and fire were in fact applied to lines 1,2,3 and 4. The swallows (line 1) and flowers (line 2) are the work of well-known Swiss artist Mattia Bonetti, while the designs symbolising the sea (for line 3) and gold jewellery (line 4) are from French fashion designer Christian Lacroix (*Montpellier, la ciudad mediterránea de futuro*. 2012).

Until recently, researchers were prevalently of the opinion that a suburban zone only takes shape around large cities (Barbier, 1985). However, as early as in the 1960s, the relevant Polish literature was considering that every urban centre (town or city) had a suburban zone, irrespective of size (Malisz, 1966). This may have reflected the reality that, in the context of the spatial development of these centres, restrictions on agricultural land use giving way to construction were not always heeded rigorously, hence sprawl of the built-up area typical for towns and cities was to be noted in Poland, even in the communist era. At the same time, suburban zones were traditionally also characterised by a large role for agriculture in the land-use structure.

At the time, therefore, the Polish literature did not use the term suburbanisation to describe the development of suburban zones. Even Ludwik Straszewicz, while clearly having the phenomenon of suburbanisation in mind, only chose to apply the term suburban zone, which he then defined as an area extending from the point at which the contiguous built-up area of a city gave out, all the way through to genuinely rural areas (Straszewicz, 1985). In accepting that an urban centre of only medium size might also develop a suburban zone, it is necessary to emphasise how this is part of a town or city is most vulnerable to transformation and change. An existing urban centre shapes its suburban zone more appropriately, in so doing designating its main functions and spatial extent.

Since the time of Poland's transformation there has been no slackening of the pressure to obtain building land close a town or city; hence a thesis that can reasonably be advanced holding that, the stronger the given town or city economically, the more dynamic its suburban-zone development. It should be added here that obstacles to the cessation of farming activity in suburbs have disappeared, while the prices of building plots here remain far lower than those applying in the urban area proper. Furthermore, as the effectiveness of urban planning in Poland has been limited, Polish urban areas differ from those in Western Europe in that construction of an urban nature sprawls out far beyond the contiguously built-up area. S. Liszewski noted that the development of suburban zones takes place as the forces of agglomeration and deglomeration come into play (Liszewski, 1987). The growth of an urban centre (as manifested in increases in population and numbers of businesses, and diversification of function) is seen to be manifested in demand for new land. This in turn favours change of a functional and spatial nature within the already-urbanised zone, with a spillover of urban-type construction into suburban areas, only more rarely populated areas or areas only managed to a more limited degree. The zone encompassed by suburbanisation processes experiences expansion in new housing developments, as well as a diversification of economic activity. Many service firms of small and medium size also find good places to locate in suburban zones. There is dynamic development of economic activity – and forms of physical development – beyond agriculture; as well as an increase in population density as compared with surrounding still-farmed areas.

In Poland's towns and cities, a suburbanisation process first took in those urban centres in which dwellings were in short supply, or in which inhabitants packed into small flats constructed using the large-panel system more or less inevitably "expelled" young people towards the city limits. It was in these peripheral areas that many bought plots, making provision by themselves for the construction of houses – a process often taking many years to complete. So the mechanism underpinning Polish-style suburbanisation contrasted with that in American cities, in not initially being associated with the transfer of representatives of the wealthier social strata out of more central areas.

In the 1990s in particular, single-family housing went up on plots selected for their relative proximity to the main urban centre, in order that daily inward commutes could take place. However, as suburbanisation continued down the years it began to take in land more and more distant from central areas. Furthermore, it was ever-larger houses on large plots, or else groups of several houses within fenced housing estates, that were now coming into existence (Mantey, 2011); and this was a reflection of rising incomes in (parts of) society, as well as changes in lifestyle that saw more and more weight attached to owning one's own home with garden.

A further widespread phenomenon characterising post-industrial and post-modernist cities was the so-called urban sprawl – of built-up areas into the countryside, now beyond the city limits as such (Czerny, 2005). The result has been the appearance of new forms of physical urban space, as well as changing societal relationships, between traditional urbanised areas and new spatial forms whose features are urban, notwithstanding a location far from the city centre (Czerny & Czerny, 2009). This diffusion of the built-up area is first and foremost characterised by the presence of housing estates with urban-type construction and organisation, not only in the zone of true suburbanisation, but also in rural areas as such. According to Panadero Moya, small suburban localities are joined by villages located within daily commuting-to-work range for inhabitants of medium-sized urban centres in featuring an urbanisation processes that does entail rural-to-urban transformation of homes, forms of building and public space (Panadero Moya, 2009). This switching of built-up areas in the countryside involving the presence of typically-urban forms seems to be a new phenomenon particularly characteristic of the times we live in (Czerny, 2010; Czerny & Czerny, 2013).

The spatial development of Płock, Puławy and Siedlce – principal actors in the process

The analysis of spatial expansion of some selected medium-small Polish cities was carried out in the period from 2012 to 2017. Mid-sized cities with some common features were selected for analysis. They all lie in the eastern

part of Poland. During the communist period, large industrial establishments were created there. The influx of workers caused the development of housing construction – multi-family blocks. Similar forms of land use in the city and directions of spatial expansion after 1990 appeared.

As a result of the investigation of changes of land use on the basis of topographic maps and its comparison with actual building forms were drawn conclusions about the directions and intensification of urbanization. Then, the missing forms of the building presented on the maps were supplemented using satellite images. On the basis of a comparison of the range of different types of buildings in particular periods, analyzes of available literature and extensive theoretical knowledge on contemporary urban processes, models for the development of medium-sized cities in Poland were created.

The large towns and small cities selected for analysis here are all located in eastern Poland. In the past each was a more important local centre with a well-developed commercial function serving an extensive agricultural region. Each is located close enough to (i.e. less than 100 km from) a large urban agglomeration (be it either Warsaw or Lublin) for this to be a key factor shaping the forms of physical development. And in the economic structure of Płock, Puławy and Siedlce alike, it is the production-related and service functions that predominate, though the role of industry in the employment and income structure in these localities is much more limited now than in the communist era. However, many large plants are still in operation, providing employment for a majority of people who are occupationally active. In the case of Puławy, the main employer remains the nitrogen works, in Płock the oil refinery, and in Siedlce several large plants serving the farming and food industry (though no longer now the machinery and clothing industries as 30 years ago).

From the moment Poland went through its change of political and economic system, these three centres under study found themselves in crisis circumstances, as first and foremost caused by a decline in industrial output and consequent emigration to larger cities of people of productive age in search of work. From 2003 onwards, the situation began to stabilise well enough for populations to begin to rise once more. In contrast, numbers of people inhabiting adjacent gminas have mostly been in decline, with this being most visible in the poviat of Puławy. On the other hand, rural and agricultural areas on the outskirts of these urban centres (and in part also certain localities in the suburban gminas) have been encroached upon by single-family housing construction (i.e. single houses or groups of several homes), the owners here being those employed in urban centres. In the cases of all the localities studied, a villa-type suburban zone has taken shape on land that was previously agricultural and is located along the main thoroughfares leading towards large centres, or in areas attractive from the landscape point of view. Alongside permanent places of habitation, some of these houses are merely the summer residences of city-dwellers, most especially in the case of Płock, where mean incomes obtained thanks to

the presence of the petrochemicals industry are far higher than in other cities of the same size. This explains the construction by many of second homes in nearby forests or along rivers.

Płock

Płock is one of the oldest cities in Poland, and in the region of Mazowsze. It was for centuries a local centre of trade in articles used in agriculture. However, the Industrial Revolution proved favourable for the city, being associated with slow population increase and new stimuli to economic development. A location in central Poland between the two large urban centres of Warsaw and Gdańsk also encouraged the development of a commercial function. In turn, in the communist period, Płock became a national distribution centre for oil and oil-derived products, and a political decision taken in the late 1950s – that a petrochemical works should be constructed – sealed the city's further fate. For, over the next three decades (all the way through to the fall of communism), economic and spatial development in Płock was subordinated to that industrial function, and more precisely the needs of the said petrochemical industry. Today's city is of some 127,000 inhabitants.

In tandem with this development of the industrial function, there was from the 1960s onwards a development of housing construction; involving first buildings 2–4 storeys high and constructed from traditional materials (mainly brick), and then large new housing estates in the vicinity of the works and extending in the direction of the city centre. The erection of such block estates using the large-panel construction technique continued between the 1960s and 1980s, and led to a marked change in the functional and spatial structure of Płock. It became a priority for the new estates to be integrated (and physically linked via streets) with remaining urban areas.

At the outset, the new large-panel estates went up on brownfield sites existing between the chemical plant and the centre. In the same way the locations of the large industrial plants in the north-eastern part of the city ensured the designation of the first main axis of development, in the construction phase and in the early years during which these were in operation. However, from the 1980s, the area at the edge of the Brzeźnica Gully and along Imielnicka and Wyszogrodzka Streets (which run towards the south-east, i.e. towards the part of the city ooposite Petrochemia) gave rise to first groups of housing estates comprising villa-like and other private homes (Czerny & Czerny, 2016).

Among the most radical post-1990 changes in the functioning of Poland's housing market was a shift from a market operating around contractors to an "investors' market", which is to say a free market. A normal system of distribution retook its proper place, with a dwelling then becoming a good, as opposed to some (very) desirable asset that the state was able to distribute at will. Economic

and political changes were naturally accompanied by changes in society, which – in the case of the housing sector – manifested themselves in a very large scale (indeed a "mass") flight of inhabitants from prefabricated multi-family housing… to places to live in new multi-family buildings of much higher standard, or first and foremost to own homes located in the suburbs.

There thus began a process of the very rapid, only poorly-controlled and at times simply chaotic expansion into agricultural areas of urban-type housing construction (be it single-family, low-rise multi-family or of the small residential complex type). It is even common for these new estates to be located in the midst of cultivated fields, at the end of a dirt access road virtually impassable in periods of heavy rain and in winter. But access roads do not represent the only lacking infrastructure, as very often these localities also lack water pipelines, sewerage and even refuse collection services. It is usual for such a process of the "deruralisation" of farming areas as described in the literature to be prolonged, albeit with successive villages consumed by the ongoing sprawl process characterising urbanisation. In this case, it is sometimes via legal loopholes or even the corrupt practices of local authorities that individual investors or developers obtain planning permission for their activity.

The rapid development of individual housing construction in peripheral areas – as spurred on by Płock's favourable economic situation – led to the further expansion of the built-up area towards the north-east, and hence along the axis of the road linking Płock and Warsaw. It was in this way that Podolszyce was joined as a residential district by neighouring gminas of Imielnica and Borowczyk (Czerny & Czerny, 2016).

Table 1

Changes in numbers of people per 1,000 inhabitants in Płock poviat in the years 2003–2016

Płock poviat	2003	2005	2010	2015	2016
Słupno	46.5	58.7	63.7	16.0	24.0
Stara Biała	20.7	26.7	38.7	13.1	12.1
Radzanowo	1.7	11.8	43.2	5.9	5.7
Łąck	0.8	8.3	27.7	1.1	3.5
Nowy Duninów	–2.6	–9.3	28.1	–4.3	3.5
Bielsk	–0.2	0.2	17.6	–3.3	–0.2
Gąbin – town	14.7	3.4	19.2	–8.9	–1.5
Starożreby	–0.7	2.9	23.2	–9.1	–2.0
Gąbin	6.1	2.8	18.8	–4.0	–2.6
Gąbin – rural area	0.9	2.4	18.5	–1.2	–3.3
Płock	–0.5	–3.0	–14.8	–4.0	–3.6

Source: based on data from Local Data Bank (2018).

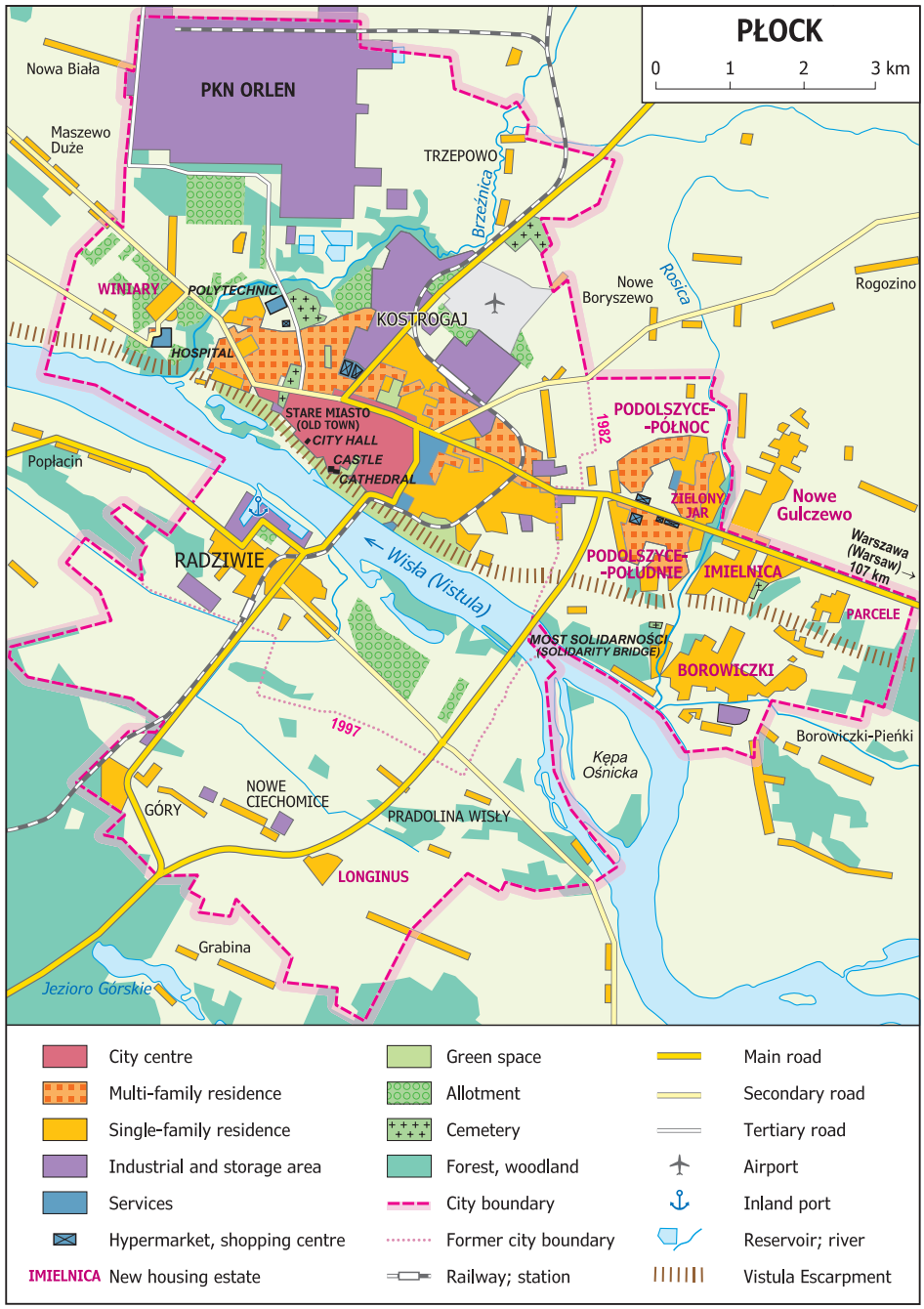

Fig. 1. The map of spatial expansion of urban area in Płock
Source: based on Czerny & Czerny (2013).

What is to be concluded from this table is that a process of outflow of population from Płock sensu stricto into neigbouring gminas began in 2005. In no other year in the period under study was it as intensive, in the face of a simultaneous increase in population in all of the gminas making up the poviat of Płock. The data presented also show how population increase is marked in gminas manifesting an intensive process or urbanisation. The gmina of Słupno borders on to Płock from the east (by the Warsaw road), while Stara Biała borders it in the NE, beyond Petrochemia.

In summary, the spatial structure of today's Płock and its suburban zone can be said to comprise four types of area from the physiognomic and functional points of view, i.e.:

1. A contiguous built-up area of the traditional kind of buildings originating in various periods, but subject to modification and modernisation for centuries (in the Old Town).
2. The petrochemical plants and associated blocks of large-panel construction built in the north-western part of the city.
3. The residential district coming into being in the 1980s (at the time of the peak role for central planning in the housing economy), with this taking a direction opposite to the petrochemical plants, i.e. in the direction of the south-east and east. Alongside multi-family blocks there were also single-family terraced houses on small plots of land.
4. A zone of suburbanisation in the context of a villa district, albeit of dwellings of varying standards (the larger the building plots, the further away from the city, with 1,000 m^2 reached and exceeded). The dominant direction is south-easterly, and along the national route to Warsaw. This phenomenon has been accompanied by partial degradation of the homes that went up close to the petrochemical works in the 1960s and 1970s.

Puławy

From the spatial development point of view, one of SE Poland's most interesting large towns/small cities is Puławy. This is a historic urban centre situated on the right bank of the Vistula which was once the seat of several leading aristocratic families in Poland (i.e. the Lubomirskis, Sieniawskis and Czartoryskis). In contrast, in communist times it was selected as the location for a large chemical plant. These two facts exert a marked influence on the development, fragmentation and functional and spatial structure of this large town, which only has around 50,000 inhabitants and can thus be regarded as a typical medium-sized urban centre. The development here was determined by the building (from 1961 onwards) of a large nitrogen works. From the outset, the workers needed to actually construct the industrial plant in the first place lacked accommodation, making it necessary for Puławy's physical development

to be planned for straight away. The assumptions at that stage were for the population to increase from the 13,000 observed in 1960 to 33,000 by 1970, and to 56,000 by 1985.

There was then a rapid implementation of projects involving the construction of housing estates comprising multi-family blocks of flats. The first occupants moved into Kaniowczyków I in 1963, and this proved similar to most of the developments of this kind from the communist era, in that the residential buildings were not accompanied into existence by other developments provided for on paper in urban-planning designs. Playgrounds, shops, health centres, kindergartens and so on were all absent.

According to Ałasa (2013, p. 45), in the 1970s it was possible to discern four directions to the expansion of built-up residential areas in Puławy:

1. The area of the old "Puławska Village" which had a major reserve of land already supplied with infrastructure. Adoption of this variant required the levelling of much of the single-family housing construction that had been present. It should be recalled that this whole project was put into effect in a manner that was (described by expert assessors as) disorderly, with the value of the project in both the technical and utilitarian senses being low.

2. The use of the "Allotment" plots (hitherto "frozen" by the aforementioned 1964 decision of the Voivodeship Council).

3. The "Niwy" area – associated with a need to update the overall plan for the city and to make considerable outlays in order to supply sites with the necessary basic infrastructure. There was an obligation that protective zone 226 be maintained, and a blockade applying over a large area hosting special buildings and installations.

4. Land in the north of the city falling within the protective zone, in the ZDUNG woods and current municipal woodland park. This area came within the range of the sewer system, and was close to the combined heat and power plant.

Since 2000, it has been possible to note a clear process by which inhabitants transfer to the peripheries of Puławy from its centre (and hence out of crowded communist-era blocks and council flats that are degraded, having gone unrenovated for decades). Podgajna (2011, p. 67) showed how the years from the start of the 21st century were characterised by rather a steady trend for the numbers of people deregistering from Puławy – at a level almost twice as high as that characterising new registrations there.

In the case of Puławy over the 2003–2016 period, only the city itself noted an increase in population expressed per 1,000 inhabitants – of 8.1%. All other gminas in the wider poviat of Puławy experienced marked ongoing declines in population, which even exceeded 10% in the cases of Kazimierz Dolny, Dęblin and Sieciechów. The urbanisation process takes place within an extensive (50.5 km^2) area of urban land which retains many free plots suitable for building, including in areas still used in agriculture (Local Data Bank, 2018).

Table 2

Numbers of people registering or deregistering in Puławy, 2001-2017

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Registering	428	449	451	463	439	432	491	440	558	481	401	421	383	418	479	471	519
Deregistering	828	877	870	919	807	851	1000	823	758	822	596	578	697	601	296	569	309

Source: based on: Podgajna (2011, p. 67), Central Statistical Office (2018), *Lokalny program...* (2016).

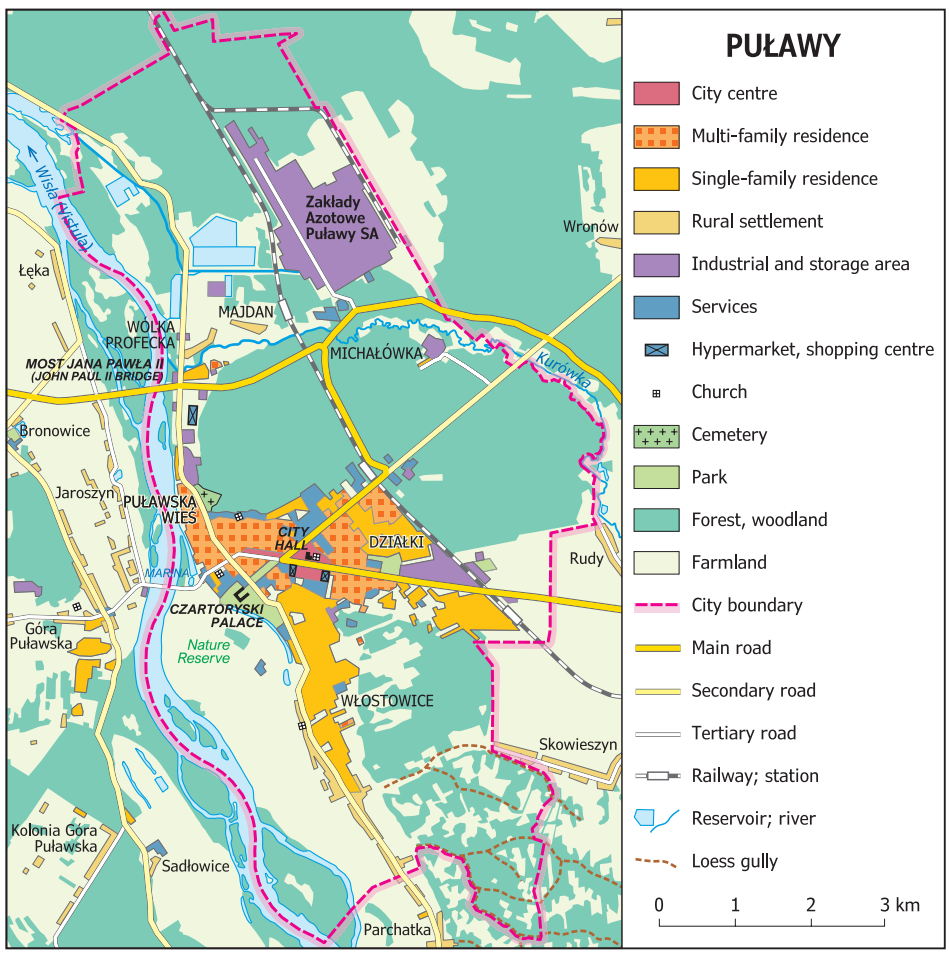

Fig. 2. The map of spatial expansion of urban area in Puławy
Source: based on Czerny & Czerny (2014, p. 161-191).

Within the gmina of Puławy as such, Gołąb and Góra Puławska are localities that have recently attracted the most new registrations of people. Gołąb is to the north of the city, while Góra Puławska is on the left shore of the island and is linked with Puławy proper via a river bridge. In the last decade built-up areas along Lubelska Street have been extending in the direction of Końskowola. All of this necessitates supplementation of ongoing spatial processes in Puławy as described by Ałasa, to include:

– a process of suburbanisation manifesting itself in the development of estates of single-family housing in the direction of Lublin, with this being accompanied by a development of service functions including supermarkets, sales salons and so on;

– a process whereby the density to which land is built-up increases as new, multi-storey residential buildings go up in estates traditionally comprising villa-type houses (as the Działki or Allotments area).

Siedlce

The post-War development of Siedlce followed on from the locating of a large number of industrial plants here from the 1950s onwards. Prior to the War, Siedlce had resembled many other urban centres in this part of Poland in manifesting a rather diversified economic structure. Small factories and workshops were interspersed with a built-up area of high-density construction. While those buildings were mainly single-storey, two- or three-storey examples began to appear even pre-War. It was the parcelling-off of land that encouraged more major spatial change in the city in the period between the Wars. Siedlce was beginning to develop in a northerly direction, with the so-called "Nowe Siedlce" residential district taking shape, and comprising single-family housing. This was actually the first such district entirely given over to the residential function, and it rather lacked morphological linkage with the earlier fabric of the city. This was therefore a departure from the traditional model entailing contiguous urban construction (Wróbel, 1971). It was in turn down to unfavourable environmental conditions for building that expansion of the city's built-up area in all other directions proved far less dynamic.

Change in the post-War period was sufficient to produce an overall change of image and structure through the city as a whole. As one of eastern Poland's key centres, Siedlce was now slated for development into an industrial city. The 1950–1955 period first saw the private factories referred to above closed down, by way of a consolidation into labour cooperatives primarily exemplifying light industry. However, the economic plans being pursued by the authorities of the Communist Party anticipated Siedlce changing far further – into the main economic centre anywhere in the Podlasie region. This meant location – at what were then the edges of the city – of a Northern and a Southern Industrial

District. This move further anticipated an influx of immigrants seeking work, and hence the construction of major housing estates close to the industrial zones (Kospath-Pawłowski, 2007).

As of 1957, the main plants comprising industry in Siedlce were Przedsiębiorstwo Jajczarsko-Drobiarskie (a poultry and egg-producing enterprise), and Zakłady Przemysłu Spirytusowego (distilling spirits). Needless to say, the 1955–1965 period saw that short list augmented, as industrialisation policy was pursued further, also in line with a process deliberately intended to ensure economic activation in urban centres of small or medium size. Plants, mills and factories erected at this stage were those of Zakłady Przemysłu Dziewiarskiego „Karo" (timber industry), Siedleckie Zakłady Drobiarskie (poultry again), Zakłady Zabawkarskie (toy manufacturing), Zakłady Zbożowo-Młynarskie (cereal milling), Zakłady Mechaniczne im. M. Nowotki (manufacturing) and Siedleckie Zakłady Przemysłu Terenowego (various) (Biarda, 2001). In 1968, work began on building yet another factory – this time connected with the manufacture of electrical machinery, and located in the southern industrial and warehousing district. Such efforts combined to turn Siedlce into a significant centre of industry, and a key node in the transport network (Koc, 2015). However, all of this time, the population had continued to concentrate in the traditional, historical part of the city.

Single-family housing construction once predominated in the suburbs of Siedlce. It was on the Nowe Siedlce, Stara Wieś and Warszawskie estates that the greatest numbers of inhabitants lived. However, from the 1970s onwards, estates with multi-family residential blocks began to arise. 1975 then saw the establishment of a voivodeship (province) of Siedlce in the context of Poland's amended administrative division, and this fact encouraged the development of the aforementioned southern industrial and warehousing district. Almost 3,000 new dwellings came into existence in the 1970–1975 period, which is to say a number three times greater than between 1965 and 1970 (Koc, 2015, p. 35). It was mainly 5- or 11-storey residential buildings that were put up.

Nevertheless, from the 1970s onwards, shortfalls in municipal management were sufficient to apply brakes to the development of Siedlce. For example, as of the late 1970s, only just over 50% of inhabitants were connected to the sewer system (Koc, 2015, p. 36). Furthermore, rapid development of construction failed to meet the demand for housing on the part of a population originating in rural areas that was now flooding into the city.

The 1980s brought further intensification of the process putting multi-family housing in place. Whole new estates came into being, along with new buildings in estates already existing. 627 plots of building land were designated for single-family housing and, while 245 of these were given over to the city to manage, 382 remained with their former owners. However, while the number of dwellings constructed did increase rapidly, a large proportion of all inhabitants continued to wait for flats to be assigned to them – not merely on the municipal

side, but also in respect of cooperative housing (Kospath-Pawłowski, 2007). The main cause of this state of affairs was a shortage of funds for the extension of necessary infrastructure into areas slated for development (Koc, 2015, p. 37).

As of the 1960s, areas under housing construction accounted for 14% of the entire area of the city. The next 20 years saw this figure rise by 18%. Initially, housing construction was concentrated in the city centre, but from there it passed along streets radiating out. Dwellings in the nature of smallholdings were located furthest out from the centre. However, in the early 1990s, built-up areas of a residential profile began to spill over from central Siedlce. New housing estates much further removed from places of work likewise began to appear. At the same time, there was a marked increase in numbers of new dwellings located in the immediate vicinity of the city's industrial plants (Koc, 2015. p. 38).

It was southern and northern areas on the edges of the city that were designated for industry. The Southern District developed thanks to a convenient location close to the Warsaw–Terespol road. In turn, in the Northern District, the industry present was associated with agriculture and food. As of 1965, the area contained within the city limits was still far smaller than today. Yet at that point, more than 76% of the whole area of the city still comprised agricultural land. The built-up or urbanised share of the city was then 22%. Today, the situation is the reverse, with 58% of the city now urbanised, while farmland of different kinds takes in 34% (Koc, 2015, p. 47). There remain certain areas developed residentially in which reserves of building land are present, though these are typically now peripheral areas. Equally, the city-centre district, though already the most-urbanised part of Siedlce, retains some free land that can be built on with either housing or service premises. The industrial district still has considerable reserves of land, albeit with business designations (Koc, 2015, p. 48).

Table 3

Changes of population per 1,000 inhabitants in Siedlce poviat in the years 2003-2016

Gmina (local-authority area)	2003	2005	2010	2015	2016
Siedlce (2)	9.4	11.1	26.0	7.0	19.5
Suchożebry	–4.5	–6.9	23.1	–11.4	8.3
Kotuń	–2.4	–3.8	11.6	–5.6	7.1
Skórzec	–4.8	3.0	27.7	2.1	3.8
Zbuczyn	–3.4	–2.9	14.9	2.5	2.9
Siedlce (1)	3.0	0.5	–13.3	4.4	1.0
Wiśniew	0.3	0.3	4.1	–3.4	–1.2
Mordy – rural area	–13.8	–21.5	6.6	–3.6	–7.1
Mordy	–10.9	–14.2	9.0	–1.3	–9.2
Mokobody	3.2	–7.1	–9.8	–0.8	–13.6
Mordy – town	–3.8	4.4	14.7	3.9	–13.9

Source: based on data from Local Data Bank (2018).

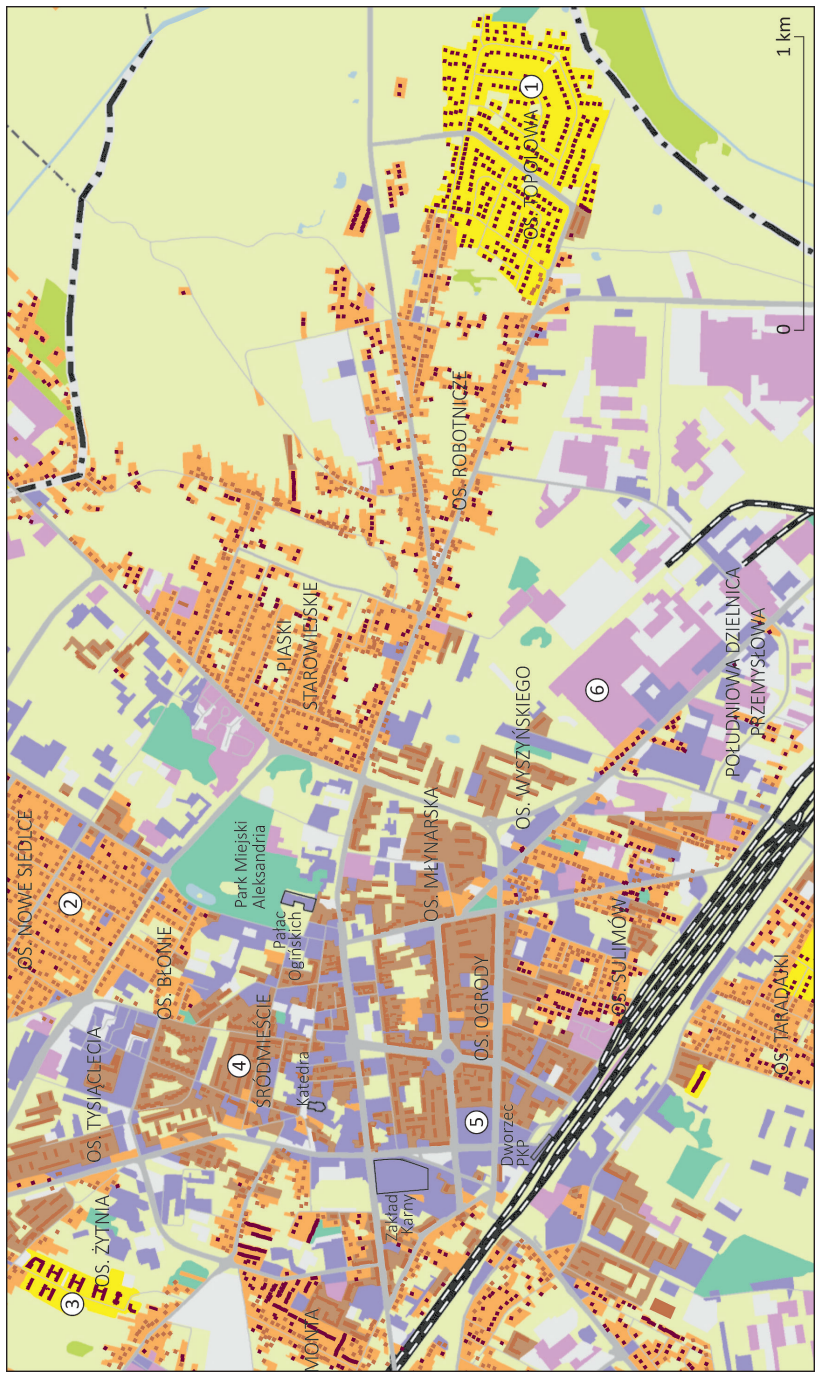

Fig. 3. The map of spatial expansion of urban area in Siedlce

Siedlce – eastern fragment of the city, illustrating the processes of spatial expansion of buildings

1 – new single-family housing, *2* – remaining single-family housing, *3* – new multi-family housing, *4* –remaining multi-family housing, *5* – service areas, *6* – industrial areas

Source: Koc (2016) actualized and changed by A. Czerny (2018).

Today's Siedlce remains a rather small urban centre of 76,000 inhabitants. The spatial development that is occurring takes place along an east-west axis, with two smaller branches off to the north (along the commercial axis to the industrial district) and to the north (the axis of residential development slightly skewed to the south – where large areas of industrial land remain). As data in the table make clear, since 2010 the population in the gminas surrounding Siedlce has grown markedly, giving support to a thesis regarding suburbanisation processes to be observed in the city.

Summing up:

– over the 50 years, there have been no changes to city limits, even if there have been marked changes in land-use structure within those boundaries. However, through to the 1990s, the spatial development of urban functions did not entail more major change in their distribution across the city;

– from the point of view of functional/spatial changes, those achieving greatest intensity characterised former industrial areas, with abandoned industrial buildings starting to play host to services, while some industrial sites are redesignated for housing;

– the main axis to spatial development runs towards the north and east.

Summary – between the consolidation of cities' internal structures and restructuring

With the ushering-in of far-reaching systemic change in Poland, 1990 brought new phenomena and trends where the physical development of the country's cities was concerned. Analysis of the dynamics to changes ongoing from 1990 through to the present day in a small number of selected towns and cities allowed for the presentation of certain general tendencies considered characteristic of the overall process of functional and spatial transformation taking place.

In fact, overlapping processes present in the urban space of medium-sized urban areas are seen to be rather varied in nature. On the one hand, it is possible to discern certain generally-observable phenomena also (perhaps above all) characteristic for Poland's largest cities, while on the other there are certain "provincial" features of development taking place, which entail the copying of rural forms of building and functional structure by the inhabitants of suburban areas.

Characteristic contemporary phenomena present in large cities include urban sprawl into rural areas, and hence the occupying of formerly agricultural land by residential construction meeting the needs of what were formerly city-dwellers; the spread of built-up areas beyond the contiguous construction of this kind typical for the city proper; and finally a certain socio-spatial segregation whereby enclaves of single-family housing take shape, with this being of higher standard,

though co-existing alongside homes typical for the countryside or the small town. The list may also be extended to include problems relating to pollution (i.e. a build-up of household refuse that quite often seems to be fly-tipped illegally, as well as the pollution of surface waters and other phenomena).

While such features might typically be ascribed to the process of metropolitanisation, they are also seen to be present in the three urban centres of medium size reported on here.

The process by which urban structure is transformed is also characterised by different phases, from the traditional town shaped pre-War (in fact far earlier in the cases of the three centres under study) through to the post-transformation town or city. The contemporary depictions of these cities' internal structures prove highly diversified. Elements to the internal mosaic take the form of different architectural styles, different materials used in building homes from the different periods, and now also differences in terms of social structure that did not manifest themselves in the communist era. Spatial development obviously conforms with natural conditions that relief, vegetation and the hydrological network supply. Industrial zones dating back to communism operate like poles of growth drawing in new labour force from nearby rural areas. And the industrialisation achieved deliberately through the locating of large plants gave rise to multi-family block housing estates that themselves made a start to new urban-planning forms in built-up areas. In all three cases studied, the locations for housing estates in which industrial workers were to live were selected in line with their being in the immediate vicinity of the works, plants and factories themselves. In this way, first axes of development were generated – leading from the historic centre and old pre-War construction in the direction of the new centres of industry. The first wedges of development within the functional and spatial structure took shape in this way.

In the cases of Płock and Puławy, it is possible to sketch out a scheme for the spatial development of two very much extended arms (wedges), as well as several less-distinct axes of development running out from the centre. Siedlce in fact has a highly regular development scheme with four arms much extended and leading out from the centre towards the periphery. However, the further development of these was not brought about by industrialisation, but rather by a change of leading function in the direction of a prevalence of services and a reversal of spatial expansion from a direction associated with industrialisation in the opposite direction, given the search by the new middle and upper-middle classes for sites to build single-family housing ultimately to be enclosed within closed ("gated") housing estates. In all three large towns/mall cities studied, this trend is strengthened by the locating of most main shopping centres along the axes of communication running through the new villa district (Czerny, 2013).

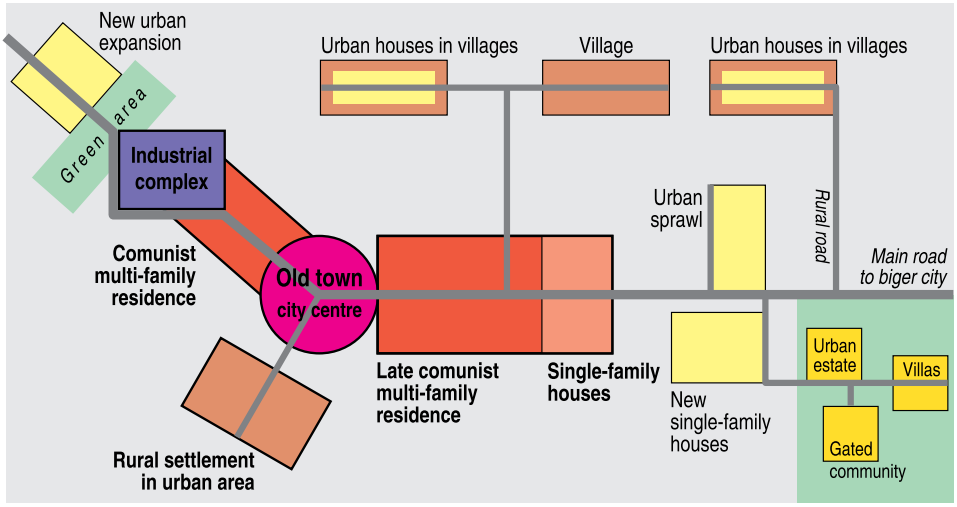

Fig. 4. The single-axis model depicting the functional/spatial structure of medium-sized urban centres
Source: own study.

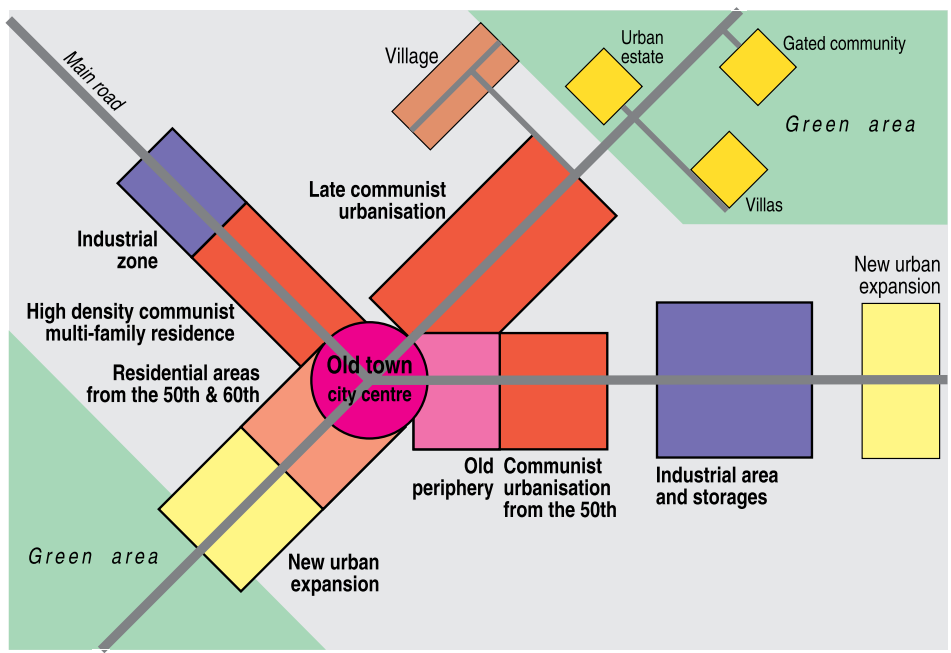

Fig. 5. The dual-axis model depicting the functional/spatial structure of medium-sized urban centres
Source: own study.

Progressing trends entailing the spatial expansion of urban construction into rural areas ensure that the latter are the subject of positive migration balances. There are thus demographic changes taking place – above all increases in the share of the population that is of productive or pre-productive age. Main economic changes in turn entail the development of functions outside agriculture, with the rule being for diversification of economic activity to be greater and greater the closer to the city limits one moves. In the case of the medium-sized urban centres under study, the investment booms to be noted on the peripheries are as visible as those characterising the large cities. The said booms are manifested in both increased housing construction (be it single- or multi-family) and a rise in the number of firms representing branches of the economy outside agriculture, primarily small-scale manufacturing and services. However, the development of the technical infrastructure that facilitates these processes still mostly takes place with a time delay in relation to the first new housing and business developments.

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SOCIAL AND POPULATION-RELATED DETERMINANTS IN THE DEVELOPMENT OF SMALL TOWNS IN POLAND

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K e y w o r d s: small towns, demographic changes, total population growth, population ageing.

A b s t r a c t

The demographic changes that have been occurring in Poland for several decades concern all cities and towns, including those with the lowest population number – up to 20 thousand inhabitants. The article proposes a quantitative analysis of selected phenomena related to population and society in small Polish towns. The two most crucial demographic issues of Polish urban units, depopulation and population ageing, were analysed with the use of simple typological methods. The analysis was conducted on the basis of available statistical data. Additionally, a spatial perspective on the issue was presented.

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UWARUNKOWANIA SPOŁECZNO-LUDNOŚCIOWE ROZWOJU MAŁYCH MIAST W POLSCE

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S ł o w a k l u c z o w e: małe miasta, przemiany demograficzne, przyrost rzeczywisty, starzenie się ludności.

A b s t r a k t

Obserwowane od kilkudziesięciu lat przemiany demograficzne w Polsce dotyczą wszystkich miast, w tym także tych o najmniejszej liczbie ludności – do 20 tys. mieszkańców. W artykule zaproponowano ilościową analizę wybranych zjawisk ludnościowych i społecznych w małych miastach w Polsce. Przeanalizowano dwa najważniejsze problemy demograficzne występujące w polskich miastach, tj. depopulację i starzenie się ludności, wykorzystując proste metody typologiczne. Analizę prowadzono na podstawie dostępnych danych statystycznych. Dodatkowo zaproponowano ujęcie przestrzenne problemu.

Introduction

City and town inhabitants constitute more than 60% of the population of Poland. The Polish settlement system has a developed, multi-stage, hierarchical urban system and the capital city, when compared with other European countries, has only a minor advantage over other regional centres. Urban units, especially small and large towns are evenly arranged in space. These features of the settlement system indicate that it is a polycentric system which favours the fulfilment of the purposes of balanced development – the competitiveness of economy, social and territorial cohesion as well as eco-development (*Koncepcja przestrzennego zagospodarowania kraju*, 2014, p. 22).

The main components of the country's settlement system are the groups of cities and towns or conurbations aggregated according to their hierarchic level or size. The first group includes the centres that hold a crucial significance to the country's settlement system and its economy: Warszawa, Kraków, Gdańsk-Gdynia, Wrocław, Poznań, Katowice – the Katowice urban area, Łódź, Szczecin, Bydgoszcz with Toruń, and Lublin. In documents drawn up for the purposes of the spatial policy of the European Union, these cities (apart from Bydgoszcz, Toruń and Lublin) are classified as MEGA and are among 72 of the largest urban centres of the EU.

The next groups of cities are the remaining voivodeship centres that fulfil not only regional functions, but also a series of national ones: Białystok, Gorzów Wielkopolski, Kielce, Olsztyn, Opole, Rzeszów, Zielona Góra; regional centres (that are not voivodeship capitals and usually have 100 thousand to 300 thousand inhabitants): Częstochowa, Radom, Bielsko-Biała, Rybnik, Płock, Elbląg, Wałbrzych, Włocławek, Tarnów, Kalisz with Ostrów Wielkopolski, Koszalin, Legnica, Grudziądz, Słupsk and subregional centres with evident subgroups that comprise former voivodeship capitals and industrial centres. The remaining *powiat* (second level of local government in Poland) centres fulfil an important role in the scope of the functions of the public sector on a local level.

Urban units can be divided into small towns (up to 20 thousand inhabitants), large towns (20-100 thousand inhabitants) and cities – above 100 thousand inhabitants (*Miasta w liczbach 2012*, 2014, p. 31). The article proposes a quantitative analysis of selected phenomena related to population and society in small Polish towns. Attention has been paid to basic demographic issues (depopulation and ageing) which have been problematic in our country for many years.

The main objective of the study was to identify the size of two demographic phenomena in small cities in Poland, i.e. depopulation and aging of the population. They are also the most important demographic problems in these centers. A crucial goal carried out in the study was to illustrate the spatial diversification of these phenomena, as well. The article also achieved objectives such as determining the territorial diversity of the network of cities and urban population.

The analysis was conducted on the basis of the available statistical data. Additionally, a spatial perspective on the issue was presented. This approach made it possible to create a typology of the phenomenon which, in turn, could lead to the determination of the role and place of selected small towns in the Polish settlement network.

Regional differentiation of urban networks and population

The size and regional structures of the Polish urban network are largely determined by history, although slowly modified by administrative changes, in accordance with the processes of demographic and economic development. In 2016 in Poland, 919 settlement units, including 303 urban gminas (the principal units of the administrative division in Poland) and 616 towns or cities in the urban-rural gminas, had city or town rights. The urban-rural gminas took up 21,813 km^2, that is 7% of the country's area. In urban gminas, the majority of the county units (127) have a surface area of 20 to 50 km^2. More than half of cities and towns in urban-rural gminas (403 units) take up an area of 5 to 20 km^2, while the largest cities in terms of surface area (100 km^2 and more)

include solely the urban gminas. In 2016, on average one city or town took up 340.2 km^2 of the country's surface. The greatest density of the urban network is located in the Silesian Voivodeship, where each city, on average, took up an area of 173.7 km^2. The indicator of network density of less than 300 km^2 per 1 city/town was a feature of: the Lower Silesian Voivodeship (219.2 km^2), the Lesser Poland Voivodeship (248.9 km^2), the Opole Voivodeship (268.9 km^2)

Table 1

The density of the urban network and the structure of cities and towns according to size groups on the level of voivodeships in 2016

Voivodeships	Surface area of the voivodeship per single city/town expressed in km^2	Number of cities/towns					
		in general	with a population of				
			less than 20 thousand		20–100 thousand	100 thousand and more	
			in total	less than 5 thousand		in total	200 thousand and more
Poland	340.2	919	700	334	180	39	16
Lower Silesian Voivodeship	219.2	91	72	26	16	3	1
Kuyavian-Pomeranian Voivodeship	345.6	52	45	20	4	3	2
Lublin Voivodeship	546.1	46	36	19	9	1	1
Lubusz Voivodeship	333.0	42	36	18	4	2	-
Łódź Voivodeship	414.1	44	29	13	14	1	1
Lesser Poland Voivodeship	248.9	61	47	19	12	2	1
Masovian Voivodeship	413.5	86	61	27	22	3	2
Opole Voivodeship	268.9	35	29	11	5	1	-
Subcarpathian Voivodeship	349.9	51	41	20	9	1	-
Podlaskie Voivodeship	504.7	40	32	21	7	1	1
Pomeranian Voivodeship	436.0	42	27	8	13	2	2
Silesian Voivodeship	173.7	71	34	12	25	12	3
Świętokrzyskie Voivodeship	366.0	32	27	15	4	1	–
Warmian-Masurian Voivodeship	493.3	49	38	19	9	2	–
Greater Poland Voivodeship	266.3	112	92	53	18	2	1
West Pomeranian Voivodeship	352.2	65	54	33	9	2	1

Source: personal elaboration on the basis of Rocznik Demograficzny (2017).

and the Greater Poland Voivodeship (266.3 km^2). In 2016, the northern and eastern regions of the country had a lower network density, while the Lublin Voivodeship had the lowest network density – 546.1 km^2 (Tab. 1).

The most numerous group, more than 76% of all cities and towns, contained the smallest centres; the ones with less than 20 thousand inhabitants (Tab. 2). This group of small towns is diverse in terms of size – most of the towns it contains belong to class I, wherein the population does not exceed 5 thousand inhabitants. The percentage of the two remaining size classes of small towns, with 5-10 thousand inhabitants and 10-20 thousand inhabitants, was similar – both classes constituted approximately 26% of all small urban centres.

Table 2

Structure of cities and towns according to size in 2016

Groups and classes of size of cities/towns	Division by the number of inhabitants expressed in thousands	Number of cities/towns		
		in general	in percentages	
			in general = 100	group = 100
In general	–	919	100	–
Small towns	less than 20	700	76.2	100.0
Class I	less then 5	334	36.4	47.7
Class II	5-10	180	19.6	25.7
Class III	10-20	186	20.2	26.6
Large towns	20-100	180	19.6	100.0
Class IV	20-50	133	14.5	73.9
Class V	50-100	47	5.1	26.1
Cities	100 and more	39	4.2	100.0
Class VI	100-200	23	2.5	59.0
Class VII	200 and more	16	1.7	41.0

Source: personal elaboration on the basis of Rocznik Demograficzny (2017).

The number of cities and towns in Poland grows, 115 centres were granted city or town rights between the 1980s and the end of 2016 – the increase exceeded 14%. An upward trend similar to the one visible in all the cities and towns was demonstrated by small town centres, whose number increased by 80 in 1980–2016 – it was an increase of 13% (Fig. 1). In 1980, small towns were inhabited by nearly 4.5 million residents, while in 2016, it was almost 5 million.

Most urban units are located in the Greater Poland (112), Lower Silesian (91) and Masovian (86) Voivodeships. These three voivodeships contain almost $^1/_3$ of Polish cities and towns (Tab. 2). The lowest number of urban centres is located in the Świętokrzyskie (32) and Opole (35) Voivodeships. It has already been mentioned that Poland contains mostly small town units with less than 20 thousand inhabitants (including 60 towns with a number of inhabitants lower

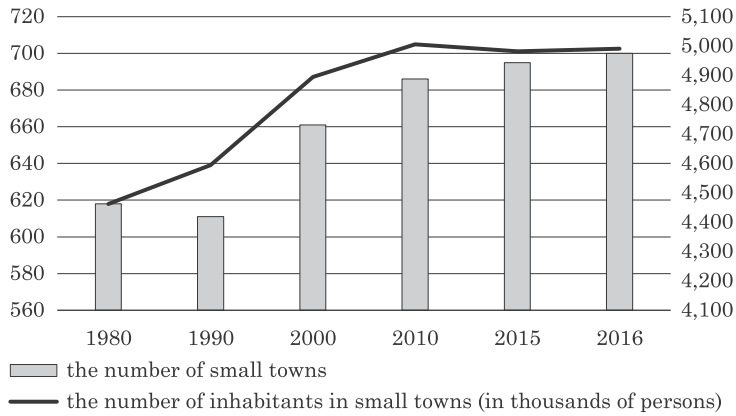

Fig. 1. Number of small towns and their inhabitants in Poland in 1980-2016
Source: personal elaboration of the basis of Rocznik Demograficzny (2017).

than 2 thousand). Approximately 53% of all 180 large towns were located in five voivodeships: Silesian (25), Masovian (22), Greater Poland (18), Lower Silesian (16) and Łódź (14) Voivodeships. The most urbanized Silesian Voivodeship holds almost one in three cities.

The size structure of cities and towns according to voivodeships is substantially diverse, although small towns predominate in all regions (Fig. 2). In as many as 12 voivodeships the percentage of the number of small towns against all cities and towns was higher than the national average – it exceeded 76%. Only in the Silesian Voivodeship, units where the number of inhabitants does not exceed 20 thousand constituted less than half of all towns and cities. The second size group contains large towns – in the Silesian, Łódź and Pomeranian Voivodeships more than 30% of all urban units are towns inhabited by 20–100 thousand people. The percentage of cities in all voivodeships is the smallest – ranging from 1.8% in the Greater Poland Voivodeship to 16.9% in the Silesian Voivodeship.

The structure of cities and towns when the number of their inhabitants is taken into account is slightly different (Fig. 3). In 2016, the inhabitants of cities constituted 46.8% of all urban population of the country. In four voivodeships (the Masovian, Silesian, Kuyavian-Pomeranian and Lesser Poland Voivodeships) more than half of the urban population are the residents of cities. This group, sorted by the number of inhabitants, contains all the main cities of voivodeships. In the structure of the population of Polish towns and cities, large towns take second place – nearly $^1/_3$ of the inhabitants of urban areas live in towns with 20–100 thousand residents. The highest percentage of population in large towns was the feature of the Subcarpathian (50.0%) and Łódź (40.9%) Voivodeships. In 2016, in Poland, every fifth resident of an urban area lived in a small town. The greatest number of people (more than 40%) in urban units with less than

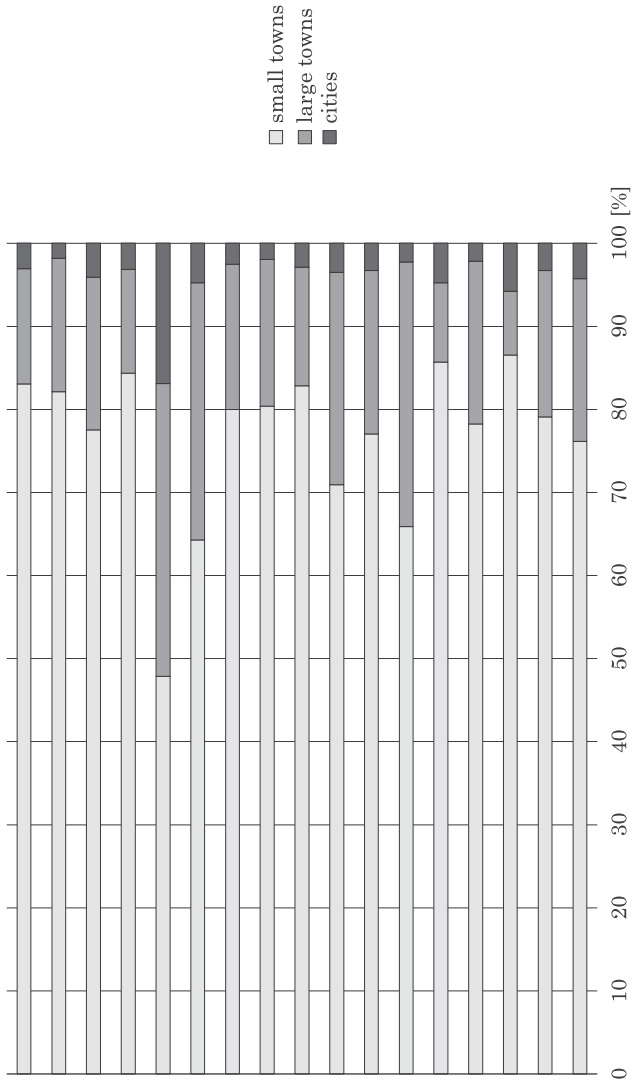

Fig. 2. Structure of urban units according to size groups in 2016

Source: personal elaboration on the basis of Rocznik Demograficzny (2017).

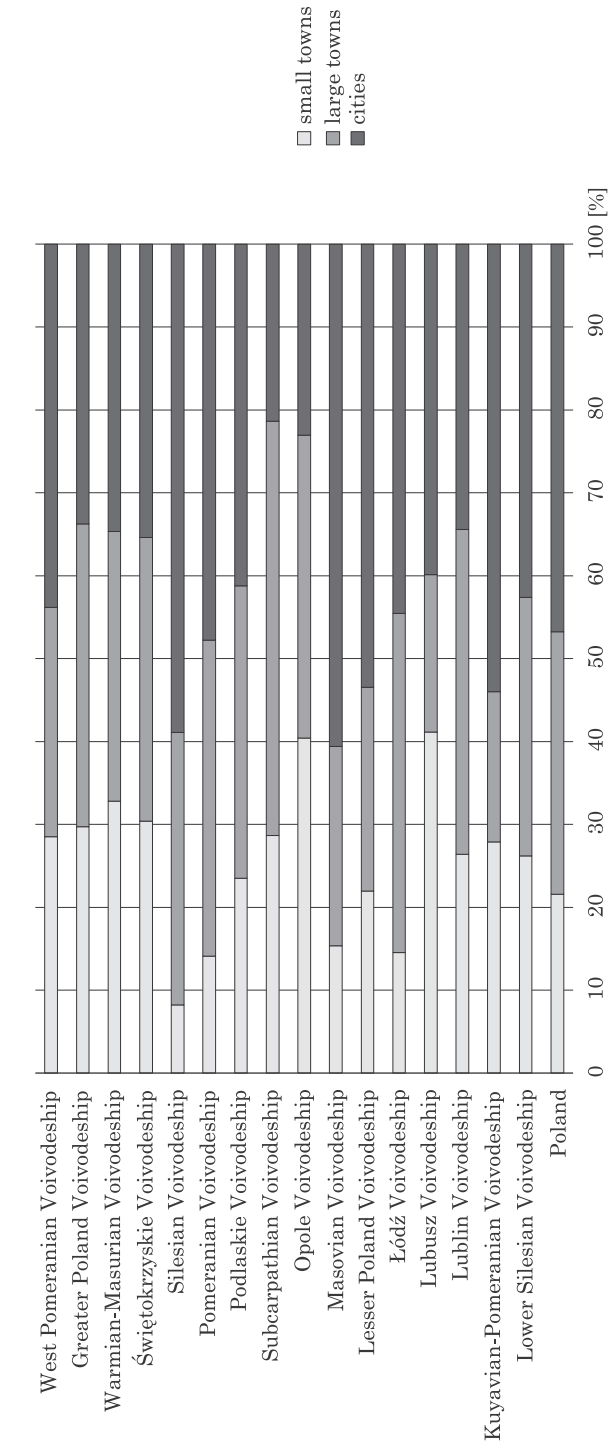

Fig. 3. Population of urban units in % of the whole of the urban population according to size groups in 2016
Source: personal elaboration on the basis of Rocznik Demograficzny (2017).

20 thousand inhabitants lived in the Lubusz and Opole Voivodeships; the smallest number of people in such units lived in the Silesian Voivodeship (8.2%).

In 2016, an average Polish urban unit had a surface area of 24 km^2 and 25.2 thousand inhabitants. The index of the average size of cities and towns on a voivodeship level spanned 41 km^2 according to the surface criterion and 33.9 thousand inhabitants according to the population criterion. The biggest urban unit, both in terms of surface and population number, was an average city/town in the Silesian Voivodeship – of almost twice the size of the average urban unit in the country. The smallest average urban unit in the country in terms of surface area was in the Warmian-Masurian Voivodeship (12 km^2), while the one with the lowest population number – in the Opole Voivodeship (14.8 thousand inhabitants) (cf. *Powierzchnia i ludność w przekroju terytorialnym w 2016 r.*, 2016).

Small towns in Poland – the selected aspects of demographic development

From the perspective of the country's economic development, urban centres play a crucial role. They hold the concentration of workplaces as well as services, both basic and advanced. It is there that the innovations that influence the economy of the whole country are created. Of course, the most significant role is performed by the metropolises, whose development spreads out to the rest of the country. However, the document entitled *Krajowa polityka miejska…* (2015) emphasizes that a country's economic development depends not only on the biggest urban centres, but also on the development potential of all, even the smallest, centres. Each kind of urban unit, even the tiniest town, is also a cultural phenomenon and a carrier of civilization. A balanced development of urban centres, which translates into a good condition of national economy, should result in Poland's competitiveness on the international level.

Krajowa polityka miejska (2015) addresses especially towns, both small and large, since the barrier hindering their introduction into modern developmental undertakings is much more pronounced in their case than in case of cities. This barrier is the result of financial possibilities, the institutional potential, etc. Additionally, towns are more exposed to the negative results of economic crises, demographic changes and other unfavourable phenomena.

The demographic changes that have been observed in Poland since the 1990s concern small urban centres to a great degree. Unfavourable demographic changes include depopulation processes and population ageing. As part of the analysis of population determinants in the development of small towns, the article examines selected demographic features such as total population growth and the selected aspects of the population's age structure (Janiszewska & Kikosicka, 2015).

The analysis of the total population growth was conducted using J. Webb's procedure, one of the typological methods based on the Cartesian coordinate system. It is also one of the most popular research tools, making it possible to determine the state of population development, in this case in small towns, taking into account the interdependencies between a positive or negative population growth and a positive or negative net migration rate. Depending on the development of both features, eight main classes can be distinguished (Runge, 2007):

– *A* – a positive population growth is larger than a negative net migration rate (+PG > –NMR),

– *B* – a positive population growth is larger than a positive net migration rate (+PG > +NMR),

– *C* – a positive net migration rate predominates over a positive population growth (+PG < + NMR),

– *D* – a positive net migration rate predominates over a negative population growth (–PG < + NMR),

– *E* – a negative population growth predominates over a positive net migration rate (–PG > + NMR),

– *F* – a negative population growth predominates over a negative net migration rate (–PG > – NMR),

– *G* – a negative net migration rate predominates over a negative population growth (–PG < – NMR),

– *H* – a negative net migration rate predominates over a positive population growth (+PG < – NMR).

The application of the typological procedure made it possible to obtain an image of the diversity of the total population growth in small towns in Poland. In the majority of units it was negative, and in sectors *E*, *F*, *G* and *H*, in 2016, there were as many as 490 towns, which constituted 70% of all small towns in Poland (Fig. 4). The largest negative total population growth, exceeding 20‰, occurred in 10 towns: Nowy Staw (Pomeranian Voivodeship), Karpacz (Lower Silesian Voivodeship), Błaszki (Łódź Voivodeship), Goniądz (Podlaskie Voivodeship), Zawichost (Świętokrzyskie Voivodeship), Frombork (Warmian-Masurian Voivodeship), Przedecz (Greater Poland Voivodeship) as well as Cedynia, Trzcińsko-Zdrój and Ińsko (West Pomeranian Voivodeship). Sector *G* predominated over the sectors with a negative total population growth; a negative net migration rate predominating over a negative population growth was observed in 205 towns. The opposite situation (a negative population growth predominating over a negative net migration rate) took place in 83 small towns in sector *F*. On this basis it has been calculated that in over 40% of analyzed towns, there was both a negative population growth and a negative net migration rate. A positive total population growth occurred in 2016 in 196 small towns (sectors *A*, *B*, *C*, *D*), and only 103 units had both positive population growth and net migration rates (sectors *B* and *C*).

In all voivodeships a significant majority of towns had a negative total population growth in 2016, although the percentage of such towns varied – from over 80% in the Świętokrzyskie Voivodeship to 55% in the Masovian Voivodeship. In the case of total population growth, sector *G* dominated in most voivodeships, only in the Greater Poland, Subcarpathian and Masovian Voivodeships most towns fell into sector *H*, while in the Silesian Voivodeship – into sector *E* (Annnex I).

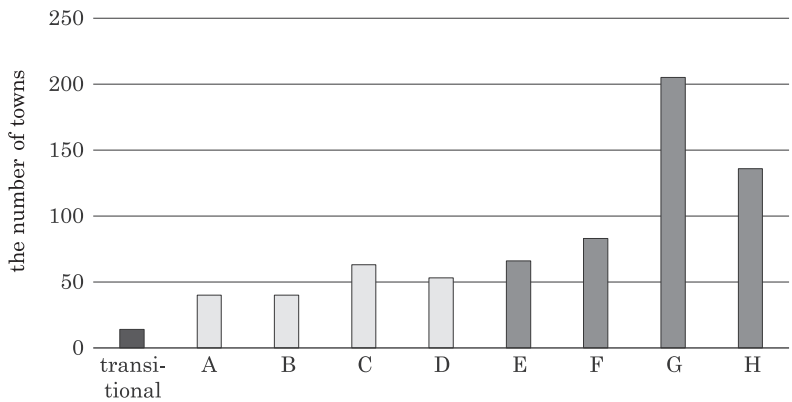

Fig. 4. Sectors of Webb's chart in Polish small towns in 2016
Source: personal elaboration on the basis of Rocznik Demograficzny (2017).

Apart from depopulation processes, changes in the structure of the population's age, especially associated with population ageing, are also observed in towns and cities. Population ageing is the result of the increase in the percentage of the elderly. The phenomenon of population ageing is determined by three factors. Those are both past and present tendencies in reproduction and mortality as well as migration flows (Preston *et al.*, 1989; Kurek, 2008). The first factor is inhibiting the population growth of the young, which is the result of the decrease in fertility and reproduction – it is known as the ageing of the population from the bottom of the age pyramid. A rapid increase in the number of the elderly can be the result of lower mortality rates among the elderly and these kinds of changes are associated with ageing from the tip of the pyramid (Grundy, 1996; Frątczak, 2002). Population ageing from the bottom and from the tip of the pyramid can also occur simultaneously. The third demographic factor of population ageing is migration, whose role increases in local systems. Research has shown that mostly young people migrate and areas with a high inflow of new residents have a lower average age. On the other hand, regions with high emigration levels have a higher index of population ageing, which often leads to depopulation. Inhibiting population inflow associated, for instance, with the saturation of the labour market, can, in time result in the increase

of the dynamics of ageing in the inflow area at an extreme scale, since the incomers will have reached post-working age. An additional element that influences population ageing is the increase in the migrations of the elderly. The inflow areas with attractive landscape or climate values become their destinations, thus increasing their percentage in the population of such areas (Grundy, 1996; King *et al.*, 1998; Avramov & Maskova, 2003; Eurostat, 2004; Kinsella & Philips, 2005). The significance of each of the factors may vary in time and space.

Small towns in Poland age to varying degrees, the advancement level of the ageing process is diverse. The old age standard calculated via the percentage of the elderly (aged 65+) was 8.6% in Łęczna (Lubusz Voivodeship) to 24.7% in Ciechocinek (Kuyavian-Pomeranian Voivodeship). Every fifth inhabitant in 16 small towns was a senior. Those towns, aside from the already-mentioned Ciechocinek, were: Niemcza, Duszniki-Zdrój, Polanica-Zdrój, Lądek-Zdrój, Szczawno-Zdrój, Bystrzyca Kłodzka, Ząbkowice Śląskie (Lower Silesian Voivodeship), Nałęczów (Lublin Voivodeship), Krynica-Zdrój (Lesser Poland Voivodeship), Iłża (Masovian Voivodeship), Ustka (Pomeranian Voivodeship), Ustroń (Silesian Voivodeship), Połczyn-Zdrój (West Pomeranian Voivodeship), Busko-Zdrój and Końskie (Świętokrzyskie Voivodeship) – Annex II. The level of population ageing in small towns is determined by the demographic dependency ratio[1]. In 2016, as many as 502 units (nearly 72% of all small towns) exceeded the demographic dependency ratio of 100. This value means that the percentage of the elderly exceeded the percentage of children aged 0–14, which is an unfavourable demographic phenomenon. Maximum values of the ratio were recorded in Działoszyce (228), Polanica-Zdrój (208), and Ciechocinek (205) – Annex III.

One of the procedures of the multivariate analysis, Ossan's triangle, was used to analyze the age structure according to economic groups (Runge, 2007). This specific tool finds its application in case of features whose numerical values can be grouped into three classes. It can serve to analyze economic age groups, where three groups are distinguished: the pre-working age (0–17), the working age (18–59 in women, 18–64 in men) and post-working age (60+ in women, 65+ in men). As a result, the nature of the age structure in a given town is expressed by the location of its corresponding point, which is located where three lines parallel to the three sides of the triangle meet. This triangle has been divided into six classes corresponding with various stages of the development of the population age structure. The arithmetic means of the share of individual age groups in all of the populations of Polish towns and cities (Tab. 3) were used

[1] Demographic dependency ratio (D_{DR}) expresses the relationship between the population aged 65+ and the population aged 0–14.

$$D_{\mathrm{DR}} = \frac{P_{65+}}{P_{0-14}} \cdot 100,$$

where:

P_{65+} – the percentage of the population aged 65+,

$P_{0\text{-}14}$ – the percentage of the population aged 0–14.

as a criterion for the division. Since this action has created a reference to the age structure of the inhabitants of all urban areas in the country, this method also makes it possible to determine the situation of small towns compared with all urban units, at least in this aspect. It should also be remembered that merely 20% of the inhabitants of urban areas in Poland reside in small towns.

As a result of the typological procedure conducted, it was proven that the structure of economic age in small towns is slightly more favourable than in the whole of the Polish urban population. In 403 small towns, the percentages of people in pre-working, working and post-working age, made it possible to count them among the demographic youth. The first class included 69 small towns, while the second one was much more numerous with as many as 334 small urban units (Tab. 3). More than 180 units were in the stabilization phase, although class structure was similar to the one in the youth phase. The phase of demographic ageing contained the lowest number of towns – 116 units.

Table 3

Classes describing the stages of development of the population's economic age structure (in %)

Classes	Pre-working age	Working age	Post-working age	Stage of population development	Number of small towns
YT1	>16.8	<61.1	<22.1	demographic youth	69
YT2	>16.8	>61.1	<22.1		334
SB1	>16.8	<61.1	>22.1	demographic stabilization	23
SB2	<16.8	>61.1	<22.1		158
AG1	<16.8	>61.1	>22.1	demographic ageing	60
AG2	<16.8	<61.1	>22.1		56

Source: personal elaboration on the basis of the Local Data Bank.

The level of ageing in small towns in Poland is spatially diverse – there are regions where the majority can be counted as part of the demographic youth phase (the Greater Poland, Pomeranian, Lesser Poland and Lubusz Voivodeships), but there are also some where units in the demographic ageing stage predominate – the Świętokrzyskie, Lower Silesian, Silesian, Podlaskie, Lublin and Łódź Voivodeships (Fig. 5, Annex IV).

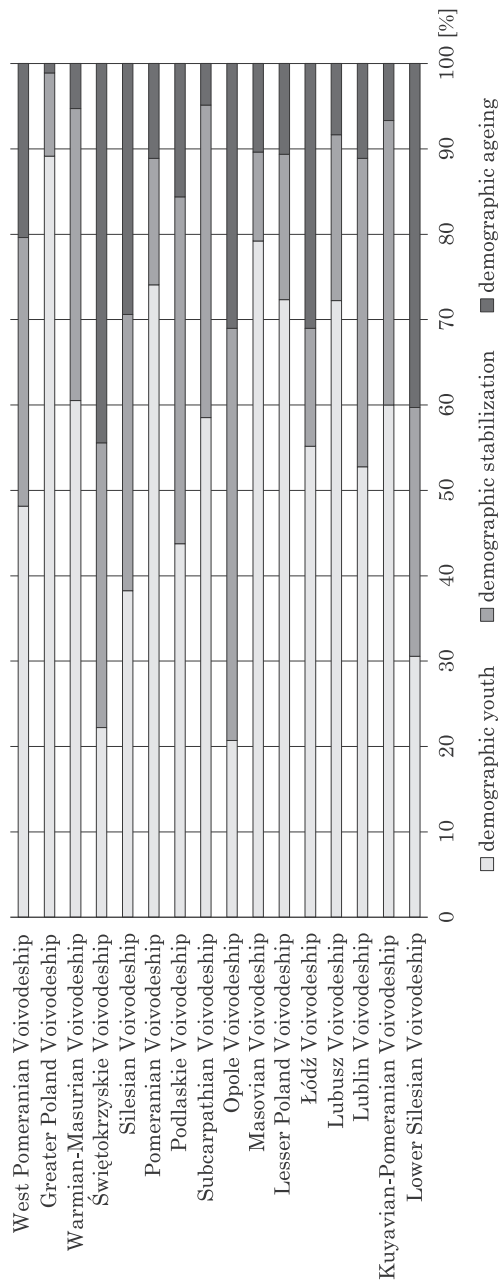

Fig. 5. Structure of the economic age among the inhabitants of small towns in Poland in 2016
Source: personal elaboration on the basis of the Local Data Bank.

Conclusions

In Poland, small towns predominate in terms of quantity; more than $^3/_4$ of all urban centres are settlement units with up to 20 thousand of inhabitants. At the same time small towns are home to merely 20% of all the urban population. The population structure in Polish towns and cities has changed both in terms of quantity and quality. Currently occurring demographic changes create two problems especially crucial for the urban units. The first one involves the decreasing general number of the urban population – which, in extreme cases, takes on the form of depopulation and shrinking cities. The second key issue is population ageing. The change in the age structure of the urban population is the result of three main causes: the increasing lifespan, the decreasing number of births and the migration processes.

The conducted analysis of population data has shown that small towns are subject to the above-mentioned demographic changes, which is proven by the results of the simple typological methods applied in this study. In 2016, the negative total population growth concerned 70% of the population of small towns and was mainly caused by the migration outflow. Apart from the negative net migration rate, the majority of small towns also had a negative population growth. Depopulation of small towns occurred in all regions of the country, although this phenomenon was spatially diversified, from 80% of small towns in the Świętokrzyskie Voivodeship to 55% in the Mazowieckie Voivodeship. The depopulation of small towns is a progressive process with varying intensity throughout the country.

The age structure of small town populations was also unfavourable, indicating a progressive ageing of the inhabitants. While this process is not yet as advanced as it is in large towns or cities, the values of the demographic dependency ratio suggest that this negative tendency will keep occurring in the future. The aging of the small town residents is spatially diversified. One can distinguish voivodships where most towns are included in the demographic youth phase (Wielkopolskie, Pomorskie, Małopolskie, Lubuskie), but also those where the units qualified for the demographic aging stage predominate – Świętokrzyskie Voivodeship, Lower Silesia, Silesia, Podlasie, Lublin and Lodz.

It should be emphasized that although many demographic issues and challenges are the challenges of horizontal policy that Poland has to face and a subject of national policies, some of them refer directly to cities and towns and require taking actions that would help them either adapt to or prevent the changes from occurring. One such solution may be to focus on developing a quality oriented approach, rather than one based on quantity. The actions undertaken, with the changing population structure, should take into account the possibilities of using the potential of various social groups, including the growing elderly population.

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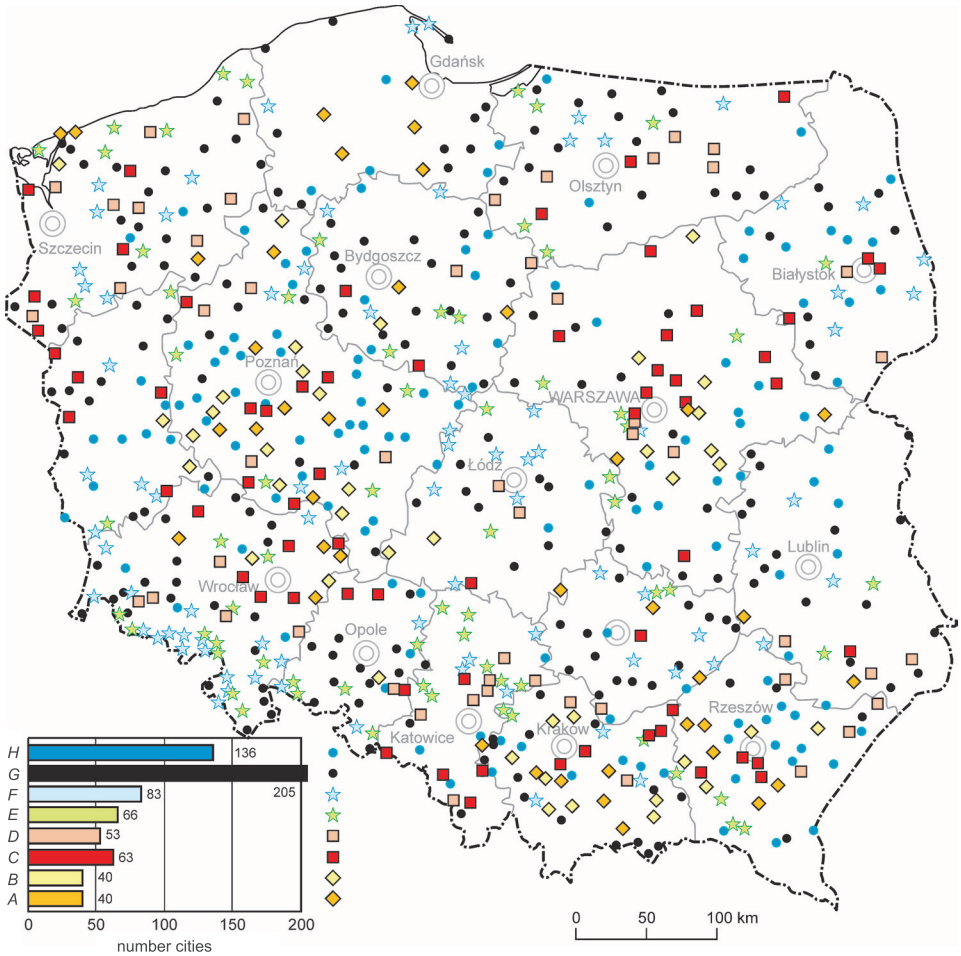
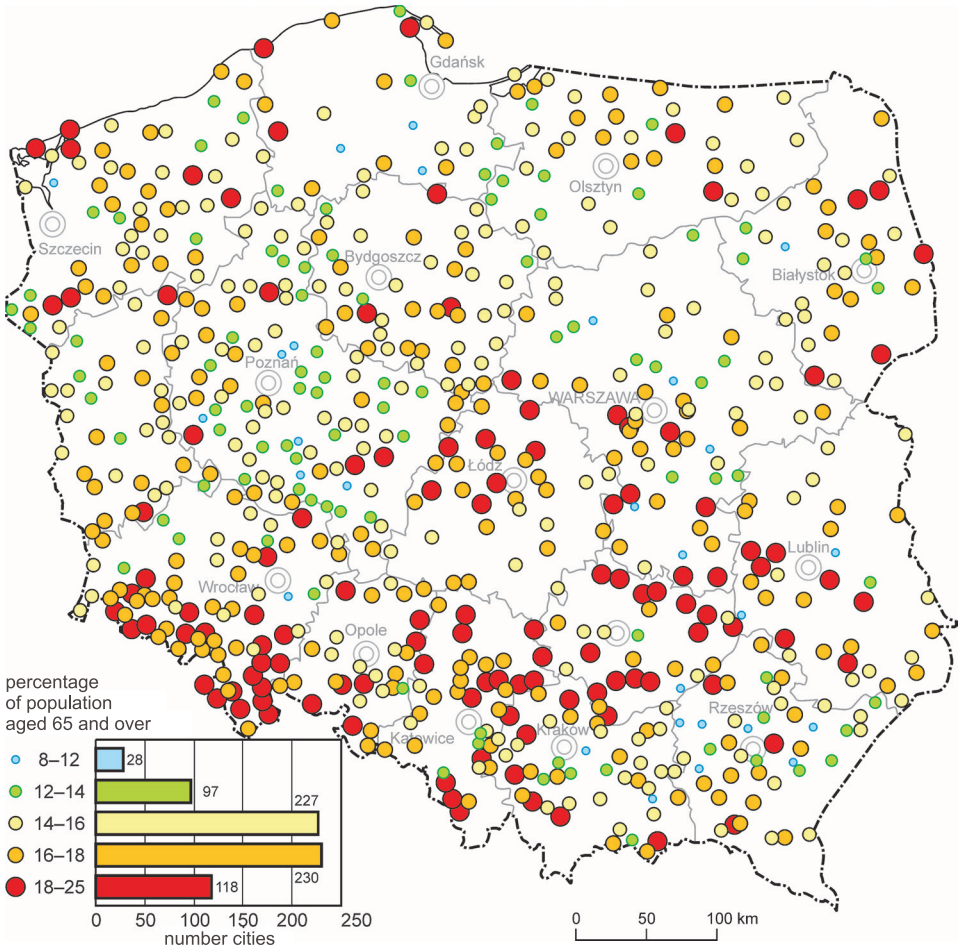
Annex I. Types of actual increase in small cities in 2016



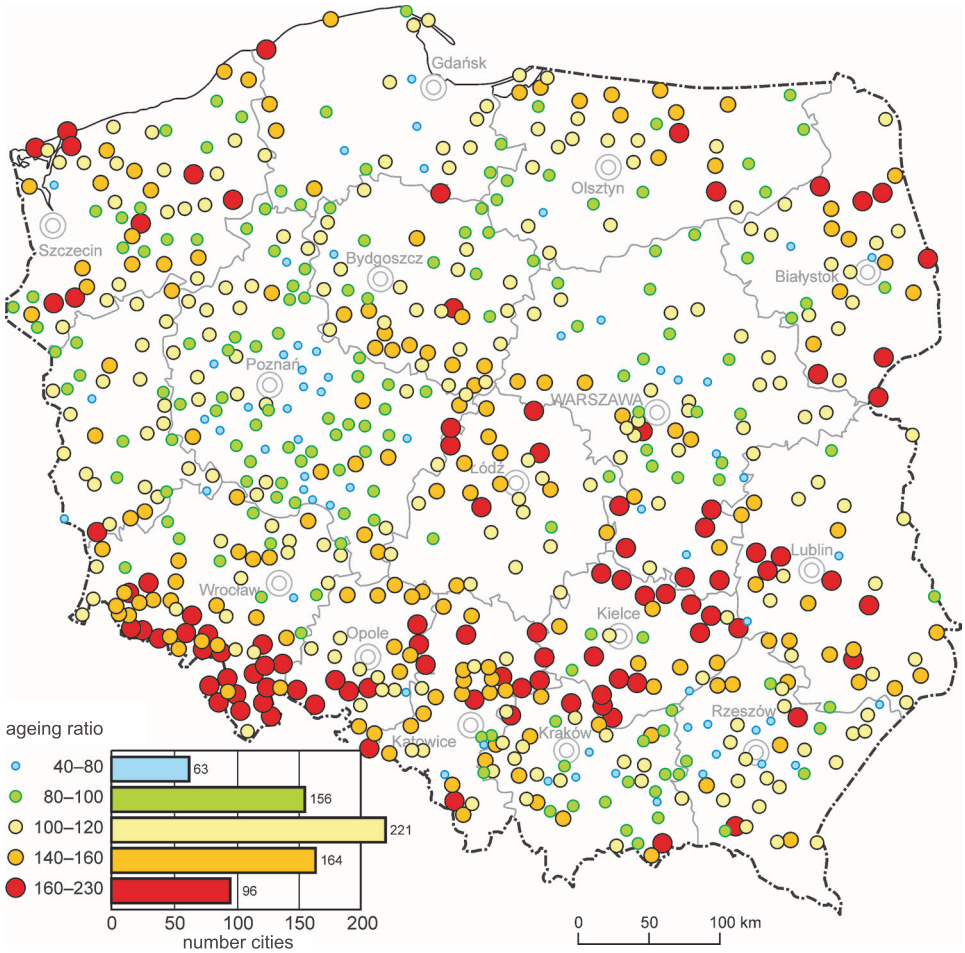
Source: personal elaboration on the basis of the Local Data Bank.

Annex II. Percentage of population aged 65 and over in small cities in 2016



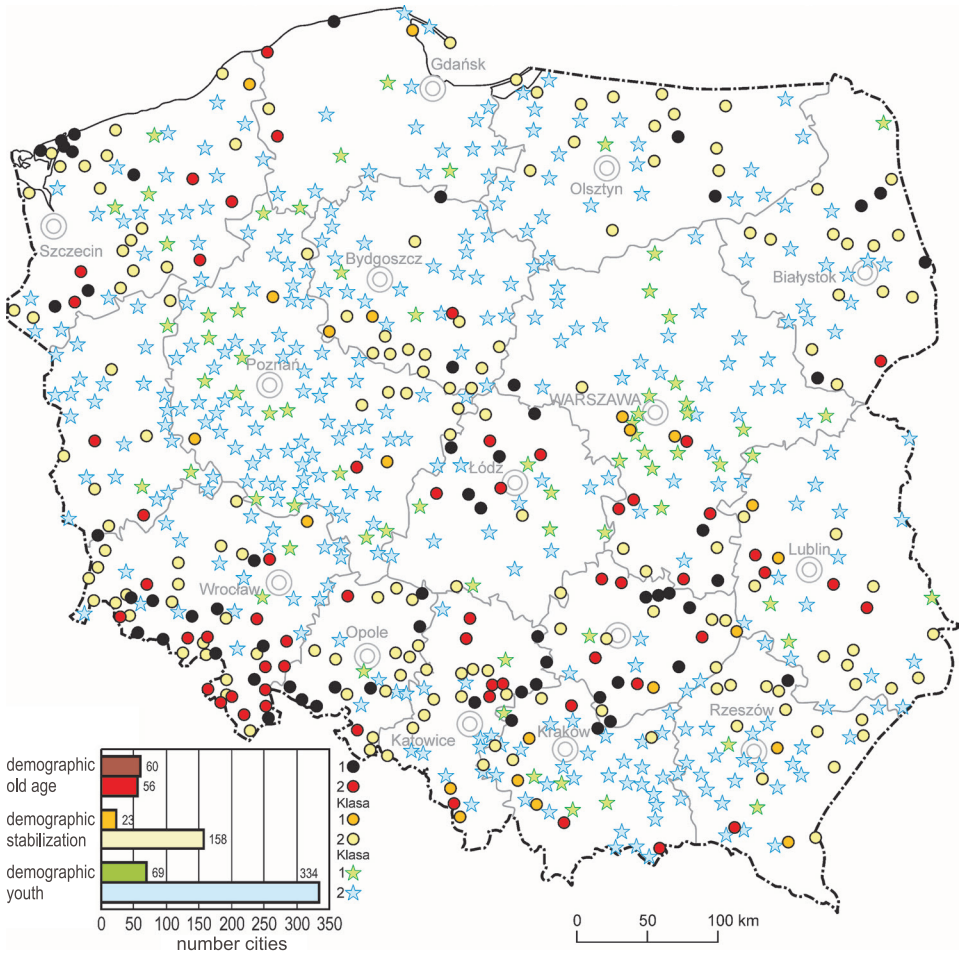
Source: personal elaboration on the basis of the Local Data Bank.

Annex III. Ageing ratio in small cities in 2016



Source: personal elaboration on the basis of the Local Data Bank.

Annex IV. Stages of demographic development in small cities in 2016



Source: personal elaboration on the basis of the Local Data Bank.

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RESILIENCE AND HYBRIDIZATION OF DEVELOPMENT OF SMALL AND MEDIUM TOWNS IN POLAND

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A b s t r a c t

This paper aims to initially evaluate the socio and economic resilience of small and medium sized town in Poland made in the context of hybridization of development. The article refers to the issues of development of small and medium sized towns as well as to the urban resilience concept recognized in the attributes approach.

Empirically, an initial assessment of resilience was carried out for all towns up to 100,000 residents in Poland using quantitative methods based on indicators of dynamics. Then, using cluster analysis along with the Euclidean distance the paper presents its findings in spatial dimension.

The results indicate a very high level of differentiation in socio and economic urban resilience of the surveyed towns. The dynamics of their development is highly unbalanced, while the overall picture of resilience of the examined towns indicates a hybrid pattern of their development.

REZYLIENCJA I HYBRYDYZACJA ROZWOJU MAŁYCH I ŚREDNICH MIAST W POLSCE

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Abstrakt

Celem artykułu jest wstępna ocena rezyliencji społecznej i gospodarczej małych oraz średnich miast w Polsce dokonana w kontekście hybrydyzacji rozwoju. Artykuł odwołuje się do problematyki rozwoju małych i średnich miast oraz do czynnikowego ujęcia koncepcji rezyliencji miejskiej.

Empirycznie wstępną ocenę rezyliencji przeprowadzono dla wszystkich miast do 100 tys. mieszkańców w Polsce wykorzystując metody ilościowe oparte na wskaźnikach dynamiki. Następnie na podstawie analizy grupowania (*cluster analysis*) bazującej na odległości euklidesowej zaprezentowano otrzymane wyniki w układzie przestrzennym.

Uzyskane wyniki wskazują na bardzo wysoki poziom zróżnicowania rezyliencji społecznej i gospodarczej badanych ośrodków miejskich. Dynamika ich rozwoju jest wysoce niezrównoważona, natomiast całościowy obraz rezyliencji badanych miast wskazuje hybrydowy wzorzec ich rozwoju.

Introduction

The development level of the network of small and medium towns determines to a large extent the scale of urbanization in a particular country, including the distribution of socio-economic functions. In Poland, the distribution of this type of city is characterized by a high degree of uniformity, which indicates polycentricity and fosters the implementation of sustainable development objectives, and prevents polarization of socio-economic processes in the country (*Koncepcja przestrzennego zagospodarowania kraju 2030*, 2011, p. 22). However, the level and dynamics of the development of smaller cities in Poland are actually varied. This is probably a consequence of interactions between at least two groups of factors.

Firstly, small and medium towns function in a complex environment. On a micro scale, these cities are adjacent to rural areas, for which they serve as operating centers. Contemporary urbanization processes in rural areas, however, foster takeovers of some functions previously located in small and medium towns. On the macro scale, the neighbors of small and medium towns are large urban centers, often with metropolitan functions. Their influence determines not only changes in the economic base of small and medium towns, but also reflects the broader impact of globalization (considered in the cultural, demographic, information and technology aspects).

Secondly, small and medium towns represent a great diversity in regard to current development paths. For example, among these kinds of cities at least several functionally specialized centers can be distinguished and their functions – in relation to the population scale – do not occur with such intensity in large cities. The dominant functions may include such specializations as: industrial, commercial, administrative, tourist and leisure, housing, services, transport, and service for the agricultural sector (Słodczyk, 2001, p. 59; Konecka-Szydłowska & Perdał, 2017, p. 29).

Interactions between outlined groups of factors can be various. For example, the peculiarity of the neighborhood (rural areas – a large regional center) combined with the current path of urban development, including its functional specialization (leisure – industrial – housing), in connection with the impact of global changes (financial capital mobility- human capital mobility) may result in multiple development trajectories. Therefore, finding an answer to the question: what are the development dynamics of small and medium towns in Poland, or more broadly – what is the social and economic resilience in this kind of a city? This seems to be an interesting first research problem. The second research problem is related to the extent to which various development dynamics of these towns can be considered in the categories of hybridization of development. The main goal of the article is, hence, the initial assessment of the social and economic resilience of small and medium towns in Poland along with reference to the dynamics of development of these urban centers within the category of development hybridization.

The issues concerning the development of small and medium towns

The issues concerning the development of small and medium urban centers are the subjects of many analyses. However, in the last decade, the existence of significant problems with the development of this kind of urban center has been emphasized in numerous studies, especially in comparison to fast developing big cities.

For instance, the National Spatial Development Concept (*Koncepcja przestrzennego zagospodarowania kraju 2030*, 2011, p. 8) emphasizes such developmental problems in smaller urban centers, including: intensification of population outflow, peripheralization, poor accessibility of public services, low economic potential, poor absorption of innovation from large cities, limited ability to create own specialization, and the concentration of negative social phenomena.

Nevertheless, the socio-economic image of small and medium towns in Poland seems to be much more complex. As emphasized by K. Heffner and A. Halama (2012, p. 7), small cities in the last few decades have clearly changed their positions in economic systems as a result of global changes. Due to the shift in their economic base, in terms of the central place theory (Maik, 1992), these centers create social and economic bonds with the environment in different ways.

One of the main problems in the development of small and medium towns in Poland is depopulation (Runge, 2011, p. 55; Stryjakiewicz, 2013, p. 127; Bartosiewicz, 2016, p. 23). The process of depopulation is the result of various reasons, among which both the historical past and contemporary socio-economic trends are mentioned (Kantor-Pietryga *et al.*, 2012, p. 14). The latter reasons are

associated with changes in the economic base, where the number and quality of jobs are particularly important. The scale of migration may be additionally strengthened by demographic and cultural factors as in the case of Upper Silesia, in particular of Opole in Silesia (Śląsk Opolski) – that area has an intense number of migrations to Germany (Kantor-Pietryga *et al.*, 2012, p. 14, 15).

The briefly outlined context of small and medium town development, due to a variety of problems, inclines research into the dynamics of their development in the context of social and economic resilience. The actual concept of resilience or urban resilience derives from the debate on sustainable development, including the adaptation to climate change (Simmie & Martin, 2010, p. 28). Initially, these categories were considered within the context of disasters (natural disasters, terrorist attacks). Resilience on the grounds of urban economics, eventually, began to be perceived in terms of an urban structures ability to:

– maintain a current city development path after disruption;

– quickly regain a current city development path after the disruption;

– quickly reorient current city development paths after experiencing disruption to achieve current or higher growth dynamics (Martin, 2016, p. 566).

The disruptions in economical terms are perceived in the following categories: economic crises, as well as technological and competitive changes that enforce a restructuring of the economic base of the city. These kind of urban development path disruptions are not only random in time, but can also be defined as long-term with incremental negative impacts of external factors that cause cumulative effects, violating the current development path.

According to T. Lang (2011, p. 16), most of the research on urban resilience uses the assumption related to the systemic approach to resilience evaluation. This means that the research subject (i.e. city, region) is perceived as a complex, multidimensional adaptive system. In terms of resilience, it is argued that urban systems should have appropriate attributes that enable them to cope with external interferences (Folke *et al.*, 2002, p. 438). According to A.J. Wardekker (Wardekker *et al.*, 2010, p. 988), the resilient system tolerates shocks through a set of attributes that limit the impact of adverse external influences, reducing 'damage and disruption, and allow[ing] the system to respond, recover, and adapt quickly to such disturbances'.

According to D.R. Godschalk (2003, p. 139), R.J.T. Klein (2003, p. 38), B. Walker and D. Salt (2006, p. 140-143), A. Drobniak (2014, p. 50) the attributes determining urban resilience include mainly: adaptability, connectivity, diversity, efficiency, redundancy, and interdependence. These attributes can be further described by factors of resilience, followed by their corresponding quantitative and qualitative indicators (Berkes, 2007, p. 287, 288; Drobniak, 2014, p. 50). An example of the decomposition of the urban resilient attribute related to the adaptability in the economic dimension onto the factors of resilience and corresponding indicators measuring their levels is presented in Table 1.

Table 1

An example of decomposition of the urban resilience attribute related to city adaptation in the economic dimension

Resilience attribute	Resilience factors (examples)	Indicators of resilience evaluation (examples)
Adaptability – a city's structures have the ability to change or fit into changed circumstances; they are flexible, adaptable	– high entrepreneurship spirit	– number of firms run by individuals per 1,000 inhabitants – number of economic entities per 1,000 inhabitants
	– high capacity for innovation	– number of patents per 1,000 privately-owned entities
	– significant local knowledge assets (knowledge base, research infrastructure)	– number of R&D units – employment in R&D units

Source: self-elaboration on the base of Drobniak (2014, p. 53, 59).

Briefly outlined backgrounds of urban resilience, in particular its attributes, including those related to adaptability, allow for the introduction of the hybridization of development concept. In general, the "hybrid" is perceived as a combination of elements belonging to different entities, cultures, technologies, and concepts. The justifications for introducing the hybrid solutions – in the context of resilience – can be sought in the pursuit of functional diversity based on combining different strategies, inputs, and products (Johnson & Scholes, 1993, p. 213), which in the case of enterprises, cities and regions leads to offering modifiable, flexible and more competitive solutions in relation to rapidly changing market needs. Hence, the hybrid solutions can lead to higher dynamics of development, and thus higher adaptability.

For the urban and regional economics, the category of development hybridization is particularly interesting, i.e. the effects that interactions, combinations of elements with a high degree of diversity generate in space (Drobniak, 2017b, p. 60). The hybridization notion can be particularly helpful in explaining the heterogeneous, non-linear and non-scale corresponding of a given set of cities to various dynamics of their development.

Research on this phenomenon in the territorial dimension was initiated by R. Boyer (1997), who drew attention to the hybridization of production models. According to him, the adaptation of production chains in terms of hybridization is carried out in various ways due to the heterogeneity of potentials in space (superiority and predominance of the local context) and the need to ensure the integration of elements forming the production chain (Boyer, 1997, p. 4). Consequently, various production models are created in space, adapting on the one hand to the local context (which in R. Boyer's concept determines access to specific resources for the production chain) and on the other hand is influenced by the global market and technological pressures.

In the era of global mobility and digitization, there is a shift away from the regional focus and integration of the links of production chains to the global orientation of production models (*Zarządzanie firmą…*, 2001, p. 198–203) and the disappearance of the benefits of geographical proximity (Micek, 2017, p. 258). In the territorial dimension, this results in re-locating individual links of production chains to places providing adequate access to tangible and intangible resources. Consequently, new places with high growth dynamics are created in space, while places previously perceived as growth centers (due to the re-localization of the production chain link) may enter into a phase of recession or stagnation. In this way, the space analyzed with the dynamics indicators shows features of uneven, patchwork growth creating a hybrid pattern of development.

The category of spatial hybridization of development can also be found in the works of O. Golubchikov (2014). According to him, the dynamics of city and regional development results from: "mutual embeddedness of the legacies of socialism and the workings of neoliberal capitalism that jointly produce what we define as the hybrid spatialities of transition—'strange' geographies that function according to the tune of capital but often conceal their capitalist nature with socialist-era 'legacies' " (Golubchikov *et al.*, 2014, p. 618). In a similar convention, i.e. in the categories of hybridization of development, significant differences in the dynamics of the development of cities and regions are explained by L. Sýkora & S. Bouzarovsky (2012). In their approach, the specificity of a place (legacy) combined with universal economic or political change generates various social changes, and consequently leads to a multipath dynamic of development. The authors talk about the "hybrid nature of territorial development processes" which is the effect of merger, the specificity of the place (heritage) and capitalist elements in the continuous process of the adaptation of socio-economic systems (Sýkora & Bouzarovsky, 2012, p. 55).

Summing up, the hybridization of development is the effect of combining a wide variety of elements in the sense of inputs, products, strategies and the specificity of place. Hybrid solutions (for example: creating new city functions based on existing infrastructure, or integration of the production chain by re-locating its links in space ensuring a better return on investment) are ways to quickly adapt to the requirements of the global economy (i.e. strengthening resilience). In spatial terms, the hybridization of development means variety, non-linearity, and mosaic development dynamics. It is, therefore, an expression of uneven development and can be a category helpful in explaining the large variety of dynamics of development recorded in studies on the resilience of cities.

Research methodology

The purpose of empirical research was subordinated to the main objective of the article, i.e. the initial assessment of the socio-economic resilience level in small and medium towns in Poland along with the distinction of groups of cities with high and low resilience levels. There were also reflections on the results obtained in the context of hybridization.

The initial assessment of the resilience level of small and medium towns was carried out for selected, basic variables that describe the dynamics of their socio-economic situation. An attribute-based approach was used to study urban resilience (Drobniak, 2014, p. 49-65), whereas the application of the indicated approach to assessing the resilience of small and medium-sized cities in Poland was associated with difficulties. It should be emphasized that from the perspective of resilience evaluation, the availability of data for Polish towns up to 100,000 inhabitants is very limited. In particular, there is scarce information on: the employment rate, investment value and GDP which are usually used in analysing resilience (Drobniak, 2014, p. 59). Hence, it was necessary to assess resilience on the basis of a few indicators that described changes in demographic potential (social resilience attribute related to efficiency, indicator: the number of inhabitants) and economic potentials (economic resilience attribute related to adaptability, indicator: the number of business entities) taking into account aspects of tourism function development (economic resilience attribute related to diversity, indicator: the number of tourists), which is very distinctive for some types of urban centers.

The study covered all small and medium towns in Poland up to 100,000 inhabitants, i.e. 876 cities (as of 2016), which comprise 43% of the population, 39% of business entities and 40% of tourists in Poland. Small and medium towns were distinguished on the basis of the classification used by EUROSTAT (ec.europa.eu), i.e. defining only the upper limit of the population number at the level of 100,000 inhabitants, used to determine the set of territorial units under the study. This kind of limit can also be found in the works of P. Bury, T. Markowski, J. Regulski (1993, p. 28, 29) and M. Czornik (2004, p. 26-30). The inclusion of all small and medium-sized cities together is due to the following premises. First, it is cognitively interesting, in urban resilience studies, to show the extent to which the dynamics of development depends on the size of the city – in this case, the collection of small and medium-sized cities treated jointly is a condition for this type of inference. Secondly, in the context of hybridization of development, a diversified collection of all small and medium-sized cities in Poland is a condition for proving the highly unbalanced developmental dynamics that are recorded in the space of a given country, including their multipath and mosaic pattern. Finally the research methodology included the following tasks:

– an assessment of social resilience in the demographic dimension – based on a cluster analysis: the dynamics of the number of inhabitants in 2016

(2004 = 100) and the dynamics of the aging index[1] in 2016 (2004 = 100) in towns of up to 100,000 inhabitants;

– an assessment of economic resilience in terms of business entities – based on cluster analysis: the number of economic entities in 2016 and the dynamics of those economic entities in 2016 (2004 = 100) in towns of up to 100,000 inhabitants;

– an assessment of economic resilience in terms of tourists – based on cluster analysis: tourist dynamics in 2016 (2004 = 100) and the dynamics of the number of economic entities in 2016 (2004 = 100) in towns of up to 100,000 inhabitants.

Fixed baseline indexes were used to measure the dynamics (Hill *et al.*, 2010; Martin, 2016; Drobniak, 2017b). Groups of small and medium cities with a similar level of resilience were identified on the basis of cluster analysis (Heffner & Gibas, 2007) using the k-means method and Euclidian distance. Its results also served to infer about the hybridization of the development of small and medium-sized cities in Poland.

Research Results

The analysis of the social resilience of small and medium towns based on the relation between the population dynamics (dimension *A* on Fig. 1) and the dynamics of the aging index (dimension *B* on Fig. 1) allowed three groups of urban centers to be identified. The first group (cluster_0 on Fig. 1, 40 towns) was comprised of cities that indicated high dynamics of population growth and, at the same time, low dynamics in the aging index. This was a small group of cities with high social resilience. This group includes towns like: Kąty Wrocławskie, Siechnice, Aleksandrów Łódzki, Niepołomice, Wieliczka, and Serock – i.e. towns adjacent directly to a large urban center.

The second group (cluster_1 in Fig. 1, 563 towns) consists of cities with average and low dynamics of population growth and relatively low dynamics of the aging index. This is a large group of towns characterized by having an average social resilience. This group includes towns such as: Nekla, Oborniki Śląskie, Wejherowo, Grójec, Góra Kalwaria, Bursy. The location of these cities in relation to large urban centers is diverse. Some of them are located approximately 30 km from strong regional centers (Nekla – Poznań, Oborniki Śląskie – Wrocław), Wejherowo – Tricity, Grójec – Warsaw, Góra Kalwaria – Warsaw). Whereas some others are located further from the regional center, 60–100 km, for example, Bursa (100 km – Tricity).

[1] A number of people aged 65 and older per 100 people aged 0-14.

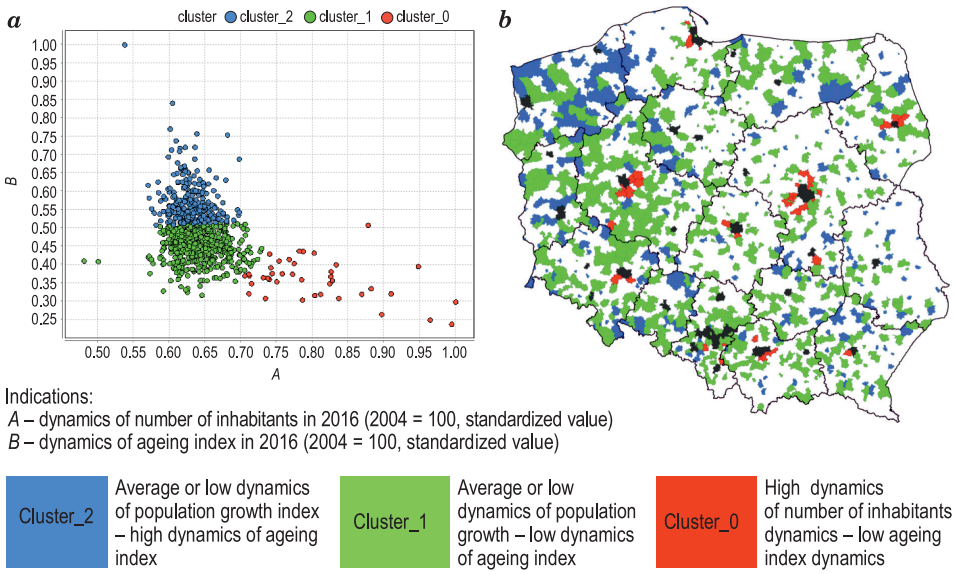

Fig. 1. Cluster analysis: dynamics of the number of inhabitants in 2016 (2004=100) and the dynamics of the ageing index in 2016 (2004=100) in cities with up to 100,000 inhabitants (standardized values): *a* – numeric layout, *b* – graphic layout

Source: own study based on data from the Central Statistical Office. Technical map preparation MSc K. Plac.

The third group of cities (cluster_2 on Fig. 1, 273 towns) was characterized by having average or low dynamics of population growth and high dynamics in the aging index. This is by far the most sensitive group of urban centers in terms of social resilience. This group comprises cities such as: Hel, Jastrzębie-Zdrój, Łęczna, Leżajsk, and Polkowice. Some of these cities pose a strong industrial heritage. Others are associated with a peripheral location (e.g. Leżajsk). There are also cities which, despite the relatively close location to a regional center (Łęczna) or tourist attractions (Hel), show a significant social sensitivity.

The evaluation of **economic resilience** carried out by comparing the number of business entities (dimension *A* on Fig. 2) and dynamics of their growth rate in the years 2004–2016 (dimension *B* on Fig. 2) indicates the existence of several differentiated groups of cities.

The first group (cluster_2 on Fig. 2, 64 towns) includes cities with a high or very high number of economic entities and most often had average or low dynamics of growth. This group comprises, for example, cities such as: Piaseczno, Słupsk, Jelenia Góra, Nowy Sącz and Pruszków. These towns usually have from 50,000 to 100,000 inhabitants. The economic resilience of this group can be described as average.

The second group (cluster_1 in Fig. 2, 168 towns) includes cities with an average number of economic entities and low or average dynamics for their

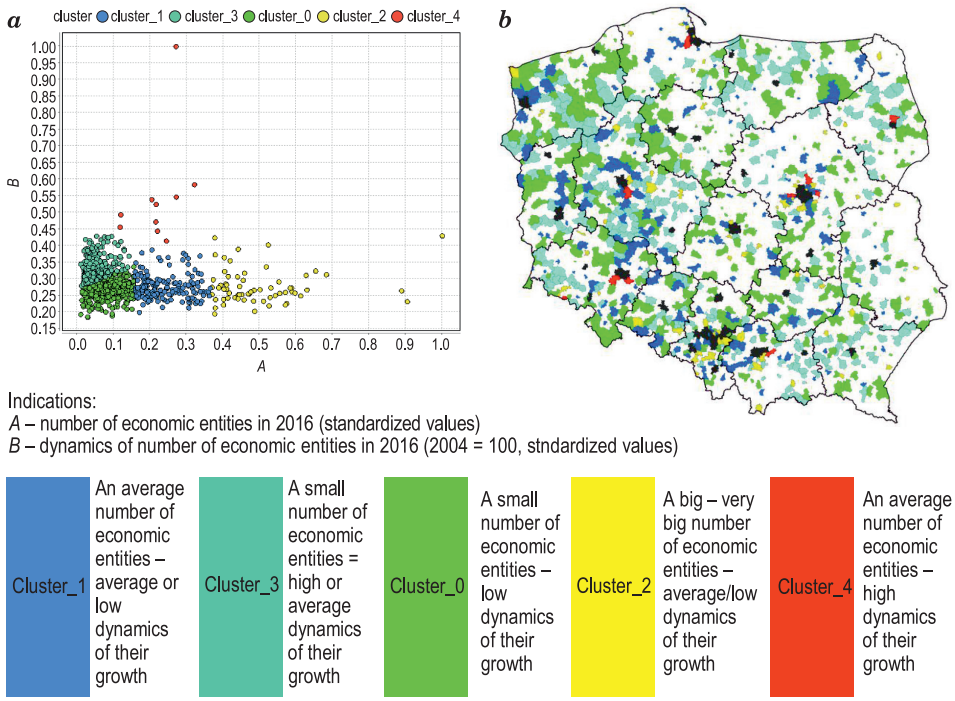

Fig. 2. Cluster analysis: number of economic entities in 2016 – economic entity dynamics in 2016 (2004=100) in cities with up to 100,000 inhabitants: *a* – numeric layout, *b* – graphic layout
Source: own study based on data from the Central Statistical Office. Technical map preparation MSc K. Plac

growth. This group comprised, among others, the following towns: Ełk, Szczecinek, Racibórz, Brzeg, Skierniewice, Mikołów. The resilience of this group can also be described as average.

The third group (cluster_0 on Fig. 2, 362 towns) consists of cities with a small number of economic entities and low dynamics of their growth. This group is undoubtedly the weakest in terms of economic resilience. Its representatives are e.g.: Kleszczele, Krynki, Nowe Warpno, Wyśmierzyce, and Obrzycko. Their common feature is having mostly a peripheral location in relation to large urban centers.

The group that differs in terms of economic resilience (cluster_3 on Fig. 2, 272 towns) consists of cities with a small number of economic entities (similarly to the previous group), but demonstrating average or even high dynamics of their growth. This group comprises, among others, the following cities: Szczucin, Choroszcz, Nowogrodziec, Ślesin, Skarszewy. High dynamics of economic entity growth is partially the result of so-called low notional value, although it is difficult to explain it only in terms of location near a large city or main road infrastructure.

The last group (cluster_4 on Fig. 2, 10 towns) consists of units with an average number of economic entities and high dynamics of their growth. They are characterised by high economic resilience. This group includes, among others: Karpacz, Kąty Wrocławskie, Siechnice, Niepołomice, and Halinów. The analyzed group is differentiated in terms of proximity to a large urban center, i.e. there are cities located near the center of the region (Kąty Wrocławskie, Siechnice, Niepołomice), but also Karpacz located at a considerable distance from Wrocław.

The evaluation of economic resilience in terms of tourism, based on the relationship between the dynamics of the number of tourists (dimension *A* on Fig. 3) and the dynamics of economic entities (dimension *B* on Fig. 3) verifies the theoretical assumption regarding the economic growth based on a tourism function. However, as the cluster analysis proves, this relation is not clear in the case of small and medium towns in Poland (see Fig. 3). On this basis, three groups of cities can be distinguished.

The first group (cluster_0 on the Fig. 3, 18 towns) comprises cities with up to 100,000 inhabitants characterized by average or high dynamics of an increase in the number of tourists and at the same time average or high dynamics in the number of economic entities. This is a small group of cities in which an increased inflow of tourists is reflected in the growth of economic activities (among them: Karpacz, Szczyrk, Międzyzdroje, Szklarska Poręba, Mikołajki). These are cities with a developed tourist function and obvious recreational values. However,

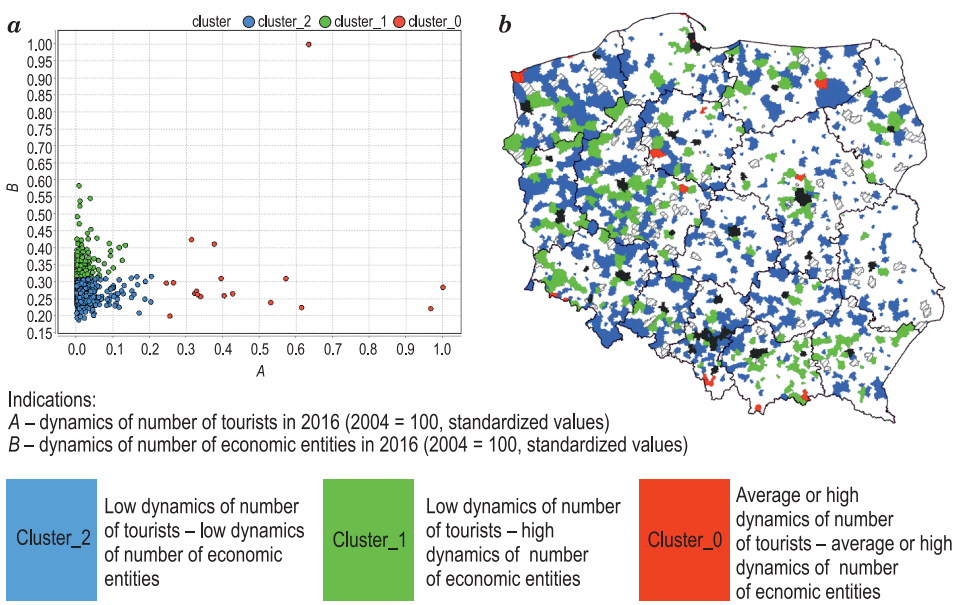

Fig. 3. Cluster analysis: tourists dynamics in 2016 (2004=100) – dynamics in the number of economic entities in 2016 (2004=100) in cities with up to 100,000 inhabitants: *a* – numeric layout, *b* – graphic layout

Source: own study based on data from the Central Statistical Office. Technical map preparation MSc K. Plac.

there are also such centers as: Serock, Żnin, Ślesin in this group, where tourism development involves rather a SPA development, business tourism, and weekend trips for nearby larger urban centers.

The second group (cluster_1 on Fig. 3, 209 towns) illustrates the cities in which low dynamics of growth in the number of tourists and, at the same time, high dynamics in the number of economic entities are recorded. These are centers whose economic growth is not directly related to the tourism industry. This group includes, among others: Wolbórz, Ryn, Józefów, Radzyń Chełmiński, Muszyna, and Piwniczna-Zdrój. What seems interesting, some of them are centers with a developed tourist function (e.g. Piwniczna-Zdrój, Rabka, Hel). However, in their case, an increase in the number of economic entities is probably a result of non-tourist factors.

The third group (cluster_2 on Fig. 3, 527 towns) consists of cities in which the dynamics in the number of tourists and the dynamics in the number of economic entities are low. This group comprises i.e.: Annopol, Knyszyn, Lubień Kujawski, Łazy, and Nowy Dwór Gdański. These are urban centers with an undeveloped tourist function and low economic growth.

Discussion and Conclusions

The initial assessment of the resilience of small and medium towns in Poland certainly has limitations, mainly due to limited access to statistical data. An attempt to formulate several general conclusions inclined the study to pay attention to: significant differences in the level of social and economic resilience, difficulties in formulating general relations between the dynamics of resilience indicators, and a mosaic character of development dynamics which creates a hybrid pattern of development of small and medium towns in Poland.

In terms of social and economic resilience, small and medium-sized cities form a very heterogeneous set of urban centers. Level differentiation of resilience refers to social resilience measured by an increase in the number of inhabitants and an increase in the aging rate. The level of economic resilience measured by the dynamics of the number of economic entities and an increase in the number of tourists is also very diversified.

Formulating general relationships between: the dynamics of the number of inhabitants and the dynamics of the aging index, the number of economic entities and the dynamics of the number of economic entities, or the dynamics of the number of tourists and the dynamics of the number of economic entities – despite seemingly obvious connections – is very limited. In the spatial dimension, there is a group (not numerous, though) of small and medium towns which poses some features determining their high level of resilience. For example, cities located in the immediate vicinity of large voivodship cities are characterized

by high social resilience, while cities with health and recreational advantages are usually characterized by a high level of economic resilience in terms of an increase in the number of economic entities combined with an increase in the number of tourists. Although there are also exceptions, for example, Skaryszew, Wilamowice, Orzesze, and Rydzyna, are characterized as having high social resilience in terms of demography, despite having a significant distance from regional centers.

On the spatial scale of Poland, the image of social and economic resilience of the examined cities is mosaic-like. This means that between groups of cities with polarized positions in terms of social and economic resilience (i.e.: high – high or low – low) there is a significant number of cities with different levels of resilience (i.e.: low – average, low – high; average – low, average – average, average – high). The cluster analyzes and their spatial interpretation for this group of cities show that it can be demonstrated to a limited extent that resilience is influenced by such conditions as the proximity of a large urban center, or the occurrence of spa and recreational values. This mosaic pattern of the development of small and medium towns can be compared to hybrid development, where the dynamics of changes in basic socio-economic values is to a limited extent directly related to the potential or location of a given center. The high or low development dynamics of this type of town is probably the result of the re-location of links in production chains or the location of links of new production chains, which in the era of progressive mobility of production factors and digitalization are less dependent on geographical proximity.

The hybrid pattern of territorial development processes can be explained both in the internal dimension, i.e. concerning a given urban unit, and the external dimension, i.e. regarding a distinguished group of spatial units (Drobniak, 2017a, p. 39). Internally, hybridization of development occurs in the form of co-occurring in the space of a particular city, stages of growth and regression which are determined by creating or closing production chains. Hybridization in the urban space takes the form of a collage of the past and the future. In the external approach, the hybrid pattern of development indicates the simultaneous occurrence of highly diverse groups of cities in terms of dynamics of growth, which adapt to changing conditions in a far different way (Drobniak, 2017a, p. 40). This is confirmed by the conducted research on the resilience of small and medium-sized cities in Poland. Their dynamics of development can be recognized in terms of a hybrid development pattern, i.e. uneven development, which simultaneously incorporates in space centers with very different growth dynamics, which leads to urbanization and de-urbanization processes, deindustrialization and industrialization, polarization in terms of income and availability of public services (Sýkora & Bouzarovsky, 2012, p. 51).

In conclusion, the complexity of the developmental problems of small and medium towns in Poland is reflected in a highly diversified level of their resilience. Small and medium towns have the potential for social and economic

development based on both the services of surrounding rural areas and the participation in "outsourcing" of economic activities by large urban centers. Moreover, endogenous development factors are also important in establishing the dynamics of their growth (Siekierska-Rosiak, 2016, p. 26). The ability to launch specific resources in small and medium towns, including leisure, housing, social, communication and specialized economic functions, indicates the usefulness of their endogenous potential and determines the dynamics of their development.

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THE ROLE OF ICT IN THE SMART CITY CONCEPT

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Abstract

The concept of a smart city enables the effective implementation of public services despite the negative consequences related to population growth in large cities. City authorities, in the face of growing demand for public services, often use a wide range of smart city instruments in various areas of operation. Despite the fact that a large part of innovative solutions is widespread and used, such as intelligent transportation systems or e-office, new opportunities are still emerging which are aimed at improving the quality of life for city dwellers.

The aim of the article is to define the role of ICT in smart city management. The subjects of analysis are innovative instruments used in technologically advanced cities as well as contemporary challenges facing city management.

The functioning of the city depends to a large extent on access to the communication network, mobile devices as well as on infrastructure connected with them. Therefore, it is necessary, on the one hand, to ensure the capacity of connections and network communication, and, on the other hand, to involve citizens in the process of creating new solutions.

ROLA ICT W KONCEPCJI *SMART CITY*

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Abstrakt

Koncepcja miasta inteligentnego umożliwia efektywną realizację usług publicznych, mimo występowania negatywnych konsekwencji związanych ze wzrostem populacji w dużych miastach. Władze miejskie w obliczu rosnącego popytu na usługi publiczne często korzystają z szerokiego instrumentarium *smart city* w różnych obszarach funkcjonowania. Mimo że duża część innowacyjnych rozwiązań jest rozpowszechniona i wykorzystywana, np. inteligentne systemy transportowe czy e-urząd, to wciąż pojawiają się nowe możliwości ukierunkowane na podnoszenie jakości życia mieszkańców miast.

Celem artykułu jest określenie roli ICT w zarządzaniu *smart city*. Przedmiotem analizy są nowatorskie instrumenty stosowane w zaawansowanych technologicznie miastach, a także współczesne wyzwania stojące wobec zarządzania miastem.

Funkcjonowanie miasta zależy w dużej mierze od dostępu do sieci komunikacyjnych, mobilnych urządzeń oraz sprzężonej z nimi infrastruktury. Dlatego też konieczne jest z jednej strony zapewnienie przepustowości połączeń i komunikacji sieciowej, a z drugiej zaangażowanie mieszkańców w proces powstawania nowych rozwiązań.

Introduction

According to the International Organization for Migration, every week about three million people move to cities around the world. Considering global trends, it is estimated that by 2050, the population of cities will have increased to 6.4 billion people (*World Migration Report*, 2015, p. 1). This causes a number of consequences for the functioning of cities, such as, for instance: an increase in the degree of congestion, waste production, water and energy use, and CO_2 emissions. Therefore, city authorities are faced with many challenges in the field of energy management, waste management, public space, transportation management, and administration. The consequence of this is the need to constantly monitor the level of city development and implement innovative solutions in the above-mentioned areas. It should be noted that city management is also subject to high pressure and encounters numerous restrictions. It is connected with the constantly growing expectations of citizens in terms of quality of life, more restrictive environmental protection laws as well as with depleted tax revenues.

It is worth to mention that the increase in the number of inhabitants mainly concerns large cities and metropolises. The problems of smaller cities sometimes have a completely different character and are related to, among others, depopulation. Despite this, there are a number of similar challenges in all cities related to air pollution, safety or transport.

The concept which can support city authorities in dealing with current and future challenges is smart city. In the literature one can come across numerous definitions of this concept, which, however, are very general and thus make it difficult to state clearly when a given city can be considered to be a smart one. It is even more difficult to identify specific development paths for cities. It is connected with the specificity of a given place, the cultural characteristics

of citizens, the level of social trust, the attitude to building relations, etc. Therefore, there are many possibilities and instruments which can support the authorities in overcoming development barriers. A very wide catalog of instruments is based on the use of information and communication technologies (ICT) that allow the processing of urban data and improving the quality of life of society.

The objective of the article is to present contemporary tendencies in building a smart city based on ICT as well as to present significant challenges facing city management. The study attempts to define the concept of a smart city, and to present ICT-based instruments applied in various cities all over the world. The study presents a definition of the smart city concept, as well as instruments from various ICT-based cities around the world. Moreover, major development challenges have been identified that should be taken into account by city authorities when conducting their activities.

The article is a combination of theory and practice. Literature studies and examples from the last few years have been applied.

The structure of the study is as follows. After the introduction, section I contains the definitions of the smart city concept and the role of ICT. Section II focuses on identifying the basic challenges of the smart city concept. The next part of the article contains a set of exemplary instruments of the discussed concept, which use ICT. The last part of the article is a summary which contains the most important conclusions derived from the analysis carried out.

The Smart City Concept. A leading role of technology

In the last few decades, many expressions of modern cities have been created to meet the demographic, climactic and economic challenges of the 21st century. In the subject literature, you can find certain terms that are frequently applied with reference to a city of the future. These terms include 'information', 'digital', 'green', 'slow', 'clever', 'knowledge', 'intelligent' 'creative' or 'smart'. However, the most popular one is the term – 'the smart city', which also refers to the developmental concept of the city. There is no commonly accepted definition of what 'smart city' is. In a large part, emphasis is laid on the use of information and communication technologies (Farelnik & Stanowicka, 2016, p. 362). A smart city strives to solve development problems (also related to the availability of public services, transportation, and environment) through ICT, which are included in the urban infrastructure (Lee *et al.*, 2014, p. 82). They allow obtaining a vast amount of information from various areas of the city's functioning, processing them and making them publicly available. Municipalities, citizens and businesses benefit from this through an appropriate use of this information provided by sensors, meters, cameras, smartphones, and mobile devices. It is worth noting, however, that a smart city is not based only on technologies. Technology is a means

to achieve social, environmental, economic and cultural development (Nam & Pardo, 2014, p. 2). The important role of social inclusion cannot be underestimated, since it increases the quality of public decisions taken. Therefore, combining the quoted threads, a city can be considered smart if investments in human and social capital as well as in traditional (transport) and modern (ICT-based) communication infrastructure fuel sustainable economic development, and a high quality of life; all while being accompanied by effective management of natural resources and active participation among citizens (Caragliu *et al*., 2011, p. 70).

Part of the definition of a smart city describes the city as a set of systems or areas of diverse character. For example, Weisi and Ping (2014, p. 69) distinguish six smart systems: social networks (health, education, security), regulations for business (administrative support, laws), transport (road networks, air and sea transportation), communication (broadband networks, wireless networks), water (water supply, water quality), and energy (utilization of rubbish, energy production). One can also analyse a city by taking into account a few more complex areas (Giffinger *et al*., 2007, p. 12):

– smart economy – competitiveness – entrepreneurship, productivity, innovation;

– smart people – human and social capital – qualifications, creativity, lifelong learning;

– smart governance – social participation – public services, transparency of management, participation in making public decisions;

– smart mobility – transportation and ICT – local availability, ICT infrastructure, safe, innovative and ecological transport systems;

– smart environment – natural resources – pollution, environmental protection, management of natural resources;

– smart living – quality of life, living conditions, security, social cohesion.

In this article, selected ICT instruments from the area of intelligent environment and life, as well as, participation in decision making (intelligent management) were analyzed.

The smart city concept is not always perceived as a certain state or end result. One can come across the view that it is a process, an interaction between urbanization and ubiquitous digital technology (Hanna, 2016, p. 92, 93). This technology integrates physical infrastructure, local public institutions, the urban community and the geographic environment. It also increases the availability of data on the functioning of the city, which can be used to improve the quality of existing public services and create new ones, and to spatial planning. It also allows citizens to participate in the process of making public decisions. This integration consists in using, by inhabitants, various technological solutions supporting, among others: transport (intelligent transport systems), and the development of public spaces (applications enabling voting on infrastructure projects, reporting acts of devastation).

Despite the fact that the concept of a smart city is already relatively well recognized, there are still many uncertainties in the organization of strategic planning in this area. It results, among others from the fact that stakeholders (local authorities, research institutions, technology suppliers, developers, and non-profit institutions) frequently have conflicting interests. Moreover, the belief that the transformation itself in terms of gaining advanced technological infrastructure will bring many benefits is wrong (Angelidou, 2014, p. 3). In addition to infrastructure-related activities, in cities aspiring to be smart it seems necessary to have technological education programmes for residents, to promote participation in public decision-making and to create social innovations. There are many cases that show the lack of an appropriate approach to the implementation of the smart city concept. One of the major problems in this respect is the lack of involvement of residents in the process of planning specific solutions (Glasmeier & Christopherson, 2015, p. 8, 9). Innovation users should participate in the development of the idea and implementation of technology that is to serve them. At the same time, they support programmers with their experience and help adapt the product or service to specific needs. The lack of such interference may lead to situations where a technology is mismatched to reality.

Contemporary challenges for city management

Contemporary cities are becoming the arena of changes taking place globally in the economic and social spheres, related to the growing importance of information and communication technologies. The business sphere is undergoing a process of transformation towards a digital economy based on the use of the Internet and computer software. In consequence, a number of emerging economic trends can be observed. First of all, there is an intensification of cooperation between enterprises. The Internet is a tool by means of which it is easier to find business partners, conduct negotiations, or purchase materials and components. As a result, transaction costs related to, among others, communication, invoicing or payments are decreasing. Secondly, computer programmes support decision-making related to management, which facilitates an optimal use of resources. Thirdly, the Internet offers many opportunities to conduct marketing and sales activities, as well as to build a positive image. This is very beneficial from the point of view of consumers who exchange opinions about products on various types of internet forums and thus monitor the seller's quality and reputation. Fourthly, in the digital economy there is a change taking place in the customers' approach to the issue of owning the product. Nowadays, owning a product is not a necessity conditioning its use. Access is more important. A cultural product, (i.e. movies, music, books available in the form of streaming services) serves as an example.

The above changes in business activity occur simultaneously with the progressive digitization of social life. One can observe the great popularity of mobile devices with access to digital platforms and social networks. An increasing part of society uses ICT by using a range of services related to leisure time, health, education, culture, tourism and business. Moreover, there are technologies revolutionizing many aspects of everyday life. One of them is the Internet of Things (IoT). It is a new communication paradigm that provides access to, control of and interaction between various devices, such as, for example, household appliances, monitoring cameras, sensors, displays, and actuators (Zanella *et al*., 2014, p. 22). This model facilitates the development of a number of applications that use a huge amount and variety of data generated by these devices. It can be used to provide new services to citizens, businesses and public administration. It is estimated that by 2020, 25 billion devices will have been connected to the network within IoT (Kazmi *et al*., 2017, p. 21). IoT is perceived as a technology that allows effective resource management in many sectors. Therefore, it is widely used in city management in such areas as waste management (sensors in garbage containers, fleet management), energy management (lighting controllers, smart metering), security management (monitoring, notification systems), transport management (traffic and parking places control systems), etc.

New technologies used in city management gain enormous amounts of data. Contemporary urban development is created by new technologies that acquire enormous amounts of data. They are stored and analysed using cloud computing or big data instruments. At the same time, there is an increase in the number of network users and in the range of available internet services. All this makes that a key challenge for city authorities is ensuring an efficient transmission infrastructure, such as, for example, the Fifth Generation Mobile Communication System (5G).

The 5G network, which will be launched in Europe in the upcoming years, will allow the implementation of various services within the smart city concept – in the broader context, within the Internet of Things. It offers a number of benefits that the existing network technologies cannot provide. These benefits are as follows (*Smart Solutions for Sustainable Cities*, 2017, p. 7):

– high transmission speed – up to 20 Gbit/s enabling ultrafast mobile broadband internet;

– low latencies – less than 1 millisecond, which means that signals are transmitted almost in real time. This is a key utility from the point of view of managing the power transmission infrastructure, where in the case of voltage changes a quick response is needed to avoid failure. In addition, it will enable fast communication between autonomous cars (car-to-car) and other devices in the car (car-to-everything);

– the possibility of connecting 1 million devices to the network per square kilometre at the same time with guaranteed quality of services. This is a great

convenience for the operation of readers and sensors acquiring data on atmospheric conditions, the level of air pollution or congestion of streets.

The main challenge for the city authorities in the area of building the 5G network is cooperation with other public institutions (central level) and private enterprises involved in this process (e.g. providing access to municipal infrastructure during construction work).

In the digital world, however, one cannot forget about the most important link – people. In the smart city concept, particular emphasis should be laid on the processes of involving citizens in technological issues. The available tools should be popularised, and features and benefits explained. This is particularly important in the context of ageing societies and their limited use of devices and applications. The constant updating of knowledge and skills of citizens should be supported by city authorities in consultation with business communities. An example of such activity is a Danish city – the City of Aarhus (Snow *et al.*, 2016, p. 95). Since 2014, 'Internet Week Denmark' has been organized there, consisting of over one hundred events – meetings, lectures, workshops, and debates in which representatives of city authorities, mobile application developers, entrepreneurs, citizens, and non-governmental organizations take part. During the festival, new devices are presented, including training sessions in operating them. In addition, discussions are held in the form of a brainstorming session about the quality of life in the city. These discussions lead to formulating proposals for solutions the work on which is continued by the city authorities in cooperation with representatives of entrepreneurs. An interesting event under the 'Internet Week Denmark' is also the so-called 'Hackathons'. These are multi-day workshops in which teams of programmers, entrepreneurs, city officials, residents and other interested parties participate to solve specific problems or urban challenges. The effects of these works are usually applications that reduce the problem identified during the meetings. Hackathons are a way to create a lasting public-private partnership that affects the economic, social and environmental spheres of the city (Perng *et al.*, 2017, p. 3). A wide range of stakeholders who are involved in the restructuring of the city foster a better understanding of problems and create a bigger number of initiatives. Hackathons give the opportunity to integrate local society and build trust in public institutions. They bring concrete results that are often missing during meetings on programme documents or modernization plans. An example of such a result is an application developed in the American city of San Diego, which collects data on places where people gather and this sort of information could be found very useful, for instance, by owners of food trucks (Kosowatz, 2017, p. 35).

The involvement of citizens in the process of building a smart city is not only an expression of the maturity of civil society but also of a demand-based approach to innovation. It consists in engaging users' knowledge to create new products, services or concepts (*Popytowe podejście do tworzenia…*, 2012, p. 28, 29). Two elements are crucial in this approach. First, there needs to be an understanding

of the real needs of users to identify new opportunities to create innovation. Secondly, the innovation process is undertaken with the systematic involvement of users who are directly involved in the work of the product development team. Social inclusion is an expression of new trends in the approach to innovation management. Therefore, the residents together with the authorities design new solutions and participate in their creation and testing. In this way, users of these solutions take part in the innovation management process (planning, creating, testing). The existing model of interaction between the public and academic spheres and industry, the so-called 'triple helix', has been supplemented with users of innovation actively participating in creating new values. In this way, a quadruple helix model was created (Arnkil *et al.*, 2010, p. 65). The cooperation of the four areas mentioned above may be utilised for the sake of the development of various types of innovations, such as, for example, technological, social, product and service innovations. Therefore, it can be concluded that the demand-driven approach to innovation reflects the need for social inclusion, and the increased participation of citizens in identifying challenges and developing remedies.

Examples of ICT-based smart city instruments

The growing expectations of urban residents regarding the quality of public space and services as well as the quality of life have caused an increasing demand for new products and services.

Many companies have specialized in providing such instruments as, for example, traffic control systems, smart metering, urban lighting control centres, electric car rental, pneumatic waste disposal systems, renewable energy infrastructure, or hotspots. This interest in cooperation with local authorities is still growing because it is estimated that as early as by 2020 the global market for smart city solutions will be worth over 400 billion USD (Lea, 2017, p. 13). The most absorptive market is being created within public management, education, health and energy.

This article focuses on several ICT solutions which are oriented to the quality of life of residents and the natural environment.

Municipal services are obliged to constantly monitor security. One of the biggest threats, especially in American cities, is street shootings. High noise levels and vibrations often make it impossible to clearly identify a given noise such as a shot from a firearm and, consequently, call the police. Hence, already in 90 cities around the world, including Chicago, New York, Boston, and San Francisco, special sensors are used that capture the sound of a shot and immediately notify the police (TechRepublic, 2018). This technology allows the location to be identified precisely within several meters, records the number of shots and may identify the shooter. Work is underway to integrate sensors

with street lamps and to adapt them to receive such signals as the sound of broken glass, car collisions or spray painting. This should improve the efficiency of police intervention as well as the level of security of residents. The monitoring system is a widespread solution to ensure the safety of residents. In German cities, monitoring systems fulfill many different functions: such as detecting the intrusion of persons or vehicles into critical areas, unwanted objects in closed rooms, detecting and filing faces in a video stream, recognizing license plates on vehicles and matching them with blacklists, and analyzing queues in order to detect overcrowding (Telekom, 2018).

Another example of a new smart city instrument is related to the community action of citizens. The Smart Citizen project being implemented in Barcelona is focused on monitoring the level of pollution (Smartcitizen, 2018). Barcelona citizens use a special device to measure the composition of air, temperature, humidity, light intensity and noise level. The device contains sensors and a geolocation transmitter and can be mounted on a window sill or on a balcony. Using a Wi-Fi network, it systematically sends data to the main computer, which places it on the map. In this way, as a result of the collective action of citizens, a publicly available information platform about environmental conditions in individual districts of the city is being created. It enables citizens to make a comparison of conditions for living and running a business, make decisions about possibly moving out or finding a suitable place to have a bicycle trip.

Problems with finding a parking lot in the city are a natural consequence of population growth and increases in the number of cars. It is estimated that up to 30% of street traffic in city centres is caused by drivers looking for a place to park. It has been calculated that, for example, in Paris, each driver loses an average of about four years during his/her life on searching for a parking lot (Labcities, 2018). In San Carlos, the United States, parking lots are equipped with sensors that send a signal telling drivers whether there is any parking available or not. Drivers through an application on their phone can find and choose in this way a parking lot and pay the fee. Sensors have a number of advantages. They are durable and consume extremely little energy. One battery, for example, can last up to eight years. The street lamps in Bonn are dimmable, darken using motion detectors, and automatically turn on and off. In addition, public utilities proactively receive a message when a bulb is damaged or needs to be replaced. The networked street lamps will save up to 60 percent of operating costs (T-systems, 2018).

One of the exemplary new solutions in the field of city management is the system of route optimization for the municipal fleet, including dustcarts (Bioenabletech, 2018). It facilitates the planning of routes for municipal vehicles in a completely automated way. In the case of cities with a fleet of several dozen or several hundred vehicles, designating service areas creates many difficulties. The computer designating the route is connected with sensors reading the filling level of garbage containers, weather conditions, and the level of street

congestion. In addition, it takes into account the work schedule of people responsible for garbage collection. The system gives savings resulting from lower fuel consumption, reduced workload, and lower equipment usage. It also positively affects the reduction of CO_2 emissions.

An innovative project focused on saving water was implemented in Lyon, France (Robert *et al*., 2017, p. 11, 12). A street was built there, under the surface of which there is a rainwater tank with a volume of 1,200 cubic meters. Rainwater from the tank is used by street sweepers and in this way the system contributes to keeping the streets clean. In addition, air temperature, soil moisture and tree growth sensors were installed in the nearby city park, which are connected to remotely controlled irrigation pumps supplied by water from the tank below the street. The monitoring of the irrigation needs of plants and the water level in the tank is done automatically via a computer.

The communication between city authorities and citizens is important in implementing the smart city concept. One of the possibilities in this area is a city portal providing information about public services (*Smart Solutions for Sustainable Cities*, 2017, p. 18). It allows a comparison of the effectiveness reached by individual departments of the city and promotes the transparency of activities. This solution has already been introduced in Liverpool, Boston and Los Angeles, where the networks publish information on:

– the number of city bus runs;
– the number of police officers on duty;
– average waiting time for help from municipal services;
– the percentage of graffiti removed from the walls in the last 48 hours;
– the number of street lamp failures removed in the last 12 months.

It is worth noting that smart city instruments do not always need to rely on ICT solutions. All activities aimed at improving the quality of life of citizens, the condition of the natural environment or management effectiveness are desirable. The introduction of a ban on entering the city centre for trucks or cars with low emissions standards or the implementation of one ticket for various types of city transport systems illustrate the point.

Summary

The smart city concept is nowadays a very popular way to counteract the effects of the growing urban population. There are different approaches to its implementation, but most frequently they are related to the wide use of network technology, mobile devices, sensors, cameras, etc. The common denominator for most of these solutions is their availability and the bandwidth of internet connections, which determines the offering of new services and the efficiency improvement of the existing ones. It is difficult to imagine that connections within

the security system or communication between autonomous cars are delayed or impossible due to network congestion. Therefore, a major challenge for smart city authorities is to ensure an adequate transmission infrastructure, such as, for instance, a 5G network. These activities should be performed simultaneously with the promotion of the idea of being smart among citizens. It is also necessary to include citizens in the process of developing new technological solutions within the framework of the model of a demand-based approach to innovation.

Implementation of new ICT solutions in cities is very expensive. Therefore, cities with limited investment opportunities may have problems financing them. It is worth mentioning that new technologies are not always an effective instrument for improving public services or the quality of life of residents. Such a situation may occur when there is no social acceptance of new solutions or the level of complexity of their application, for example: cities with an aging society, where most residents prefer more traditional payment for a public transport ticket or a car park than through a special application. It is important that the municipal authorities improve the effectiveness of their activities together with the inhabitants. A good practice in this area is the broad social participation in city management. In summary, real smart cities primarily use their human capital and then advanced technologies.

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REVENUE AUTONOMY AND ENTREPRENEURSHIP IN THE MUNICIPALITIES OF THE WARMIAN-MASURIAN VOIVODESHIP[1]

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K e y w o r d s: revenue autonomy of municipalities, local entrepreneurship, municipal budget.

A b s t r a c t

One of the most important problems in the proper functioning and fulfillment of entrusted tasks by municipalities in Poland is their high income independence. It depends, inter alia, on the broadly understood entrepreneurship undertaken in their area. Therefore the aim of this study was to identify the factors affecting entrepreneurship in the Warmian-Masurian Voivodeship in 2014–2016, which determined the revenue autonomy of municipalities in the region. The analysis was conducted with the use of a multiple linear regression model. Revenue autonomy, which is measured by the proportion of a municipality's own-source revenues in total revenues, was the explained (dependent) variable. The initial group of explanatory (independent) variables consisted of 22 indicators linked with the operations of local businesses in the evaluated region.

The key determinants of the revenue autonomy of municipalities were: the percentage of commercial partnerships in the total number of companies in the private sector, the percentage of private-sector companies in the total number of companies, the percentage of industrial and construction companies in the total number of companies, the percentage of self-employed in the total number of companies in the private sector, the number of agricultural producers, livestock breeders and hunting companies per 1,000 residents, and the number of companies employing up to 9 people per 10,000 working-age residents.

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[1] "Voivodeship" (Polish *województwo*) is the highest-level administrative subdivision of Poland.

SAMODZIELNOŚĆ DOCHODOWA A PRZEDSIĘBIORCZOŚĆ W GMINACH WOJEWÓDZTWA WARMIŃSKO-MAZURSKIEGO

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S ł o w a k l u c z o w e: samodzielność dochodowa gmin, lokalna przedsiębiorczość, budżet gminy.

S t r e s z c z e n i e

Jednym z ważniejszych problemów prawidłowego funkcjonowania i wypełniania powierzonych zadań przez gminy w Polsce jest ich duża samodzielność dochodowa, która zależy m.in. od szeroko rozumianej przedsiębiorczości podejmowanej na ich terenie. W związku z tym celem artykułu była identyfikacja czynników związanych z przedsiębiorczością podejmowaną na terenie województwa warmińsko-mazurskiego w latach 2014–2016, determinujących samodzielność dochodową gmin tego województwa. Metodą badawczą była analiza regresji liniowej wielorakiej. Za zmienną objaśnianą przyjęto podstawowy miernik samodzielności dochodowej, jakim jest udział dochodów własnych gminy w dochodach ogółem, natomiast wstępną listę zmiennych objaśniających utworzyły 22 wskaźniki dotyczące różnych aspektów funkcjonowania podmiotów gospodarczych zlokalizowanych na terenie gmin badanego województwa.

Najważniejszymi determinantami kształtującymi samodzielność dochodową gmin okazały się: udział spółek handlowych w podmiotach prywatnych ogółem, udział podmiotów gospodarczych działających w sektorze prywatnym w podmiotach ogółem, udział podmiotów gospodarczych w grupie przemysł i budownictwo w podmiotach ogółem, udział osób fizycznych prowadzących działalność gospodarczą w podmiotach prywatnych ogółem, liczba podmiotów gospodarczych prowadzących działalność w dziale rolnictwo i zajmujących się uprawą rolną, chowem i hodowlą zwierząt oraz łowiectwem na 1000 mieszkańców gminy, liczba podmiotów gospodarczych zatrudniających od 0 do 9 osób na 10 tys. mieszkańców w wieku produkcyjnym.

Intruduction

Revenue autonomy is the ability of local government entities to generate budget revenues and implement autonomous tax policies (Kosek-Wojnar & Surówka, 2007, p. 78). Revenue autonomy is the key economic aspect of a local government's operations. Local governments with a limited ability to finance operations from independent sources of income are merely providers of administrative functions (Poniatowicz, 2014, p. 33, 34).

In periods of stagnant economic growth, the revenue autonomy of local governments decreases because the share of own revenues in total revenues declines whereas an increasingly important role is played by external transfers. This scenario was observed in local governments throughout Poland, in particular in large urban areas, in the first years after the global economic crisis

of 2008–2009 (Poniatowicz, 2014, p. 33). This study was conducted in the Warmian-Masurian Voivodeship which is one of the least economically developed Polish regions plagued by macroeconomic problems. The Warmian-Masurian Voivodeship is characterized by the lowest GDP per capita, the highest unemployment in the country, low levels of urbanization, low levels of revenue autonomy and an unfavorable structure of municipal budgets. According to the latest report of the Polish Agency for Enterprise Development, the Warmian-Masurian Voivodeship ranks last in Poland with regard to entrepreneurship (*Raport…*, 2017, p. 43).

Any attempts at improving a municipality's revenue autonomy should begin with an analysis of the measures that could be undertaken to stimulate local entrepreneurship in the Warmian-Masurian Voivodeship and enable municipal governments to better perform their responsibilities in the public sector. The first stage of the presented problem seems to be identification of these aspects of entrepreneurship undertaken in the area of a selected voivodeship, whose conscious stimulation may contribute to improving the economic situation of the entire region.

The aim of this study was to identify the factors affecting the revenue autonomy of municipalities in the Warmian-Masurian Voivodeship, which are linked with the operations and the structure of local businesses. The study was conducted based on the resources of the Local Data Bank of the Central Statistical Office (BDL GUS) for 2014–2016. The main limitation of the study was the scarcity of statistical data at the municipal level. The determinants of revenue autonomy in the analyzed municipalities and the strength of their relationships with the explained (dependent) variable were identified by multiple linear regression analysis based on the least squares method[2]. The results were verified statistically (Kufel, 2011) to guarantee that they meet the following assumptions (Welfe, 2014, p. 60-62; Stanisz, 2007, p. 33-35, 61-63; *Analiza regresji…*, 2009, p. 129, 130; Bhattarai, 2015, p. 12-14):

– the tested model is linear in its parameters (Ramsey RESET test);

– the number of observations n is greater than or equal to the number of estimated parameters;

– the parameters are not co-linear: none of the variables supplies the model with information that is provided by other variables (VIF is less than 10);

– the expected value of the random component is zero. Variables that were not included in the model do not significantly influence the mean value of Y;

– the random component is homoscedastic – all variables in the model have the same variance (White test);

– there is no autocorrelation in the random component (LM test);

– the random component has normal distribution (Doornik-Hansen test).

[2] This method and its modifications in the subject literature were commonly used in searching for determinants of various budgetary aspects of communes in Poland (eg. Smutek, 2012; Sekuła & Basińska, 2014; Poniatowicz, 2015) or equivalents of Polish municipalities in other countries (eg. Benito & Bastida, 2004, 2008; Delgado *et al.*, 2015; Smith & Benpah, 2017).

The above assumptions were tested at a significance level of p=0.05. Econometric calculations were performed in the GRETL v. 2017d-git program, and data were processed in Statistica v. 13 and Excel.

Revenue autonomy of the municipalities in the Warmian-Masurian Voivodeship

Local government entities, including municipal authorities, have the right to self-governance in various areas of activity. The Polish law, in particular Articles 163–169 of the Constitution of the Republic of Poland (Konstytucja Rzeczypospolitej Polskiej z 2 kwietnia 1997 r., DzU z 1997 r., nr 78, poz. 483), defines the extent to which public tasks can be performed independently by local governments. Local governments have the right to appoint constitutive organs and define their organizational structure. They have the right to perform public duties as their direct responsibility, levy and collect local taxes and charges, exercise rights of ownership and other property rights (Jagoda, 2014, p. 15).

The financial autonomy of local government entities is a particularly important consideration for the inhabitants of territorial units. It enables local governments to perform public tasks by making independent decisions regarding public expenses (Jagoda, 2014, p. 15, 16; Patrzałek, 2010, p. 68) and by planning and implementing their budgets. The aim of financial autonomy is to guarantee that local government entities generate the highest possible proportion of their revenues from local sources by stimulating local economic growth rather than from transfers of public funds from the central government (Heller & Farelnik, 2013, p. 84).

Revenue autonomy plays a particularly important role in the financial autonomy of municipalities. Self-reliant local governments have steady and reliable sources of income. Due to their revenue autonomy, municipalities can influence the structure and efficiency of income sources (Miemiec *et al.*, 2013, p. 55). Revenue autonomy applies particularly to own-source revenues generated in a municipality. Local sources of income provide local authorities with independence in decision making, they enable them to better meet the local community's needs and improve the quality of public services (Ślebodzka, 2013, p. 292). The proportion of own-source revenues in total revenues is the key indicator of a municipality's revenue autonomy (Głowicka-Wołoszyn & Wysocki, 2014, p. 35). This indicator is used to evaluate a municipality's financial performance because own-source revenues are the most stable item of the budget, which is controlled by the municipal government. According to the act on the revenues of local government entities (Ustawa z 13 listopada 2003 r. o dochodach jednostek samorządu terytorialnego, DzU z 2008 r., nr 157, poz. 1240), municipalities can generate the following types of own revenues: local taxes (property taxes,

agricultural taxes, vehicle taxes), local charges (stamp duty, local market charges, operating fees) and other proceeds (inheritance, donations, sale of municipal property).

The Warmian-Masurian Voivodeship has 116 municipalities which were characterized by relatively low levels of revenue autonomy in 2014–2016. The proportion of own-source revenues in total revenues was low at 40% on average in 2014 and 2015, and a further drop to 36.17% was reported in 2016. In the analyzed period, the results noted in individual municipalities deviated from the regional average by 10 to 11 percentage points. The highest levels of revenue autonomy in the studied region were observed in the municipality of Stawiguda, where the evaluated parameter reached 71.07% in 2014, 76.26% in 2015, and 64.89% in 2016. The lowest values of the analyzed indicator were determined in the municipality of Janowiec Kościelny at 15.93%, 14.87% and 15.15%, respectively. The municipalities in the discussed region were characterized by significant variations between the minimum and maximum values of the studied indicator. The highest difference was noted in 2015 at 61.39%, followed by 55.68% in 2014 and 49.74% in 2016. The basic statistical parameters describing the revenue autonomy of the evaluated municipalities are presented in Table 1. Only collective data were presented due to space constraints.

Table 1

Basic statistical measures describing the proportion of own-source revenues in total revenues in the municipalities of the Warmian-Masurian Voivodeship in 2014–2016

Parameter	2014	2015	2016
Arithmetic mean [%]	40.08	40.84	36.17
Standard deviation [% points]	10.93	10.94	9.56
Minimum value [%]	15.39	14.87	15.15
Maximum value [%]	71.07	76.26	64.89
Range [%]	55.68	61.39	49.74

Source: own elaboration based on *Wskaźniki do oceny…* (2017).

In the analyzed period, the average revenue autonomy of Polish municipalities was estimated at 52% (*Gospodarny samorząd 2017*, online), which indicates that the studied indicator was relatively low in the municipalities of the Warmian-Masurian Voivodeship. Transfers from the central government to municipalities cannot be completely eliminated; however, these funds should merely supplement local revenue sources, and not replace them (Poniatowicz, 2015, p. 258). Local governments should derive a minimum 70% of total revenues from own sources of income to maintain financial autonomy (Kalisiak-Mędelska, 2013, p. 118). The figures above suggest that the municipalities in the analyzed region were largely dependent on state transfers, which poses the greatest threat to their

revenue autonomy. According to the literature, the structure of transfers from the central government constitutes a specific and indirect impediment to revenue autonomy. Targeted subsidies from the state play a special role because they deprive local governments of autonomy in the process of allocating these funds. Targeted payments are made to attain strictly defined objectives, and they are distributed and accounted for based on a rigorous set of rules. In the Warmian-Masurian Voivodeship, targeted subsidies accounted for nearly 31% of total municipal revenues on average in the analyzed period (*Wskaźniki*…, 2017), which testifies to low levels of autonomous decision-making in local budgeting.

Determinants of revenue autonomy in the municipalities of the Warmian-Masurian Voivodeship in 2014–2016

Territorial units are characterized by differences in local conditions, including population (demographic data), economic growth, employment, political factors, environmental conditions, natural resources, the size and the location of local government entities. All of the above elements influence a municipality's financial status (Baptista *et al.*, 2008, p. 58; Filipiak, 2009, p. 19-28; Jastrzębska, 2009, p. 95-119; Wójtowicz, 2014, p. 104; Skowron, 2012, p. 81-84). Entrepreneurship, namely the economic activities conducted by businesses registered in a municipality, is one of the most important determinants of a local government's revenue autonomy. In addition to social factors, the number and structure of local businesses exert the greatest effect on the tax base, namely a municipality's revenue structure and, consequently, its revenue autonomy (cf. Brzozowska *et al.*, 2014, p. 46, 47; Żyżyński, 2009, p. 70; Gwodzicka-Piotrowska, 2012; Wołowiec & Reśko, 2009; Głowicka-Wołoszyn *et al.*, 2017, p. 76). Local entrepreneurs generate a substantial portion of a municipality's own-source revenues, and they are responsible for the part of income generated by virtue of the corporate income tax (CIT). By creating jobs and improving the situation in the local labor market, entrepreneurs also contribute to an increase in municipal revenues by virtue of the personal income tax (PIT). The capital invested by entrepreneurs in the local market also caters to the needs of the local community (Bończak-Kucharczyk *et al.*, 1998, p. 6).

In view of the above, attempts have been made to identify the determinants and trends relating to the revenue autonomy of municipalities in the the Warmian-Masurian Voivodeship. The analysis was conducted with the use of a multiple linear regression model. The explained (dependent) variable (Y) was the proportion of own-source revenues in the total revenues of municipalities in the Warmian-Masurian Voivodeship in 2014-2016. The initial group of explanatory (independent) variables was composed of the following indicators which were calculated based on the resources of BDL GUS for the analyzed period:

X_1 – number of new companies registered in the REGON database in a given year per 10,000 residents;
X_2 – number of companies registered in the REGON database per 10,000 residents;
X_3 – number of companies removed from the REGON database per 10,000 residents;
X_4 – percentage of deregistered companies in the total number of companies registered in the REGON database [%];
X_5 – percentage of newly registered companies in the creative industries in the total number of newly registered companies [%];
X_6 – number of companies per 10,000 working-age residents;
X_7 – percentage of agricultural producers, forestry, hunting and fisheries companies in the total number of companies [%];
X_8 – percentage of industrial and construction companies in the total number of companies [%];
X_9 – percentage of companies outside agriculture, forestry, hunting, fisheries, industry and construction in the total number of companies [%];
X_{10} – number of agricultural producers, animal breeders and hunting companies per 1,000 residents;
X_{11} – number of companies employing up to 9 people per 10,000 working-age residents;
X_{12} – number of companies employing 10 to 49 people per 10,000 working-age residents;
X_{13} – number of companies employing 50 to 249 people per 10,000 working-age residents;
X_{14} – number of companies employing more than 250 people per 10,000 working-age residents;
X_{15} – percentage of private-sector companies in the total number of companies [%];
X_{16} – percentage of self-employed in the total number of companies in the private sector [%];
X_{17} – percentage of commercial partnerships in the total number of companies in the private sector [%];
X_{18} – percentage of commercial partnerships with foreign capital involvement in the total number of companies in the private sector [%];
X_{19} – percentage of cooperatives in the total number of companies in the private sector [%];
X_{20} – percentage of foundations in the total number of companies in the private sector [%];
X_{21} – percentage of associations and social organizations in the total number of companies in the private sector [%];
X_{22} – percentage of public sector companies in the total number of companies [%].

The results of the analysis indicate that 64% of the variation in the revenue autonomy of the municipalities in the Warmian-Masurian Voivodeship was explained by the indicators relating to the level and structure of local entrepreneurship. Revenue autonomy was affected at 36% by other factors that were not included in this study. In the group of potential factors whose combined and individual effects significantly influenced the explained (dependent) variable, six factors were found to play the most important role (based on the results of Student's *t*-test analyzing the significance of the parameters and the F-test analyzing the combined significance of the parameters). Based on the coefficients of regression, the first factor was the percentage of commercial partnerships in the total number of companies in the private sector [%], X_{17}. The higher the number of commercial partnerships, the greater was the revenue autonomy of the investigated municipalities. The next factor was the percentage of private-sector companies in the total number of companies [%], X_{15}, and it was also positively correlated with revenue autonomy. The revenue autonomy of the investigated municipalities was negatively affected by the percentage of industrial and construction companies in the total number of companies [%], X_8. The municipalities with a higher proportion of businesses from the above sectors were characterized by lower levels of revenue autonomy. The percentage of self-employed in the total number of companies in the private sector [%], X_{16}, was positively correlated with a municipality's revenue autonomy. The number

Table 2

The results of multiple linear regression analysis of the proportions of own-source revenues in the total revenues of municipalities in the Warmian-Masurian Voivodeship in 2014-2016, and indicators of local entrepreneurship

Explanatory variables/ evaluation criteria	X_8	X_{10}	X_{11}	X_{15}	X_{16}	X_{17}
Coefficient of regression	–0.50	–0.09	0.01	0.65	0.34	1.07
P-value in Student's *t*-test	0.00	0.00	0.00	0.00	0.00	0.00
Indicator of collinearity – VIF	1.79	1.49	1.99	1.35	1.71	1.23
Combined significance of parameters	$F(6.341) = 101.22$ with p-value = $P(F(2.339) > 101.22) = 1.12e\text{-}72$					
Linearity test – Ramsey RESET test	$F(2.339) = 1.48$ with p-value = $P(F(2.339) > 1.48) = 0.23$					
Normal distribution of the random component – Doornik-Hansen test	Chi-squared(2) = 2.79 with p-value = 0.25					
Homogeneity of residual variance – White's test	LM = 32.08 with p-value = P(chi-squared (27)>32.08) = 0.23					
Autocorrelation – LM tests	LMF = 3.55 with p-value = $P(F(1.340) > 3.55) = 0.06$					
Coefficient of determination R^2	64.04%					

Source: own elaboration based on the results of the study.

of agricultural producers, animal breeders and hunting companies per 1,000 inhabitants, X_{10}, adversely impacted a municipality's revenue autonomy, but to a lesser extent than the previous factors. Revenue autonomy was least influenced by the number of companies employing up to 9 people per 10,000 working-age residents, X_{11}. This factor was positively correlated with revenue autonomy. The results of the analysis are presented in detail in Table 2.

Potential explanatory (independent) variables X_i, not listed in Table 2, were eliminated because they did not exert a significant effect on variable Y (X_1, X_3, X_4, X_5, X_{12}, X_{13}, X_{14}, X_{18}, X_{19}, X_{20}, X_{21}) or were removed from the set of explanatory variables due to collinearity problems (X_2, X_6, X_7, X_{11}, X_{22}) where VIF was higher than 10. The general multiple linear regression equation was written in the following form:

$$Y = -50.72 + 1.07X_{17} + 0.65X_{15} - 0.5X_8 + 0.34X_{16} - 0.09X_{10} + 0.01X_{11}.$$

The practical application of the above model may be its further application in economic forecasting or simulations of the explained variable. Thanks to this, the municipalities could properly and effectively modify their policy of development and promotion of entrepreneurship in order to improve income independence.

Conclusions

The results of this study point to low levels of revenue autonomy in the municipalities of the Warmian-Masurian Voivodeship. The level and structure of local entrepreneurship were the key internal factors that exerted the greatest effect on the revenue autonomy of the analyzed municipalities. Local businesses generate a very important category of budgetary revenues, namely local taxes and charges which are largely responsible for the municipalities' revenue autonomy and financial decision-making capacity. Regardless of external factors (such as macroeconomic factors), local taxes and charges can be stimulated and influenced by municipal governments. This group of income particularly includes those that generate economic entities located in the municipalities.

The identified determinants of municipal revenue autonomy in the Warmian--Masurian Voivodeship, associated with entrepreneurship, can be used to formulate several conclusions and recommendations relating to the local authorities' role in fostering a supportive environment for local business growth and, consequently, improving their financial decision-making capacity.

Stimulation of entrepreneurship should be the main goal of municipalities in the Warmian-Masurian Voivodeship on the road to achieving revenue autonomy. The proportion of commercial partnerships and sole proprietors in the local market should be increased. Microenterprises employing up to 9 people

should play an increasingly important role in the analyzed region. Agriculture is the predominant income-generating activity in the evaluated municipalities, and active measures are needed to stimulate the growth of entrepreneurship outside the farming sector. These goals are not easy to achieve, and they require a sufficiently long time-frame as well as dedicated tools. Municipal authorities can set new priorities in their economic policy and implement economic programs addressing those objectives. The tasks and competencies of local governments should be clearly defined to increase their operational transparency. Transparent decision-making is also required in the process of granting tax deductions and exemptions to guarantee that local businesses have equal access to fiscal privileges. The value of local investments and the sequence of investment projects should be governed by a set of transparent and fair criteria. Municipal authorities should also prudently choose debt instruments such as credits, loans and bond issues. Similar criteria should apply to municipal programs that co-finance local investments and provide support for local entrepreneurs.

The implementation of the above measures could contribute to an improvement in the municipalities' revenue autonomy. Financially independent municipalities are more effective in catering to the needs of local communities, which stimulates entrepreneurship. The above goals can be achieved in the long term provided that the relevant measures are implemented conscientiously, and that local authorities are not exposed to political or lobbying pressure.

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IDENTITY OF PLACE IN THE BRANDING OF SMALL AND MEDIUM-SIZED COMMUNES

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A b s t r a c t

The place brand is an extremely complex and multidimensional concept. Creation of a strong territorial brand is largely dependent on identifying aspects which define the attractiveness of a given place. As the literature on the subject and studies prepared by experts tend to devote a lot of attention to large urban centres, I decided to analyse how small and middle-sized local government units deal with the brand building process. The aim of the study was to determine the aspect of attractiveness that build identities of small and medium-sized communes (gminas), the dimensions of identities of such communes, and the typological classes of communes defined on the basis of these dimensions. Local authorities tend to perceive place brands primarily through the prism of key attributes of individual places. Natural attributes and attractions, geographical location, events, and sport facilities are the building blocks of attractiveness for small and middle-sized local government units. The key dimensions of the communes' identities are the aspects of their attractiveness in terms of settlement, tourism and economic activity. The conducted analysis allowed also to distinguish communes with strong and distinctive identities, communes whose identities are defined primarily by their offer dedicated to the residents, ones defined most strongly by their business and cultural offers, communes whose identity is not very clear and requires intervention, as well as communes with a high level of tourist attractiveness and good recreational offerings.

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TOŻSAMOŚĆ MIEJSCA W KONTEKŚCIE KSZTAŁTOWANIA MARKI MAŁYCH I ŚREDNICH GMIN

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S ł o w a k l u c z o w e: tożsamość miejsca, marka miejsca, siła marki miejsca.

A b s t r a k t

Marka miejsca jest konstruktem niezwykle złożonym i wielowymiarowym. Bardzo ważnym etapem kształtowania silnej marki terytorialnej jest identyfikacja obszarów atrakcyjności budujących tożsamość miejsca. W literaturze przedmiotu oraz opracowaniach eksperckich wiele uwagi poświęca się przede wszystkim dużym ośrodkom miejskim, dlatego zdecydowano się przyjrzeć, w jaki sposób z procesem budowania marki mierzą się małe i średnie jednostki samorządu terytorialnego. Celem badania było określenie: obszarów atrakcyjności budujących tożsamość małych i średnich gmin, wymiarów tożsamości gmin oraz klas typologicznych gmin ze względu na wymiary ich tożsamości. Władze lokalne postrzegają markę przede wszystkim przez pryzmat najważniejszych atrybutów miejsca. Atrakcyjność małych i średnich JST tworzą walory i atrakcje przyrodnicze, położenie geograficzne, wydarzenia i imprezy organizowane w gminie, infrastruktura sportowa. Główne wymiary tożsamości gmin to atrakcyjność osadnicza, turystyczna i gospodarcza. Analiza pozwoliła również wyróżnić: gminy o silnej i wyrazistej tożsamości, jednostki, których główne atrybuty tożsamości są związane z ofertą przeznaczoną dla mieszkańców gminy, których najsilniejszymi wyróżnikami tożsamości są elementy związane z ofertą dla biznesu i ofertą kulturalną, jednostki, których tożsamość jest mało wyrazista i wymaga interwencji oraz gminy o dużej atrakcyjności turystycznej i dobrej ofercie rekreacyjnej.

Introduction: theoretical background

The conceptualization and operationalization of research concerning territorial brands is not easy because it is difficult to define the conceptual scope of the term and its measurable attributes. The difficulties are connected with the following facts:

– there is no single universal definition of the territorial brand and no common agreement as to the components of this term;

– there exist a rich set of tools for measuring place brands, but the level of operationalization of the adopted indicators is low;

– there exist certain problems with research concerning identities and images of places.

Companies, communes and people all carry out activities related to building strong brands, but in each case the meaning of this concept is different. Different authors, depending on the field they represent, define the brand by emphasising different components, distinguishing features and functions. For economists,

a brand is one of the key competitive advantages of an enterprise, lawyers often focus on a brand as a trademark, linguists pay attention to the message that the brand expresses, tourism experts focus on branded tourism products, while geographers try to determine the role of branding in the management of a local government unit (LGU). The multitude of approaches translates into a number of brand concepts and measurement methods. The literature of the subject most often adopts the definition proposed by the American Marketing Association (*Marketing Definitions…*, 1960) according to which the brand is a name, term, design, symbol, or a combination of them, intended to identify the goods or services of one seller or group of sellers and to differentiate them from competitors.

This definition is often criticised for being too manufacturer-oriented, too focused on the brand's owner, and by putting too much of an emphasis on the brand's visual aspects (Arnold, 1992; Crainer, 1995). Some of the researchers decided to adopt a different definition proposed by Bennett (1988) who claimed that a brand is a name, term, design, symbol or any other feature that identifies one seller's good or service as distinct from those of other sellers. According to Wood (2000), the phrase "any other feature" is of particular importance, as it expands the definition of the brand to include non-material elements, that is, the brand's image.

Some authors point to a much broader understanding of the brand, defining it as an identifiable product, service, person or place, augmented in such a way that the buyer or user perceives relevant, unique, sustainable added values which match their needs most closely (de Chernatony, 2003).

The biggest challenge faced by researchers is figuring out how to translate the experience related to the research of brands of consumer goods into the context of territorial marketing. Despite the growing scientific interest in the branding of places, the idea of creating and managing territorial brands in a manner similar to the one used for brands of goods or services is still controversial. Kavaratzis and Ashworth (2005), who treat places as extended products, are some of the proponents of this approach. Researches of urban spaces are more sceptical, emphasising that brands of cities are especially complex and multidimensional and that being able to identify the distinguishing features of the place identity is of utmost importance in the branding process (Dudek-Mańkowska & Balkiewicz-Żerek, 2015). It is all connected to the specific character of the place brand which is determined by the complexity of the territorial product, its lack of owner and multiple external factors influencing its identity and image. The territorial brand combines material elements that make up the reality of the city, such as its technical infrastructure, architecture, and tourism facilities, with more elusive aspects, such as values and beliefs (Korczyńska, 2006).

The identity and image of a given place are the key components of its brand. The place identity consists of a set of attributes determining the way the place is perceived by society and creating a specific context for the process of communication with society (Wiktor, 2001). It is a set of key attributes

of a given place – its attractive and competitive aspects. The components of the place identity include historical events, customs, monuments, local products, as well as its prominent inhabitants, or even animals and plants which are strongly associated with the area.

The perception of the place identity becomes the basis for the creation of its specific image, which is understood as a set of subjective feelings (affective components of the image) and opinions (cognitive components of the image) of an individual, and relationships between those elements which arose as a result of the inflow of information from various sources (Dudek-Mańkowska, 2011). A distinctive identity of a place has a great impact on the perception of that place (Stanowicka-Traczyk, 2008).

Operationalization of the above-described terms and selection of research methods and techniques are another challenge related to conducting research on the place brand. Any research concerning any place identity consists foremost of an evaluation of the place's current offer and its market position. The most frequently used research methods include: desk research, questionnaire surveys, focus studies, in-depth interviews, as well as content analysis of promotional materials and the results of previous research. Any research on the place's image involves attempts to determine how the given place is perceived by particular groups of recipients (internal and external), with the help of such tools as questionnaire surveys, focus studies, in-depth interviews, and analyses of the content of promotional materials.

Methods for measuring territorial brands are largely taken from the methodology for evaluating commercial brands, with both the identity of the place and its perception being evaluated. An overview of the most important models of brand measurement reveals how researchers and practitioners understand the concept of identity of place and how it can be evaluated.

One of the best-known models for measuring a city's brand is the city brand hexagon developed by Anholt (2006). According to the author, cities focus on brand-building activities in six different dimensions: the presence, the people, the basic prerequisite amenities, the pulse of the city and the potential. Based on this methodology, the City Brands Index™ (CBI) ranking, covering the world's 50 largest cities, is issued every year.

In the city brand study methodology developed by Anholt (2006), individual elements of a place identity are analysed. In contrast, in the territorial brand evaluation methodology developed by the Saffron company, analysis covers not only what the place has to offer, but also the strength of its brand. Saffron's European City Brand Barometer evaluates cities in two dimensions: the first is City Asset Strength, while the second is City Brand Strength. To evaluate the city in each of these dimensions, a proprietary set of indicators is used, with indicator values being determined using questionnaire survey data, qualitative desk research, and expert opinion and experience.

The Bloom Consulting company also produces country, region and city rankings using a proprietary methodology called "Bloom Consulting's CRC Brand Wheel", which assumes that a location's brand has six dimensions, i.e. Attraction of Investment; Attraction of Tourism; Attraction of Talent; Increase in Pride; Improvement of Public Diplomacy; and Increase in Exports. A specific target group is assigned to each of the dimensions (respectively: investors, tourists, employees, residents, public opinion and companies).

The process of building a strong brand for a place should therefore begin with identifying the areas of attractiveness that constitute its identity. The literature on the subject and expert studies devote a lot of attention to large urban centres, which on the one hand are very complex territorial megaproducts, directing their offer to many different recipient groups, and on the other hand have financial opportunities to include external experts in the branding process and apply extensive marketing tools. It is worth considering how the small and medium-sized local government units deal with the brand building process. This article focuses on presenting the results of an analysis of aspects of attractiveness of small and medium-sized communes as the key distinguishing factors that build their identities. The aim of this analysis is to determine:

– the aspects of attractiveness that build the identities of small and medium-sized communes;

– metafeatures (dimensions) of identities of such communes;

– basic typological classes of communes defined on the basis of these dimensions.

Research methodology

The results of a survey conducted on a sample of 221 small and medium-sized communes in Poland constituted the basic source of data used for the study. In the Polish geographic literature, the concept of a small and a medium-sized settlement is not unambiguously defined. In most cases, small settlements are taken to be those of 20,000 or fewer inhabitants, while medium units range from 20,000 to 100,000 residents. The upper limit of this division is particularly controversial – according to some researchers, units exceeding as little as 50,000 are distinct from small and medium centres (Runge, 2012). In this study, it was decided to take the value of 50,000 inhabitants as the upper threshold for small and medium-sized communes. This statistical criterion has been used, among others, by Czarnecki (1965), Brol *et al*. (1990) and Bagiński (1988).

The survey was addressed directly to people responsible for conducting and managing marketing activities in communes. The survey was conducted between July and September of 2015 using postal surveys, and supplemented by computer-assisted web interviews. Communes of fewer than 50,000 inhabitants

took part in the survey, of which, rural communes accounted for 51% of surveyed settlements, while towns accounted for 29%. Small communes, i.e. those inhabited by 20,000 persons and fewer, accounted for 65%.

The identity of the place is understood to be the core or heart of its brand (Dudek-Mańkowska & Balkiewicz-Żerek, 2015); therefore, the analysis took into account various elements of the structure of this identity. On the basis of the definition constructed by Girard (1997), it was assumed that the place identity is determined by the following elements and their variables: organic elements (e.g. place legacy, natural conditions), economic elements (e.g. offers for businesses, and local products), geographical aspects (location, functions) and symbolic elements (architecture, heritage). The discussed territorial brand measurement methods also suggested creating a catalogue of elements defining a town's identity. It was decided that these elements reflect well the genotype of the place brand. The analysed communes were characterised with the help of a set of 13 selected variables. An analysis of the main components was used to determine the basic dimensions of the communes' identities, while a cluster analysis was used to determine typological classes of the communes.

Metafeatures of the commune identity

The conducted study demonstrated that the authorities of small and medium-sized communes are aware of the importance of a strong brand for the development of a local government unit. The communes' awareness of their own brands was also analysed. For local authorities, brands are made of the key attributes of the relevant places. The respondents claimed that they associate the brand foremost with elements of their communes' identities, and only 13% of the respondents associate this concept with the perception and valorisation of the place's offer. It may be related to the fact that smaller local government units are less involved in conducting marketing activities. It is also important information regarding the approach of local authorities to branding in general. The brand is on the one hand identified with the specific attributes of a given place, such as its heritage, attractive location, landscapes or tourism, and, on the other hand, with certain intangible elements associated with the high-quality offer of the place, its reputation and prestige.

Most of the respondents perceived the brand they represented as strong (53.2%). The perceived power of the brand increases along with the size of the commune – the brands of communes inhabited by 20–50 thousand residents obtained the highest results in this category (33% of respondents rated the brand as strong), while the brands of communes inhabited by less than 5,000 people received the lowest results (21%). The perceived power of the commune's brand and its legal status were also linked. The brands were described as strong more

often by representatives of authorities from urban communes than by representatives of authorities from rural and urban-rural communes (respectively: 14%, 4%, and 0%).

Employees from commune offices who are responsible for the promotion of their communes were asked to assess aspects of attractiveness which build their communes' identities (Fig. 1). The opinions they provided indicate that attractiveness of small and middle-sized local government units is based foremost on their natural assets and attractions, geographical locations, events organised in the commune, as well as available sport facilities. It might be surprising that safety and order in the commune were ranked higher than its historical heritage, and tourist attributes and attractions, but it may be associated with functions performed by smaller government units. Elements related to the local economy, i.e. local products, companies and the offerings for business, were perceived as the least important.

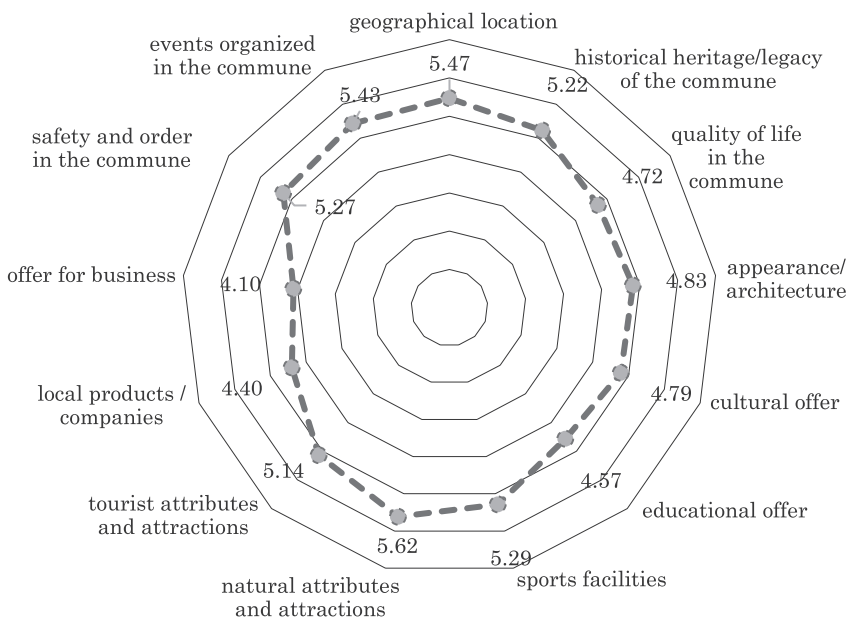

Fig. 1. Evaluation of the aspects of attractiveness of the commune's brand in the opinion of people responsible for the promotion of the commune (1–7 scale)

Source: own study.

Principal component analysis was used to determine the basic dimensions of the communes' identities. The first three main components were responsible for 63.1% of the total variance of output variables, and their significance was not highly differentiated in the context of shaping the attractiveness of commune brands (from 19.2% to 22.3%).

The first component was responsible for 22.3% of the variability of the set of original variables. It reflected the commune's attractiveness in the context of settlement, as it was most closely correlated with the following attributes: quality of life, safety and order, educational offer and social infrastructure. This dimension reflected the attributes of communes which determine the comfort of life of the commune's inhabitants.

The highest positive values were recorded for the first component in the communes which belong to the richest local governments in the country *(Wskaźniki dochodów podatkowych…*, 2018), such as Grodzisk Mazowiecki (2.2), Jerzmanowa (2.2), Suszec (2.0) and Stara Biała (2.0). Such communes (including their revenues and local job market) are influenced by the fact that they are located close to a large industrial plant or several significant investors.

The highest negative values were recorded for the first component in a varied set of communes, differing in their size and type. This group included, among others, the rural commune of Banie Mazurskie (–2.22), the urban-rural Szadek commune (–2.6) and the town of Krosno (–2.8). People responsible for the promotion of these communes have assigned particularly low marks to the elements of their communes' offer related to the quality of life.

The next five aspects which shape the identities of communes were attributes of their tourist offers. The second component proved to be responsible for 21.6% of the variability of the set of original variables. The strongest attributes which correlated with the second component were: tourist attributes and attractions,

Table 1

Main components of identities of small and middle-sized communes

Aspects of attractiveness of the commune (variables)	Component 1	Component 2	Component 3
	component and variable correlation coefficients		
Geographical location	0.342	0.592	0.075
Historical heritage/legacy of the commune	0.060	0.672	0.199
Quality of life in the commune	0.831	0.151	0.130
Appearance/architecture	0.455	0.559	0.155
Cultural offer	0.322	0.382	0.667
Educational offer	0.710	0.128	0.322
Sports facilities	0.651	0.079	0.356
Natural attributes and attractions	0.101	0.825	0.102
Tourist attributes and attractions	0.013	0.827	0.301
Local products / companies	0.199	0.209	0.757
Offer for business	0.446	0.037	0.665
Safety and order in the commune	0.747	0.179	0.218
Events organized in the commune	0.197	0.254	0.753

Source: own study.

natural attributes and attractions, historical heritage, geographical location and appearance/architecture, that is – the elements related to the commune's attractiveness in the context of tourism or recreational offer.

The LGUs which received the highest positive values for this component included both rural communes with populations of up to 10,000 people, such as Zaręby Kościelne (1.8), Kroczyce (1.7), Radziejowice (1.6), and Stegna (1.5), urban-rural communes with populations between 10,000 and 20,000, such as Iłża (2.1), Żerków (1.8), and towns with over 10,000 inhabitants, such as Braniewo (1.5) and Sandomierz (1.7). All of them constitute communes known for their attractiveness for tourism, mostly due to their natural attributes. It is worth noting that high values were also recorded for the second component in the case of communes known for performing tourist functions, i.e. Hel (1.3), Karpacz (1.2) and Wieliszew (1.1).

The lowest values were recorded for the component in the case of middle-sized urban communes, that is, Świętochłowice (–2.2 m), Ostrowiec Świętokrzyski (–2.2 m) and Zambrów (–2.6 m), which are rather unlikely to be associated with a rich tourism offer.

The third component, referred to as economic attractiveness, was responsible for 19.2% of the variability of the set of original variables. The following attributes of communes were most strongly correlated with the third component: local products and companies, events organized in the commune, cultural offer and offer for business. This component is bipolar in its character – on the one hand, it includes elements contributing to the commune's attractiveness for investment, on the other hand, it focused on attributes related to culture. The co-existence of economic characteristics and features describing cultural activity may indicate that there is a strong link between the commune's financial situation and the frequency or quality of cultural events it organises.

The highest positive values of the component were recorded in the towns of: Lelów (2.3), Dzierżoniów (2.1) and Leżajsk (1.6). The communes which received high positive values in the context of this component also included towns associated with industry (e.g. Jasło, Puławy, Radzionków, Ozorków) and local products (Zambrów, Łowicz).

Local government units which received the lowest values for the component defined as economic attractiveness represented small rural communes, i.e. Jastrzębia (–2.5), Grodziec (–2.8), Suszec (–2.9) and Parysów (–3.1); as well as the town of Zielonka (–3.1), which is located on the outskirts of Warsaw. These are communes which, in the opinion of people responsible for their promotion, tend to focus on providing their residents with a high quality of life.

The analysis of the main components allowed the determination of the main dimensions of the identity of small and medium-sized communes and their relative importance in the eyes of employees of commune offices responsible for the promotion of their communes. The average number of points assigned by the respondents to the elements most strongly correlated with the given

identity component was calculated in order to determine the average (positive or negative) ratings for each of the chosen identity components. The average ratings of the attributes which are most strongly correlated with the components show that the attractiveness-related components of commune brands are only mildly distinctive, as their values range between 4.68 and 5.26 (4 corresponds to the average). Particular attention was paid to the settlement attractiveness (component 1), which was assessed rather positively (4.96). Tourist attractiveness was rated the highest (component 2) – 5.26. The third component was ranked as the lowest – the average: 4.68.

Typological classes of communes

The identified metafeatures of communes' identities were used for the classification of LGUs according to the dimensions of their identities. Hierarchical cluster analysis was used, assuming the square of the Euclidean distance as a measure of similarity and applying the Ward linkage method. 5 typological classes were identified. They differ in the average values of individual components (Tab. 2). The number of communes in a class varies from 31 (class 4) to 54 (class 5) (Fig. 2). As the highest average value of the component in class 5 amounted to 0.755, the value was assumed to be the criterion for describing the content of typological classes of component values, assuming a value higher or equal to + 0.755 or lower or equal to –0.755. Such values were recorded for one component in the case of two classes (class 1 and 5) and two components in classes 2, 3 and 4.

Table 2

Classification of communes according to the metafeatures of their identities

Typological classes of communes	Component 1	Component 2	Component 3
Class 1	0.724	0.707	**0.795**
Class 2	**0.936**	–0.101	**–1.086**
Class 3	0.301	**–0.756**	**0.757**
Class 4	**–1.133**	**–1.130**	–0.347
Class 5	**–0.755**	0.729	–0.109

Source: own study.

As previously noted, the commune classes differ due to differences in assessments of the individual attributes of given LGUs. Communes in class 1 are distinguished by their strong and attractive identities and their key attributes are linked to economic attractiveness, however, they are also characterized by a high quality of life and a high level of tourist attractiveness (high positive values for all components). The local government units which belong to this class are

recognizable, have already established brands in the public awareness, and are known either due to their tourist offer or local products, e.g. Karpacz, Kudowa-Zdrój, Puławy, Wejherowo, Darłowo, Koszalin, and Krasnystaw. This class is made of predominantly urban communes (towns) – 43%. People responsible for the promotion of the vast majority of class 1 communes assessed the power of the brands of their communes as strong or very strong (77%).

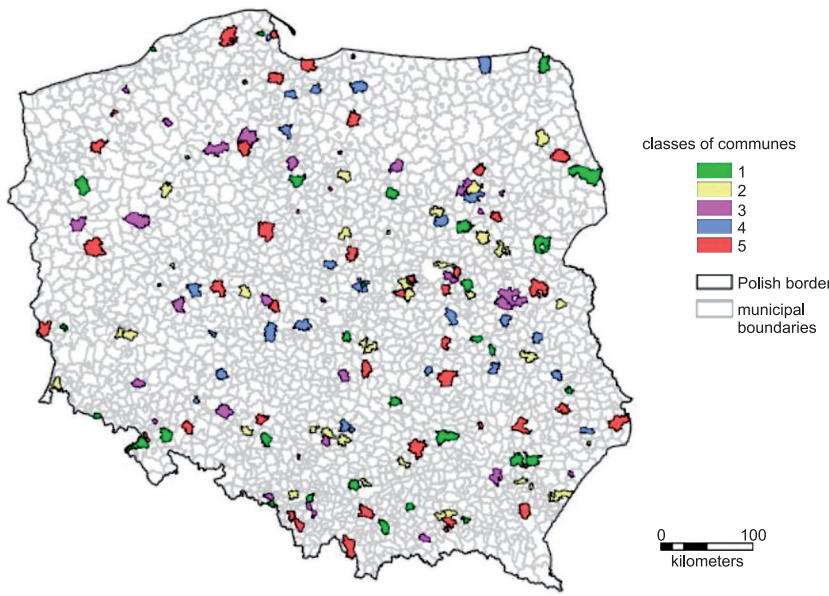

Fig. 2. The distribution of typological classes of communes according to the dimensions of their identities

Source: own study.

The communes whose key attributes of identities are associated with the offer dedicated to residents are primarily LGUs located in the vicinity of larger urban centres, such as Ząbki, Zielonka, Grodzisk Mazowiecki, Stara Biała (located near Płock) or Puszczykowo (located in Poznań poviat) (class 2). In the case of communes included in this class, the power of their brands was assessed by half of the respondents as being strong and by the other half as being poor.

Another group is made up of communes whose strongest distinguishing features are elements related to their offers for business, as well as cultural offers (class 3). This class includes such towns as Ostrów Mazowiecka, Dzierżoniów, Ozorków, Zambrów, and, less frequently, also rural communes. The power of brands of the communes which belong to this class has been positively assessed (65%).

The communes grouped in class 4 have identities which are perceived as fairly unattractive. According to the opinions of people responsible for promotion, these

communes are characterised by a poor quality of life, poor tourist offerings and a rather uninspiring economic offer. The power of brands of the communes included in class 4 was rated as poor or very poor (64%). This class included mainly rural communes (61%) and mostly little-known units, such as Błaszki, Trawniki, and Subkowy, but it was also made up of such places as Łowicz, Krosno and Rumia, i.e. communes associated with local enterprises, products or tourist attractions. In the case of LGUs included in this class, it is recommended to define the values of identities of these places and to display them in the image message.

Class 5 brings together communes whose representatives value highly the tourist attractiveness of their respective local government units. This group included Hel, Stegna, Iłża, and Sandomierz. In the case of some of the class 5 communes, the key elements of their identity are geographical location, heritage or natural attributes, and thus elements of the offer related to the way the residents of said places or neighbouring areas spend their free time (e.g. Dębe Wielkie, Gąbin). The power of most brands of the class 5 communes was assessed positively (59%), however, every third respondent perceived the brand of the commune he or she represented as weak.

Summary

Studies focusing on place identities employ many varied research methods and tools. This article discusses the results of a survey conducted among people responsible for the promotion of communes, so it constitutes part of the studies on the self-assessment of places in terms of their brands. The applied approach allows a definition to be made for the strongest and most distinctive aspects of communes' identities. Subsequently, this defines the identity profiles of individual communes.

The conducted analysis indicates that local authorities tend to perceive the brand primarily through the prism of key attributes of given places. For small and medium-sized communes, the brand of a given place is understood as its heritage, characteristics, quality, attractions, and good name and tradition. The territorial brand is much less often associated with such terms as the place's image, high level of recognisability, and good ranking. Natural attributes and attractions, geographical location, events, and sport facilities are the building blocks of the attractiveness of small and middle-sized local government units. Local products and companies, as well as offers for business are in comparison relatively rarely considered to be the key attributes of any such communes.

The conducted analysis proved that that the aspects of place identity which are often indicated in the literature on the subject (cf. Dudek-Mańkowska & Balkiewicz-Żerek, 2015), such as the place's attractiveness for settlement,

tourism and economic activity, are still useful. The identities of small and medium-sized communes are very diverse, as evidenced by weak representation of the total volatility by the first metafeature – only 22%, and all three – 63%. It is also confirmed by the complex hierarchical classification of communes, which allowed the distinction between 5 typological classes of communes divided on the basis of the dimensions of their respective place identities.

The people responsible for the promotion of small and medium-sized communes paid special attention to the aspect of identity dedicated to residents of the analysed places, and this component was assigned a good rating. Elements related to tourist offerings constituted another important component of the brand identity. The analysis showed that it was ranked very highly. Respondents were less positive when assessing the features linked to the economic aspects which turned out to constitute the least important component of communes' identities.

The hierarchical cluster analysis also allowed to distinguish communes with strong and distinctive identities (class 1), communes for which the defining attributes of their identities are linked to their offer dedicated to the residents (class 2), ones defined most strongly by their business-related and cultural offers (class 3), communes whose identity is not very clear and requires intervention (class 4), as well as communes with a high level of tourist attractiveness and good recreational offerings (class 5).

It was established that there is a dependency between the typological class to which a given commune belongs, its legal status, and the assessed power of the relevant commune brand. The power of the brand was assessed as the highest by the authorities of the communes belonging to class 1, i.e. the group of communes with distinctive identities. Towns are most numerous in class 1. The power of the brands of the communes included in class 4 was rated as poor or very poor. The class is made up primarily of rural communes. It can be concluded that a strong and distinctive identity translates into a high level of the place brand power, as in the case of small and medium-sized communes, the first stage of branding, that is, the identification of aspects of attractiveness which build their identities, plays a very important role in the process of shaping the territorial brand. Due to organizational and financial possibilities, local governments assign much less importance to promotional activities.

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ENTREPRENEURSHIP OF SMALL AND MEDIUM-SIZED ENTERPRISES IN POLAND IN THE CONTEXT OF THE REGIONS AND INTERNATIONAL ACTIVITY

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K e y w o r d s: entrepreneurship, internationalization, SMS, region.

A b s t r a c t

The main objective of this study was to identify the state of entrepreneurship of small and medium-sized enterprises in Poland in the context of individual regions and to try to identify the relationship between entrepreneurship and international activity, with particular focus on foreign direct investment. This goal was also chosen to inspire more researchers to fill the research gap in this respect. To achieve this goal, research was carried out, consisting of comparative analyses of existing official reports and documents regarding the state of entrepreneurship and internationalization, which would then show the activity of enterprises in relation to their revenues, investment expenditures and their internationalization. It should be mentioned that there are no compact, uniform studies regarding the relationship between entrepreneurship and internationalization of activities broken down into individual voivodships. It is definitely a research gap. For the purpose of this study, it was necessary to explain the fact that the author identified the international activity of enterprises with their internationalization and used this nomenclature interchangeably in this study. The author understands internationalization to be every activity of enterprise in relation to their various forms: from sporadic export and import contacts in an indirect way (i.e. through foreign intermediaries), to direct trade activities (direct export and import), cooperative contacts, strategic alliances and foreign direct investments (FDI). The study is not about showing what forms dominate in individual regions, but what the state of entrepreneurship is there, evaluated through the prism of such indicators as revenues per company from the SME sector in PLN million, investment outlays in PLN thousands and the so-called Synthetic indicator (WS). This action was performed to bring the following results: a comparison of the entrepreneurship of small and medium enterprises in Poland in relation to their regionalization and to draw attention to the relationship between the state of entrepreneurship and the state of internationalization.

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PRZEDSIĘBIORCZOŚĆ MAŁYCH I ŚREDNICH PRZEDSIĘBIORSTW W POLSCE W KONTEKŚCIE REGIONÓW I AKTYWNOŚCI MIĘDZYNARODOWEJ

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Słowa kluczowe: przedsiębiorczość, internacjonalizacja, małe i średnie przedsiębiorstwa, region.

Abstrakt

Zasadniczym celem opracowania jest zidentyfikowanie stanu przedsiębiorczości polskich firm z sektora małych i średnich w kontekście poszczególnych regionów oraz próba zidentyfikowania związku między przedsiębiorczością a aktywnością o charakterze międzynarodowym. Do zrealizowania celu przeprowadzono badania, polegające na analizach porównawczych istniejących oficjalnych raportów i dokumentów dotyczących stanu przedsiębiorczości i internacjonalizacji, co ma pozwolić na pokazanie aktywności przedsiębiorstw w związku z osiąganymi przez nie przychodami i nakładami na inwestycje oraz ich internacjonalizacji. Nadmienić należy, że nie ma zwartych, jednolitych opracowań dotyczących związku przedsiębiorczości z internacjonalizacją działalności w podziale na poszczególne województwa. Jest to z pewnością luka badawcza. Do zrealizowania celu autorka utożsamia międzynarodową aktywność przedsiębiorstw z ich internacjonalizacją i nazewnictwem tym w opracowaniu posługuje się zamiennie. Internacjonalizację zaś rozumie jako każdą aktywność przedsiębiorstw w związku z ich zróżnicowanymi formami: od sporadycznych kontaktów eksportowych i importowych pośrednich (czyli przez zagranicznych pośredników), po bezpośrednie działania handlowe (eksport i import pośredni), kontakty kooperacyjne, alianse strategiczne i bezpośrednie inwestycje zagraniczne (BIZ). W opracowaniu nie chodzi o wykazanie, jakie formy dominują w poszczególnych regionach, ale jaki jest stan przedsiębiorczości ocenianej przez pryzmat takich wskaźników, jak: przychody na firmę z sektora MSP w mln PLN, nakłady na inwestycje w tys. PLN oraz tzw. wskaźnik syntetyczny (WS). Takie działanie ma przynieść następujące rezultaty: porównanie przedsiębiorczości małych i średnich przedsiębiorstw w Polsce w związku z ich regionalizacją oraz zwrócenie uwagi na związek stanu przedsiębiorczości ze stanem internacjonalizacji.

Introduction

In recent years, the role of entrepreneurship in companies and their international activity has been growing. The characteristics of owners and managers, such as enthusiasm, charisma, and risk-taking abilities are gaining in importance (Kaczmarek, 2013, p. 192). The pace of change is connected with the continuous expansion of competences, especially those related to entrepreneurship and the ability to take a responsible risk. Despite barely twenty years of the past related to the conditions of running a business in Poland, a marked increase in the international activity of Polish enterprises has been noted. Small and medium-sized enterprises, which form the backbone of the Polish economy, play an unwavering role in this activity. The sector of small and medium enterprises fulfills very

important functions that positively affect a serious chance to increase employment and international activity (internationalization) as well as the effective competition of the Polish economy on the European market and global markets (*Przedsiębiorczość: szansą na sukces*…, 2003, p. 235). At the same time, small and medium-sized enterprises face numerous barriers to their development, which in individual regions leads to restrictions on their functioning, and sometimes to collapse, which also affects the negative development of the entire economy. Internationalization is often a response to the lack of opportunities to develop in a given country's market or in a given region, and the multiplication of barriers is often an incentive to look for opportunities beyond the borders of one's own country. More and more enterprises are moving their business operations directly or indirectly out of their home country (Glinkowska & Kaczmarek, 2016a, p. 11-15). This article was inspired by self-conducted research performed in connection with the internationalization of Polish enterprises in 2013–2017. The results of the obtained research gave rise to scientific questions, whether the entrepreneurship of business owners and their managers influence the growth of international activity and whether there is an increase in the entrepreneurship of regions and an increase or decrease in the activity of enterprises from the SME sector on foreign markets.

The aim of the study was to identify the state of entrepreneurship of small and medium enterprises in individual voivodships in Poland and to connect it with their international activity in an attempt to draw conclusions about the relationship between regional entrepreneurship and international activity in individual regions. It seems to be worthwhile here to draw attention again to the importance of small and medium-sized enterprises for the Polish economy.

Description of the research methodology

Seeking answers to these questions, the author decided to explore the reports related to entrepreneurship in individual regions of Poland and to the international activity of businesses. For the elaboration of the study, analysis of the existing official documentation was carried out, including PARP Reports: Desk research report – internationalization of enterprises, Report on the state of the small and medium enterprises sector in Poland, and Regional and international reports on the websites of the Central Statistical Office in Poland. The literature on the subject was also analyzed: retrospectively and currently. A critical comparative analysis was made. The results of the research obtained were also analyzed from entrepreneurs, representatives of the local government and the government in Ukraine in the Luhansk, Kiev and Kharkov regions, which was carried out personally in Ukraine in 2013–2017. Surveys and interviews were conducted there. The research concerned the internationalization of Polish and Ukrainian enterprises. Among the research problems

were those that concerned the characteristics of contemporary entrepreneurs and managers and their relationship with the development of enterprises, while seeking opportunities outside the market of their own country. Moreover, the reasons for internationalization and barriers in this process were also examined. The research is of a qualitative character.

The sector of small and medium-sized enterprises (SMEs) in the Polish economy and its significance

The SME sector in Poland, as well as in all economically advanced countries, plays an important role in the economy. It is an important source of income for the state budget (and thus for the budget of individual regions), it also participates in the creation of gross domestic product (GDP), contributes to the creation of jobs and to creating social and functional changes in the region (voivodship, municipality, city). It also has a significant impact on the innovativeness of the economy (Targalski, 2003, p. 12). Small and medium enterprises are flexible in terms of structure and costs, which means they can compete with large enterprises in terms of speed of reaction to market volatility; owners' motivation to act; exploiting market opportunities by entrepreneurial managers; rationality of resource use, the rationality of information flow within the company; ease of entering into cooperative arrangements, as well as the use of privileged conditions to obtain funds from specially launched sources for the support of the development of regional and local economies (*Zarządzanie małym i średnim przedsiębiorstwem…*, 2002, p. 20, 21). B. Onak-Szczepanik is of the opinion that the region in which entities from the small and medium-sized sector prevail is more resistant to economic fluctuations and any "disturbances" (*Nierówności społeczne a wzrost gospodarczy…*, 2007, p. 613-626). In the activities of small and medium enterprises, the role of their international activity increases, especially in terms of forms such as exports and imports. The share of export activity compared to imports has been clearly growing for a number of years, however, it should be mentioned that import activity over export activity still prevails, which is due to the higher profitability of importing over exporting. However, for the first time in the history of the market economy, the statistics contained on the websites of the Central Statistical Office for 2013 noted an equally balanced level of value of both forms (Główny Urząd Statystyczny, 2018). Every form of international activity is important because it directly or indirectly influences the attraction of new technologies, new investments, ideas, revenues, innovative products and services, as well as improving their quality. Regardless of the applied form of regional and international activity, the entrepreneurship of business owners and managers appears to be the most important. It is thanks to entrepreneurship that it is possible to increase the activity of enterprises, which will translate into the development of individual regions and, consequently, the development of the economy in Poland.

Entrepreneurship – essence

The Entrepreneurship Report, prepared by the European Commission, states that the "entrepreneur's initiative is a key condition for the development (…), innovation and creation of new jobs" (*Raport o przedsiębiorczości*, 2004, p. 32). The concept of entrepreneurship and the entrepreneur was introduced to the literature around 1800 by the French economist J.B. Say who bluntly defined the entrepreneur as the one who "transfers economic resources from the area of lower to the area of higher productivity and higher yield" (Drucker, 1992, p. 30). One of the most accurate (in the author's opinion) expressions for the analyzed terms: entrepreneur and entrepreneurship were proposed by R. Cantillon – the entrepreneur, according to him, is a person who looks for opportunities and uses them, and entrepreneurship is a relationship with uncertainty and risk (Gruszecki, 1994, p. 32, 33). Similarly, entrepreneurship is treated by R.W. Griffin, who stresses that it is a process of doing business and taking risks (Griffin, 2009, p. 730). Over the years, many definitions have emerged defining the entrepreneur and entrepreneurship. Most of them stress resourcefulness and charisma as characteristics of these concepts. According to the *New Dictionary of Polish Language* (*Nowy słownik języka polskiego*) entrepreneurship means ingenuity, initiative and resourcefulness (*Nowy słownik języka polskiego*, 2003, p. 769).

T. Listwan associates entrepreneurship with initiating projects, creative problem solving, taking advantage of opportunities, taking risks, and adapting to environmental conditions (*Kapitał ludzki a kształtowanie przedsiębiorczości*, 2004, p. 201). A.K. Kozminski, on the other hand, believes that entrepreneurship enables the full use of resources (especially intellectual), thanks to which the company can quickly and flexibly react to a change in the market situation, avoid defeat and blur the borders between the organization and its surroundings (Koźmiński, 2004, p. 155-156). Entrepreneurship is an indispensable element of the modern economy, allowing for the search for opportunities in the national and international environment. D.B. Audretsch and M. Keilbach (2004, p. 605-616) underline the importance of the flow of knowledge in entrepreneurial behaviors that may lead to the region's development. The influence of entrepreneurship on regional development has also been confirmed by:

– P.D. Reynolds (1994, p. 429-442) who on the basis of research covering 382 regions of the USA for the period 1986-1988 stated that the growth of entrepreneurship is accompanied by a greater degree of regional development;

– P. Braunerhjelm and B. Borgman (2004, p. 929-947) based on data from 70 Swedish regions for the 1975-1999 research period;

– B. Ashcroft and J.H. Love (1996, p. 482-500) based on data on 64 regions of Great Britain in the eighties.

International activity – essence

The international activity of enterprises is often described as internationalization, globalization or foreign expansion. It is a term often found in the contemporary literature on the subject of business operations. As a process, it is considered at many levels: the world, countries, regions or individual enterprises (Glinkowska & Kaczmarek, 2016b, p. 12). The simplest definitions treat it as any economic activity undertaken by an enterprise abroad (Rymarczyk, 2004, p. 19), the degree or level of involvement of the company/sector in international operations (Johanson & Vahlne, 1977, p. 26; Przybylska, 2005, p. 73) or as a process involving the export and import of products/raw materials, and sometimes also as a transfer of all production to other countries (direct foreign investment (FDI) (Pietrasieński, 2005, p. 15). Nowadays, internationalization is an important way of development and growth for enterprises which increases their competitiveness (Glinkowska & Kaczmarek, 2016a, p. 13-20). It is a changeable and dynamic process, characterized by an upward trend and leading to the expansion of the company's operations in other countries (Welch & Luostarinen, 2013, p. 17). It is widely believed that the greater the company's involvement in international activity, the higher the stage of internationalization of activities (Przybylska, 2013, p. 17). Internationalization refers to the constantly developing network of economic connections, going beyond the borders of the region, and then the home country. International activity is the result of the activities of entrepreneurial business owners and their managers. Entrepreneurialism of business owners brings a lot of benefits thanks to the use of new technologies, new organizational and management methods, the use of differences between the price of raw materials at home and abroad, differences in labour costs in individual countries, etc. Foreign markets are a source of knowledge that allows for increased production efficiency, and economic relations with other countries give the opportunity to expand the network of contacts and strengthen the position of the company and the region. A multitude of definitions related to the international activity of enterprises requires the process to be perceived in a multifactorial and complex manner. It can be considered from the point of view of motives, barriers, forms, strategies and ways of internationalization, or we can – which is the essence of this study – compare and analyze the state of international activity of companies and the state of entrepreneurship of SMEs in selected regions.

Entrepreneurship of companies in the SME sector in Poland by region

Quoted in the PARP Report (*Raport o stanie sektora…*, 2017, p. 45-49), the research results cover many aspects. In this study, the focus is solely on the issues of entrepreneurship in the SME sector and its relation to the international activity of this sector. Figure 1 contains the results of PARP research.

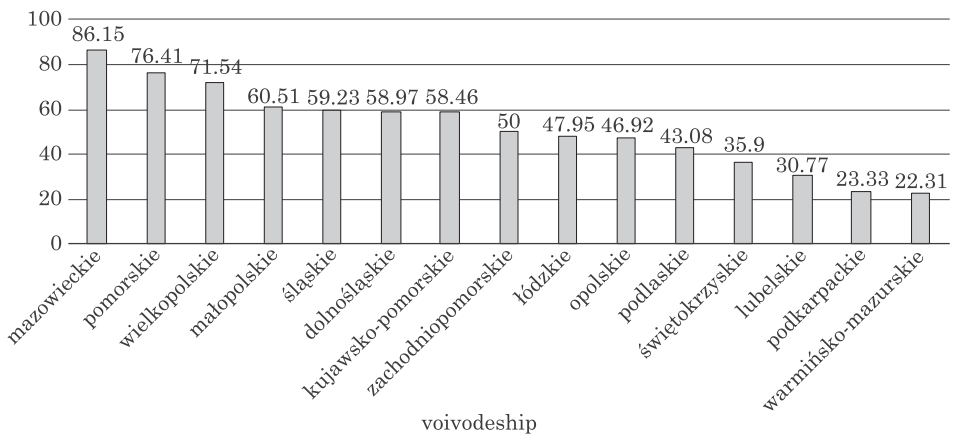

Fig. 1. Ranking of entrepreneurship by voivod – synthetic indicator
Source: study based on *Raport o stanie sektora…* (2017, p. 45-49).

Analyzing the results of the PARP report, it can be noticed that in 2015 (as in previous years), the leader in the entrepreneurial ranking was the Mazowieckie Voivodship, which took first place in several analyzed categories. The value of the synthetic entrepreneurship indicator, which consists of the medium income of enterprises and capital expenditures for the voivodship, amounted to 86.15 and was higher than the previous year (83.3). The next places were occupied by the following voivodships: Pomorskie (76.41, for five years unchanged) and Wielkopolskie (71.54). The worst performers were the following voivodships: Lubelskie (28.46), Podkarpackie (23.33) and Warmińsko-Mazurskie (22.31). An increase in the ranking in relation to 2014 was recorded by such voivodships as Małopolskie, Zachodniopomorskie, Łódzkie, Opolskie, Lubuskie and Lubelskie. The following voivodships fell: Dolnośląskie, Podlaskie and Podkarpackie. The remaining voivodships did not change their position in the ranking.

Also of interest is the situation related to the revenues of SMEs (in PLN million per active company) in regional terms. In 2015, the average revenue per active company amounted to PLN 1.19 million in total and, compared to 2014, it was higher by an average of 10,000. PLN (Fig. 2).

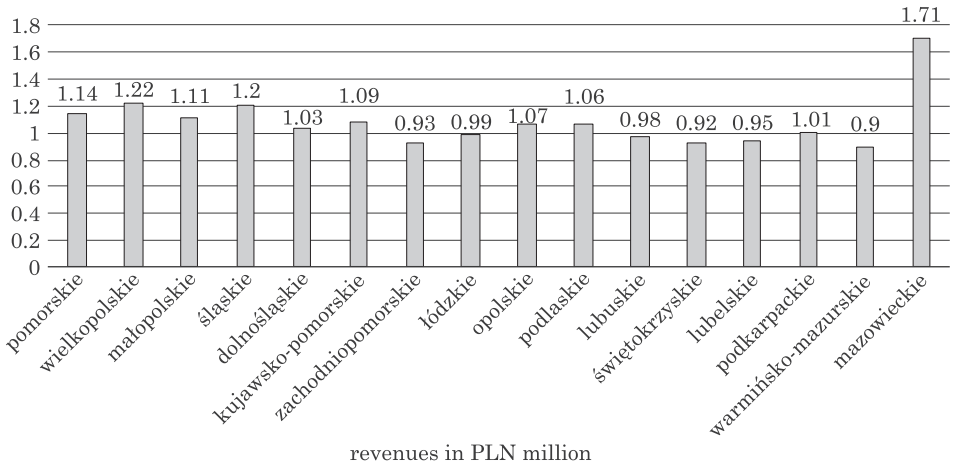

Fig. 2. Average income of active SMEs in 2015 by region
Source: study based on *Raport o stanie sektora…* (2017, p. 51, 52).

The analysis of Figure 2 shows that the highest average income of active SMEs was recorded in the following voivodships: Mazowieckie (PLN 1.71 million), Wielkopolskie (PLN 1.22 million) and Śląskie (PLN 1.20 million). Supplementary data included in the analyzed documentation, inform that in the Mazowieckie voivodship this result was worse compared to the revenues from the previous year by 37 thousand PLN. Decreases in revenues in 2015 were also recorded in the following voivodships: Lubelskie (decrease by PLN 41 thousand), Podkarpackie (decrease by PLN 33,000) and Wielkopolskie (decrease by PLN 7 thousand). In turn, the largest increase in revenues (compared to 2014) was recorded by enterprises in the following voivodships: Zachodniopomorskie (increase by 96 thousand PLN), Lubuskie (increase by 75 thousand PLN) and Dolnośląskie (increase by 53 thousand PLN).

The regions' entrepreneurship is also evidenced by the investments made by the companies. Trends can be observed where the increase in average income attributable to active SMEs is accompanied by an increase in investment outlays and a decline in revenues in many voivodships. This is accompanied by a decrease in investment outlays. In 2015, the average investment outlay attributable to active SMEs in 2015 amounted to PLN 47.04 thousand and increased on average by 7.75 thousand PLN in comparison with 2014. The highest average investment outlays were incurred by enterprises from the SME sector in the Mazowieckie voivodship (PLN 64.22 thousand). They were lower by over 6.5 thousand PLN as compared to 2014. High investment outlays were also recorded by SMEs in the following voivodships: Kujawsko-Pomorskie (PLN 51.22 thousand), Pomorskie (PLN 49.27 thousand), Opolskie (PLN 46.78 thousand), and Zachodnio-Pomorskie (PLN 46.22 thousand). The lowest investment outlays were made by enterprises

from the following voivodships: Lubuskie (36.92 thousand PLN), Świętokrzyskie (37.05 thousand PLN) and Dolnośląskie (37.44 thousand PLN). A decrease in outlays was recorded in 5 out of 16 voivodships, which in comparison to the situation in 2014 is a better result (9 out of 16). Revenues that were too low translated into a decrease in the level of investment. The largest increase in investment outlays compared to 2014 was recorded in the following voivodships: Lubuskie (by 8.6 thousand PLN), Kujawsko-Pomorskie (by 5.94 thousand PLN) and Małopolskie (by 5.41 thousand PLN).

In the analyzed PARP Report, separate data on R & D expenditures can also be found. In 2015, as compared to 2010, they increased more than threefold.

Individual voivodships have their specificity related to the scope and type of activity. Many factors contributed to this, including the demand of the regions for a given product/service, historic conditions of the region, access to resources and raw materials, proximity to the state border, etc. Due to this specificity, particular regions are perceived through the prisms of their most frequently produced or sold products / services, which are often export products as well. In the first half of 2017, the largest export partners were the following countries: Germany (27.2% of total exports), the Czech Republic (6.4%), the United Kingdom (6.4%), France (5.6%), Italy (5%), the Netherlands (4.4%), Russia (2.9%), Sweden (2.8%), the USA (2.7%) and Hungary (2.7%). Regarding imports, these were in turn: Germany (22.8%), China (11.7%), Russia (6.5%), Italy (5.2%), France (3.9%), the Netherlands (3.9%), the Czech Republic (3.7%), the USA (2.9%), Belgium (2.7%), and the United Kingdom (2.3%) (*Towary eksportowe polskich województw*, 2018). Entrepreneurship is also evidenced by the foreign activity of entrepreneurs in various forms, and especially by direct foreign investments.

Foreign direct investment of Polish entrepreneurs by industry and motive

Every year, the value of foreign direct investments (FDI) of Polish enterprises increases. In 2014, 345 foreign units of Polish enterprises operating in Ukraine were recorded, at the same time in the same period, 311 Polish enterprises operated in Germany, and 212 in the Czech Republic (*Polskie inwestycje bezpośrednie…*, 2015). GUS public data show that the most enterprising in the field of international activity are the following voivodeships: Mazowieckie, Śląskie and Wielkopolskie. Data obtained in the Kiev region indicate that in comparison to 2009, their value in USD million (about USD 60 million) doubled; however, it is still quite low in relation to the potential of this country and Polish entrepreneurs. FDI was located in such sectors of the Ukrainian economy as: industry – 31.5%, including the processing industry – 29.5%, financial sector – 29.6%, real estate trade and other services provided to entities conducting business

activity – 16.6%, as well as trade and repair services – 11% (Deržavna Služba Ukrainy, 2017). The main motivations for FDI in the respondents' opinion were: attractive production costs, cultural and geographical proximity, willingness to develop, technological advantage, and own entrepreneurship.

Research carried out by a team of researchers from the Nicolaus Copernicus University in Toruń confirms that the most important motives for internationalization for entrepreneurs is entrepreneurship associated with acquiring new markets, geographic proximity, willingness to develop and allocate capital (*Aktywność inwestycyjna…*, 2009, p. 9).

Conclusions and recommendations

Observing trends in foreign trade against the background of the economic situation of individual regions, one can notice a clear progression in the internationalization of Polish enterprises, both in terms of the number of companies cooperating with foreign countries and the size of internationalization forms, such as exports and imports. After the difficult years of crisis from 2007 until 2013, in 2014 the mood improved, and has continued to this day. From 2013 to 2015, there was a significant increase in exports (by about 7.8%). However, in 2015 there was a slight decrease (down 6.4%), and in 2016 it increased 2.8%. This was due to the fact that in 2014-2015 exports to countries outside the European Union showed negative dynamics. Against this background, the dynamics of imports changed similarly (*Raport o stanie sektora…*, 2017, p. 38-49). Unfortunately, there are no collective studies on the analysis of individual regions in terms of various forms of internationalization and its relation to the entrepreneurship of individual regions. On the website of the Central Statistical Office, one can find a summary of the state of exports and imports in selected regions (e.g. Pomorze, Eastern Poland). Analyzing this data, it can be noticed that voivodships, whose revenues and expenditures on investments are the highest, also, in the most intense way, conduct export and import as forms of internationalization of their activities. Commodity and service exchange with foreign countries is an important element of the economic development of the country and regions. Data on the status of this exchange enable regional authorities to design enterprise support for internationalization. More data on the status of exports and imports can be found in the INTRASTAT and EXTRASTAT systems, which have been in existence since 2016, however, there are restrictions related to the identification of entities and regions. Direct allocation of revenues from the export and import of goods to individual voivodships was made in 2013 at around 85% of trade in goods. Among voivodships in the field of export and import, the Mazowieckie Voivodship is the leader.

The research carried out by the author of this study, based on the analysis of existing, legal documentation, interviews and surveys gave the conclusion that the entrepreneurship of the regions directly affects their internationalization activity; however, the state of entrepreneurship of individual voivodships is different. The basic indicators showing the state of entrepreneurship of regions is the share of revenues of enterprises from the SME sector. It is positively correlated with investment expenditures and directly proportional to the position in the voivodship ranking achieved by the given voivodship.

The author has only reached very general detailed data on the relationship between entrepreneurship of the regions and the state of internationalization. The reason for this is the existing data gap regarding the state of internationalization broken down into voivodships. There are only rudimentary data on the state of exports and imports, and only regarding selected regions. This is certainly an area that requires research and additions. The analysis of the data gives the conclusion that regions characterized by high entrepreneurship also have a high share in exports and imports. The voivodships: Mazowieckie, Śląskie and Wielkopolskie are characterized as having the highest entrepreneurship according to the synthetic index of entrepreneurship adopted in the study and the highest international activity. This may be the result of the positive perception of a given region by foreign entrepreneurs and a greater willingness to make contacts. The study can be an inspiration for further research and analysis. It can also be used to create regional programs and to dispose of funds in connection with the initiation of entrepreneurship and support for the international activity of small and medium enterprises in Poland.

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THE DEVELOPMENT OF THE POLISH NATIONAL CITTASLOW NETWORK

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K e y w o r d s: city, idea Cittaslow, Polish National Cittaslow Network, diversity of cities.

A b s t r a c t

The purpose of this article has been to present the history of the Polish National Cittaslow Network, to discuss its development and to draw the attention to the diversity of network member cities.

The authors emphasise the fact that the Polish National Cittaslow Network is developing very dynamically, and is the second largest network of Cittaslow in the world. Today, it is composed of 28 cities, of which 20 lie in the Warmińsko-Mazurskie Voivodeship. Other two centers are currently in the process of joining the network.

The member cities are diverse in terms of their size as well as environmental or cultural assets. They are also diverse in terms of the level of socio-economic development. There are such cities in the network whose level of entrepreneurship, measured by the number of private sector businesses per 1,000 residents, is much higher than the average for the whole network (Rzgów, Murowana Goślina), but there are also cities with a very low level of entrepreneurship (Rejowiec Fabryczny, Jeziorany). Despite the differences, the cities associated in the network share the same concept and pursue shared aims in order to improve the quality of life for their inhabitants. They are proponents of implementing pro-social and pro-environmental measures, while striving to preserve the unique character of each of these cities.

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ROZWÓJ POLSKIEJ KRAJOWEJ SIECI MIAST CITTASLOW

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S ł o w a k l u c z o w e: miasto, idea Cittaslow, Polska Krajowa Sieć Miast Cittaslow, zróżnicowanie miast.

A b s t r a k t

Celem artykułu było przedstawienie historii powstania Polskiej Krajowej Sieci Miast Cittaslow, omówienie jej rozwoju oraz zwrócenie uwagi na zróżnicowanie miast członkowskich sieci.

W rozważaniach podkreślono, że Polska Krajowa Sieć Miast Cittaslow rozwija się bardzo dynamicznie i stanowi drugą co do wielkości sieć Cittaslow na świecie. Członkami polskiej sieci Cittaslow jest obecnie 28 miast, w tym 20 z województwa warmińsko-mazurskiego. W trakcie procesu przystępowania do sieci są już kolejne dwa ośrodki.

Miasta członkowskie sieci są zróżnicowane nie tylko pod względem wielkości, posiadanych walorów przyrodniczych czy kulturowych. Są też zróżnicowane pod względem poziomu rozwoju społeczno-gospodarczego. W sieci znajdują się miasta, w których poziom rozwoju przedsiębiorczości, mierzony liczbą podmiotów sektora prywatnego przypadających na 1000 mieszkańców, jest zdecydowanie wyższy od średniej dla ogółu miast sieci (Rzgów, Murowana Goślina). Są też miasta o bardzo niskim poziomie rozwoju przedsiębiorczości (Rejowiec Fabryczny, Jeziorany). Pomimo tego zróżnicowania, miasta zrzeszone w sieci przyjęły wspólną ideę i realizują wspólne cele, aby polepszyć jakość życia mieszkańców. Stawiają na działania prospołeczne i prośrodowiskowe, dbając przy tym o zachowanie niepowtarzalnego charakteru każdego z miast.

Introduction

The idea of Cittaslow originated in Italy in 1999. This is a novel concept of the development of a town, which promotes the culture of a good and harmonious life as an alternative to a big city's hectic life and progressing globalisation. Cittaslow is a concept of balanced development, which ensures adequate relations between the economic growth, conservation of the environment and improvement of the residents' quality of life. This is a concept which presumes the implementation of modern technologies and innovative ways of urban management in order to ensure that the peaceful pace of life does not collide with the constant and thoughtful development.

The concept of Cittaslow has found many proponents both in Italy and all across the world. The international Cittaslow network today comprises 250 cities. The network can be joined by small and medium-size cities with a population of no more than 50,000. Cities are first admitted to the international network, and after reaching the required minimum number of cities in the country, they create a national network. In Poland, this is called the Polish National Cittaslow Network.

The purpose of this article has been to present the history of the Polish National Cittaslow Network, to discuss its development and to draw the attention to the diversity of network member cities.

The considerations contained in this paper arise from a review of the subject literature and from an analysis of secondary data obtained from the offices of the Polish National Cittaslow Network and from the Local Data Bank.

History of the Cittaslow network in Poland

The Cittaslow movement was born in Italy in 1999 (*città* means a city in Italian) and its purpose was to extend the concept of "slow food" to other aspects of urban living and to use it in designing and planning cities.

The creation of the Cittaslow network was initiated by the authorities of 4 Italian cities: Bra, Greve in Chianti, Orvieto and Positano. The new concept of city development very quickly found many supporters. Many Italian cities became interested in "a new quality of life", identifying themselves as being a good and quiet city as opposed to globalised cities that are always in a rush (Ball, 2015, p. 565, 566). To formalise the network, in 1999 the association called the "Cittaslow – International Network of Cities of the Good Life" (Cittaslow in short) was established. The association is a non-profit organisation whose aim is to "promote and spread the culture of good living through research, testing and application of solutions for the city organisation" (*International Cittaslow Charter…*, 2014, p. 5).

The idea of Cittaslow emphasises local distinctiveness in a context of globalisation and seeks to improve the quality of life locally (Pink, 2008, p. 97). It is an alternative life philosophy, a type of mobilization encouraging sustainable, original and fair urban development against globalisation (Semmens & Freemen, 2012, p. 357). The idea of Cittaslow is a response to the need for change due to the incompatibility of past development ideas focused primarily on economic growth, without regard to environmental issues and the quality of life of individuals (Gruszecka-Tieśluk, 2013, p. 383). It is much more than an urban design ideology. Cittaslow is one of the more important ideas in the prevention of urban agglomeration and the stress of a busy city life (Grzelak-Kostulska *et al.*, 2011, p. 186). Cittaslow promises to maintain small-town distinctiveness by protecting the local heritage, slowing the pace of life and increasing livability, while supporting the principles of sustainable development (Hatipoglu, 2015, p. 33).

The Cittaslow network brings together small cities with a population of fewer than 50,000 inhabitants. In order to join the network (apart from the size criterion), the city needs to meet more than 50% of the 72 criteria grouped into seven categories (*International Cittaslow Charter…*, 2014, p. 27-29):

– energy and environmental policy;
– infrastructure policies;

– quality of urban life policies;
– agricultural, turistic and artisan policies;
– policies for hospitality, awareness and training;
– social cohesion policy;
– partnership policy.

Cities belonging to the Cittaslow network have the aim of sustaining their unique characteristics, while also improving the urban conditions so that a city becomes a better environment in which its residents are able to enjoy living (Radstrom, 2011, p. 96). Slow cities agrees to work towards a set of goals that aim to improve the quality of life of citizens and visitors, and to share good ideas, experiences and knowledge across the national and international Cittaslow networks (Miele, 2008, p. 135; Heitmann *et al*., 2011, p. 116, 117).

At present (September 2018), the international Cittaslow network consists of 252 cities from around the world. The network is dominated by European cities – currently there are about 190. The second most numerous are Asian cities – about 50 cities on that continent are cities of "good life". The European leader in terms of the number of Cittaslow cities is Italy – as many as 84 cities work together as part of the network. Poland comes in the second, with its 28 cities, and the third place is occupied by Germany – 19 cities. As for Asian countries, the majority of Cittaslow cities are in Turkey and South Korea (15 in each of them) (*Cittaslow List,* 2018, p. 1-10).

The idea of Cittaslow reached Poland in 2003. The first Polish city which decided to join the international Cittaslow network was Reszel. The efforts to enter the network started in July 2004, and were initiated by the local government of the Warmińsko-Mazurskie Voivodeship, the municipality of Reszel and the Zamek Cultural Association in Reszel. The subsequent cities in the region of Warmia and Mazury which joined the network of 'good life cities' were Bisztynek, Biskupiec and Lidzbark Warmiński. These three cities passed a resolution in July 2005 to enter the network. They also expressed their wish to create a national network of Cittaslow. As a result, the Marshal of the Warmińsko-Mazurskie Voivodeship, the mayors of Biskupiec, Bisztynek, Lidzbark Warmiński and Reszel, and the President of the association "Cittaslow − International Network of Cities of the Good Life", signed a letter of intent concerning the establishment of the Polish National Cittaslow Network.

For the national network to be established, several formal requirements needed to be met by the local government of the voivodeship and by the candidate cities:

– to obtain an approval from the Ministry of Foreign Affairs to join the international association Cittaslow;
– to create posts for Cittaslow matters in municipal offices;
– to make a study trip to cities which belong to the international association Cittaslow;

– to develop a regulation of the Polish National Cittaslow Network[1];

– to successfully undergo the process of certification.

Having satisfied all formal requirements, the Polish National Cittaslow Network was established on 13 April 2007. The network member cities were Biskupiec, Bisztynek, Lidzbark Warmiński and Reszel (the network's founding city), while the Marshal Office of the Warmińsko-Mazurskie Voivodeship became a supporting member.

The goal of the Polish National Cittaslow Network is to promote and spread the idea of a good life for town residents by implementing in towns certain solutions which belong to the scope of environmental and infrastructural policy, urban space, hospitality, social cohesion and partnership (*Regulamin Polskiej Krajowej…*, 2017, p. 1). The head office of the Polish National Cittaslow Network is the Marshal Office of the Warmińsko-Mazurskie Voivodeship, and the network's organs are (*Regulamin Polskiej Krajowej…*, 2017, p. 3, 4):

– National Assembly of the Members − consists of representatives of all member towns of the national network, and is the network's highest authority;

– National Coordinating Committee – composed of representatives of 8 member towns of the national network;

– National Science Committee – composed of experts from different fields (5 to 7 persons indicated by the National Coordinating Committee).

The network is coordinated by the office of the Polish National Cittaslow Network, set up in October 2008 and incorporated within the structures of the Marshal Office of the Warmińsko-Mazurskie Voivodeship.

The Polish National Cittaslow Network, being the second largest network of Cittaslow in the world, is distinguished by a very high rate of new cities entering the network. The network was first expanded in 2010, while the latest incoporporation of new members took place in 2017 (Tab. 1). Two more centers are in the process of being admitted to the network: Braniewo and Wydminy.

At present (September 2018), the Polish National Cittaslow Network is composed of 28 cities, of which as many as 20 lie in the Warmińsko-Mazurskie Voivodeship (Fig. 1).

The fact that Poland – a country inhabited by people who are not very optimistic – has the second largest network of Cittaslow among 30 countries with Cittaslow networks – is kind of a phenomenon, which positively contributes to the further development of this network in Poland as well as to the achievement of tangible benefits resulting from its membership in this network (Zawadzka, 2017, p. 95). It is therefore worth emphasising that the dynamic development of the Cittaslow network in Poland, and especially in the Warmińsko-Mazurskie Voivodeship, is an outcome of numerous measures undertaken to promote the concept of cities of 'good life'. Below are a few examples:

[1] The original regulation has been amended a few times. The current regulation was approved on 20 April 2017 by Resolution 3/2017 of the Polish National Cittaslow Network.

– the Marshal Office of the Warmińsko-Mazurskie Voivodeship conducted two projects: *Promoting the concept of Cittaslow in Warmia, Mazury and Powiśle,* and *Cittaslow – a network of towns in Warmia, Mazury and Powiśle promoting good quality of life*. These projects were executed under the Regional Operational Programme for Warmia and Mazury in 2007-2013, and co-funded from the European Regional Development Fund;

– in June 2013, the Provincial Assembly of the Warmińsko-Mazurskie Voivodeship resolved to adopt the *Strategy for the Social and Economic Development of the Warmińsko-Mazurskie Voivodeship until the year 2025*, in which the international cooperation under the framework of partnership towns (including the Cittaslow network) was named as one of the operational goals (St*rategia rozwoju…* 2013, p. 29, 47);

– in June 2016, the updated *Strategy for the Development of Tourism in the Warmińsko-Mazurskie Voivodeship* was accepted, where the slow cities were a tourist product of the region shaping the region's image among potential visitors (*Strategia rozwoju turystyki…*, 2016, p. 39, 40);

– in November 2017, an office Cittaslow International was opened in Olsztyn; the office has been delegated the international tasks of the Cittaslow movement, connected with the European policy as well as with contacting towns in Central and Eastern Europe which are interested in joining the Cittaslow network.

The Polish National Cittaslow Network is developing very dynamically. The member cities focus on gradually improving the living conditions for their residents, protecting the nature, landscape and cultural values, and on creating the grounds and instruments for the implementation of sustainable growth principles (Szelągowska, 2014, p. 221, 222). According to the concept of Cittaslow, the citiess take care of their history, nature, tradition and hospitality.

Table 1

Members of the Polish National Cittaslow Networks, including the year of their admission

Members of the Polish National Cittaslow Network	Year of admission	Number of new members admitted in the same year
Biskupiec, Bisztynek, Lidzbark Warmiński, Reszel	2007	4
Murowana Goślina, Nowe Miasto Lubawskie	2010	2
Lubawa, Olsztynek, Ryn	2012	3
Barczewo, Dobre Miasto, Gołdap	2013	3
Górowo Iławeckie, Kalety, Nidzica, Nowy Dwór Gdański, Pasym, Rejowiec Fabryczny	2014	6
Bartoszyce, Działdowo, Lidzbark, Orneta, Prudnik	2015	5
Głubczyce, Jeziorany, Sępopol	2016	3
Rzgów, Sianów	2017	2

Source: the table was developed by the authors, based on the *Cittaslow List* (2018, p. 7) and information provided by the Marshal Office of the Warmińsko-Mazurskie Voivodeship.

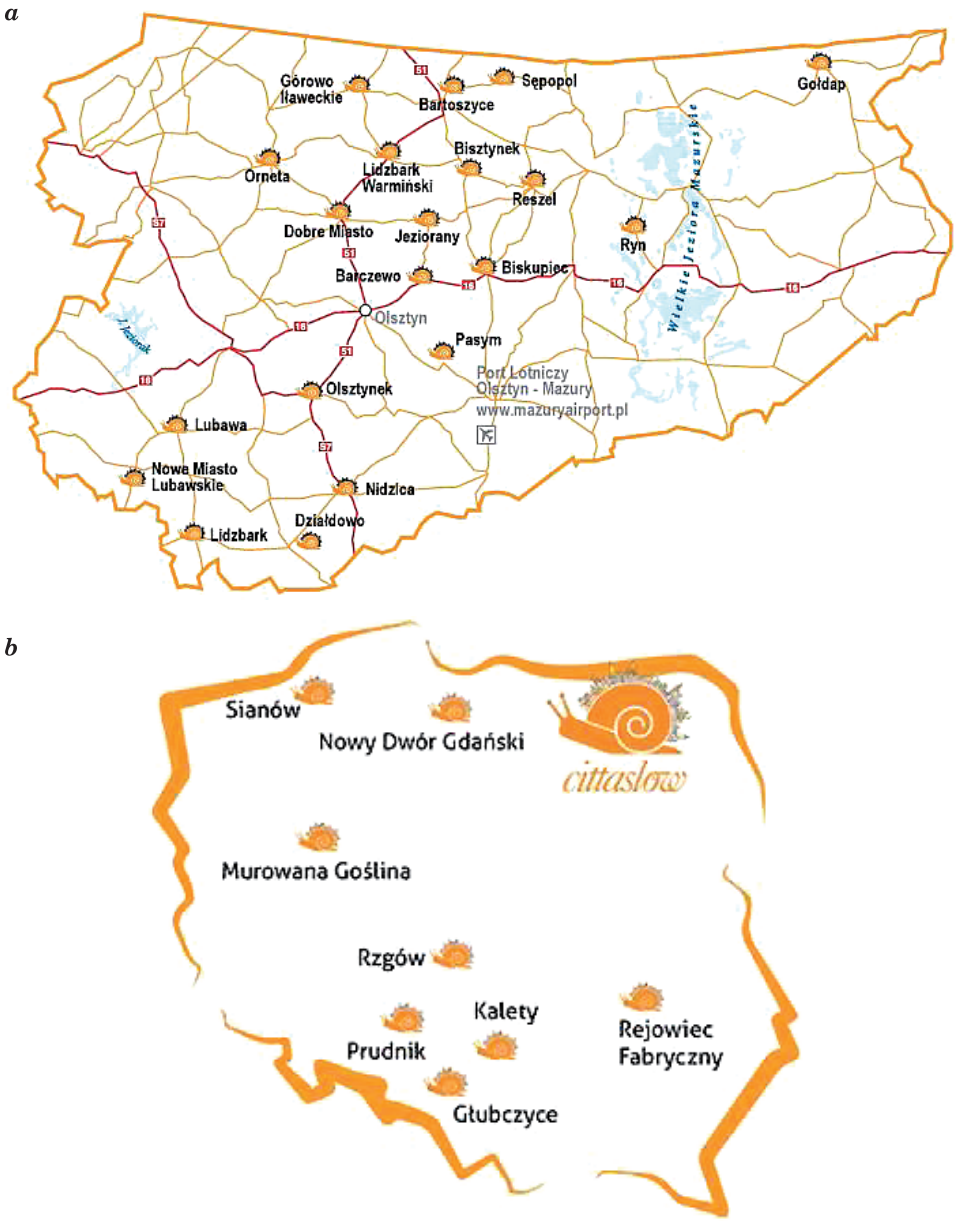

Fig. 1. Cities who are members of the Polish National Cittaslow Network: *a* – in the Warmińsko-Mazurskie Voivodeship, *b* – in other Voivodeships
Source: website of the Polish National Cittaslow Network (*About Cittaslow*, 2018).

Yet, they have no intention of becoming live skansens. The towns have set up an association called the Polish Cities of Cittaslow, which is a legal person and is an object predisposed to acquire funds from external sources to develop and promote the whole network. The association was started on 18 March 2015, by 11 member cities of Polish National Cittaslow Network. Today (September 2018), the association gathers 21 cities of Polish National Cittaslow Network, including 20 from the Warmińsko-Mazurskie Voivodeship, as well as the Kalety from the Śląskie Voivodeship. The association is a partner of the Warmińsko-Mazurskie Voivodeship in the scope of executing the project titled *Supralocal Programme of City Revitalisation of Cittaslow Network in the Warmińsko-Mazurskie Voivodeship*. This program concerns 19 cities of the network, i.e. Barczewa, Bartoszyc, Biskupca, Bisztynka, Dobrego Miasta, Działdowa, Gołdapi, Górowa Iławeckiego, Jezioran, Lidzbarka, Lidzbarka Warmińskiego, Lubawy, Nidzicy, Nowego Miasta Lubawskiego, Olsztynka, Ornety, Pasymia, Reszla and Rynu. The aim of the program is to achieve coordinated and complex revitalisation of degraded areas of the cities in the Cittaslow network, so that they can preserve their unique character and values while offering better living conditions to their inhabitants. The cities are to be allocated over 200 million PLN under the framework of the Regional Operational Programme for the Warmińsko-Mazurskie Voivodeship in 2014-2020, to finance the attainment of this goal.

Thus, the fact that a city operates in the spirit of slow life does not equate to any deceleration of its economic growth. On the contrary, as shown by A. Augustyn (2011, p. 745), it means development through an improvement of the quality of life for the citie's inhabitants, which simultaneously increases the citie's competitiveness. The concept of Cittaslow does not exclude innovativeness of cities, either. According to E. Strzelecka (2017, p. 35, 36), slow cities combine the cultural identity and tradition with innovative actions. However, M. Bryx (2014, p. 239) highlights that the key to attaining such innovativeness, that is successfully completing investment projects (not only pro-ecological ones), is to acquire more funds than these cities themselves would manage to secure alone.

The member cities of the Polish National Cittaslow Network

All Polish cities which belong to the Cittaslow network have a population of less than 50,000. As many as 25 cities are small, with up to 20,000 residents. Only three cities, Działdowo, Prudnik and Bartoszyce, are medium-size cities, with more than 20,000 inhabitants. The average size of a Polish cities in the network is around 9.4 thousand people[2].

[2] For comparison, an average size of a cities in the Italian network is 9.2 thousand, but in Europe it reaches 13.8 thousand people (more on this question in: Maćkiewicz & Konecka-Szydłowska, 2017, p. 297-309).

The cities in the Polish network are diverse not only in the size of population but also in the population density, their situation in the labour market, or their level of social and economic development (see: Janusz, 2018, p. 71-82; Konecka-Szydłowska, 2017, p. 61-73). To characterize the level of this diversity, Table 2 presents selected statistical data on the member cities of the network.

As many as 20 cities in the Polish National Cittaslow Network lie in rural-urban municipalities, with just 8 being purely urban municipalities. The average population density in these cities is 1,098 persons per km^2. The city with the highest population density (i.e. 2,143 persons/km^2) is Dobre Miasto, situated in the Warmińsko-Mazurskie Voivodeship, district of Olsztyn. The city with the lowest population density, with only 113 persons/km^2, is Kalety, lying in the Śląskie Voivodeship, the district of Tarnowskie Góry. It is an urban municipality, where around 85% of the surface area is covered by forests.

The Polish slow cities are also diverse in terms of the development of entrepreneurship, measured by the number of businesses from the private business sector per 1,000 inhabitants. The coefficient of variation in this case reached over 30%, which corresponds to a moderate variation[3]. The mostly highly developed entrepreneurship was found in the cities: Rzgów (209 private sector business enterprises per 1,000 residents, versus the average for all towns equaling 92 businesses) and Murowana Goślina (144 private sector enterprises per 1,000 residents). The high level of entreprenurship in these two cities stems from their specific location. Rzgów lies in the Łódź agglomeration, while Murowana Goślina is located within the Poznań agglomeration. The lowest level of entrepreneurship is in Rejowiec Fabryczny, in the Lubelskie Voivodeship, the district of Chełm. This city is characterised by a poorly developed sector of small and medium-size businesses, a mono-functional structure of industry and a relatively high unemployment rate. Consequently, there are only 51 private sector business entities per 1,000 residents.

The situation looks slightly differently in the case of entrepreneurship in areas connected with tourism, hospitality and catering, culture and recreation, since these are areas which are particularly important for towns following the concept of Cittaslow. The highest share of businesses in these areas (in sections *I* and *R*, according to the Polish Classification of Activities), reaching nearly 13% in the total number of economic entities registered in the REGON system, is found in Ryn. This city lies in the Warmińsko-Mazurskie Voivodeship, in the district of Giżycko. The city is situated between two lakes and has great tourism and cultural appeal. A high share of business subjects within this area is also noted in Reszel (nearly 7.5%). This city is situated in the Warmińsko-Mazurskie Voivodeship, in the district of Kętrzyn. Reszel prides itself

[3] In line with the interpretation presented in the subject references, it has been assumed that the coefficient of variation less than 10% means non-significant variation, within the interval of <10%; 40%> moderate variation, and above 40% large heterogeneity of the analysed variable in the group examined.

Table 2

Characteristics of cities in the Polish National Cittaslow Network (date from 31 December 2016)

City	Type of municipality*	Total population	Population density (number of persons per 1 km^2)	Number of working persons per 1,000 inhabitants	Number of private sector businesses per 1,000 inhabitants	Share of section I and R** in total number of economic entities [%]
Barczewo	r-u	7,376	1,610	232.0	72.4	3.3
Bartoszyce	u	24,001	2,036	228.2	85.2	4.0
Biskupiec	r-u	10,585	2,117	262.0	90.8	3.9
Bisztynek	r-u	2,418	1,119	210.5	76.9	1.9
Dobre Miasto	r-u	10,414	2,143	282.0	76.7	4.4
Działdowo	u	21,355	1,862	325.1	80.0	4.2
Głubczyce	r-u	12,735	1,016	293.8	121.0	2.9
Gołdap	r-u	13,771	801	273.5	95.1	4.8
Górowo Iławeckie	u	4,068	1,225	169.4	89.5	4.3
Jeziorany	r-u	3,264	957	142.2	62.8	4.9
Kalety	u	8,616	113	86.4	79.6	3.8
Lidzbark	r-u	7,996	1,408	194.1	68.9	5.3
Lidzbark Warmiński	u	16,040	1,118	250.9	92.5	4.2
Lubawa	u	10,199	606	518.9	82.3	4.1
Murowana Goślina	r-u	10,404	1,207	224.1	144.2	3.7
Nidzica	r-u	14,050	2,048	288.8	89.3	3.7
Nowe Miasto Lubawskie	u	11,085	975	282.7	89.7	4.3
Nowy Dwór Gdański	r-u	9,962	1,965	221.4	99.3	6.8
Olsztynek	r-u	7,656	996	305.9	89.3	5.0
Orneta	r-u	8,921	926	120.4	99.1	3.8
Pasym	r-u	2,542	167	132.6	79.9	7.0
Prudnik	r-u	21,368	1,042	223.7	84.6	5.0
Rejowiec Fabryczny	u	4,430	310	106.8	51.0	4.1
Reszel	r-u	4,676	1,224	165.1	81.3	7.4
Ryn	r-u	2,900	700	191.4	101.4	12.8
Rzgów	r-u	3,378	201	817.9	209.0	5.4
Sępopol	r-u	2,005	433	107.2	78.3	5.0
Sianów	r-u	6,633	418	142.0	110.7	4.5
Arithmetic mean		9,387	1,098	242.8	92.2	4.8
Coefficient of variation [%]		62.4	55.5	58.0	30.9	40.0

* a town in a rural-urban municipality (r-u), an urban municipality (u)

** according to the 2007 Polish Classification of Activities, section I - business activity connected with accomodation and catering, section R – business activity connected with culture, entertainment and recreation.

Source: the authors, based on the Local Data Bank (2018).

on rich history and many medieval buildings. The lowest share of business subjects classified to section I and section R, is noticed in Bisztynek, a city in the Warmińsko-Mazurkie Voivodeship, in the district of Bartoszyce (about 1.9%).

Differences among the Polish slow cities can also be seen in the number of working persons per 1,000 residents. The coefficient of variation for this criterion reached 58%, which indicates a large heterogeneity among the towns. The highest number of employed persons per 1,000 residents was in Rzgów (nearly 820 persons) and Lubawa, a city in the Warmińsko-Mazurskie Voivodeship, the district of Iława (nearly 520 persons). The lowest number of persons in employment per 1,000 inhabitants was in Kalety (nearly 87 persons) and Rejowiec Fabryczny (nearly 107 persons).

Differences among the cities which belong to the Polish National Cittaslow Network can be seen in each of the discussed areas, and these are just some of the areas in which the towns function.

Summary

The growth of the Cittaslow network and the fact that more and more cities join the network and begin to develop as 'slow cities' are indications that an increasngly large population feels the need to slow down their pace of life, to protect the unique characteristics of their surroundings, based on the local culture, identity, products and services, as opposed to omnipresent uniformity and standardisation. Paradoxically, a city which functions according to the slow life concept does not develop more slowly. On the contrary, its development involves constant improvement in the quality of life of its inhabitants as well as a greater appeal of the city itself, which eventually raises its competitiveness, mostly owing to the town's endogenous resources.

The Polish National Cittaslow Network are the second most numerous network of Cittaslow in the world. The Polish network nowadays comprises 28 cities, 20 of which are situated in the Warmińsko-Mazurkie Voivodeship. The Marshal Office of the Warmińsko-Mazurskie Voivodeship is a supporting member of the network. The network keeps growing, becoming more easily recognisable and more important on international fora.

The member cities of Polish National Cittaslow Network are very diverse, both in terms of their size and the level of economic development. Each city is distinguished by their own, distinc features. Each has a different history, tradition, natural values and historic buildings. What they all share is the same concept and mutually shared goals, of which the overriding one is to improve the quality of life of the local populations. Importantly, improved living standards, higher tourism appeal, mutually conducted promotional campaigns, better access to funds, for example to carry out revitalisation efforts, are a handful

of examples of the benefits that member cities see in being interconnected in the network (Farelnik *et al.*, 2017, p. 424). In the long run, these cities also expect to improve their level of social and economic development. As implicated by C. Honoré (2012), this process has already been observed in many Italian cities, whose access to the Italian Cittaslow network enabled them to reduce unemployment, and to give a new life to their 'limping' economy.

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c) direct scientific collaboration in the course of the last two years preceding the preparation of the review.

4) The editorial board follows procedures preventing ghostwriting and guest authorship. Detailed description of the procedures can be found on the website.
5) The reviewer is obliged to abide by the copyrights. In the case of detecting copyright infringement by the Author, the reviewer is obliged to report it to the editorial board of the journal.
6) The reviewer is required to keep confidential all details of the article as well as the peer review process.
7) The review is submitted in the written form and ends with a clear statement as to whether the article is accepted for publication or rejected.
8) Only articles which have two positive reviews are submitted for printing. If one of the reviews is negative, the article is submitted for evaluation to a third reviewer.
9) The review form is available on the website.
10) Names of the reviewers for individual issues of the journal are available in the current issue and on the website.

After receiving two positive reviews and taking into considerations the reviewers' corrections and recommendations the Author revises the article and submits to the editorial board the following:

a) the final version of the article in English, together with the title, key words and abstract in Polish and English (saved on CD or sent via e-mail to oej@uwm.edu.pl),
b) responses to reviews,
c) the Author's statement (the relevant form can be found on the website),
d) information about the name and last name of the translator and the native speaker,
e) consent for the processing of common personal data (the relevant form can be found on the website).

The final version of the article submitted by the author will be verified by the statistical editor.