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LVIV AND ŁÓDŹ
AT THE TURN OF 20th CENTURY

Structure
of Economic Space

WYDAWNICTWO
UNIWERSYTETU
ŁÓDZKIEGO

Edited by
Mykola Habrel
Bartosz Bartosiewicz

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WYDAWNICTWO UNIWERSYTETU ŁÓDZKIEGO
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Mykola Habrel – University of Łódź, Faculty of Geographical Sciences
Department of the Built Environment and Spatial Policy
Sub-Department of Spatial Policy, 90-142 Łódź, Kopcińskiego St. 31

Bartosz Bartosiewicz – University of Łódź, Faculty of Geographical Sciences
Department of the Built Environment and Spatial Policy
Sub-Department of the Built Environment, 90-142 Łódź, Kopcińskiego St. 31

REVIEWER
Jan A. Wendt

PUBLISHING EDITOR
Iwona Gos

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CONTENTS

PREFACE

The turn of the 20th century has been a time of big changes in cities of Central and East Europe. The transition from planned to free market economy has initiated a lot of socio-economic, demographic and functional processes. The intensity of these processes depends on the internal potential of a city, which is largely determined by economic conditions, the role of the city in the national and international settlement network, and its investment attractiveness. It is also conditioned by external factors, such as political and economic situation at the national level and the dynamics of integration processes with international trade markets.

The book is dedicated to the economic structure of Lviv and Łódź. The volume consists of three parts, each containing two texts – one about Lviv and one about Łódź. Each of the parts deals with one economic issue: technical infrastructure and housing, spatial structure of the city's economy, and socio-economic linkages.

Łódź and Lviv are cities which differ in respect of the economic structure, but are similar in terms of population, negative trends in the demographic situation and important role in the settlement network. Both cities are also, in their respective countries, significant academic and cultural centres.

Identification of changes observed in the economic structure of both cities during the last two decades offers important insights into diversity of their development path, with regard not only to the dynamics of their development in quantitative terms, which is a derivative of different development paths of the country, but also

to the changes occurring in the spatial organization and living conditions in each of the cities.

This book is a valuable, from the cognitive and scientific point of view, set of texts, whose great advantage is comparative analysis of two important metropolises in Poland and Ukraine.

Bartosz Bartosiewicz
Mykola Habrel

Natalja Lysyak

Lviv Polytechnic National University

1. TECHNICAL INFRASTRUCTURE AND HOUSING IN LVIV

1.1. Introduction

Housing and infrastructure are important areas of the functioning of a city. They are necessary to maintain living activity and human development and to improve citizens' quality of life. They also influence the condition of the city's economy, in particular, the industrial output and employment, as well as contribute to the solution of other important social and economic problems of the city. Experience of many countries shows that investment in infrastructure projects, roads and residential construction enables governments to control the growth of unemployment and stimulate the majority of production branches.

Infrastructure is considered as a set of industries and activities that serve the economy and urban manufacture. Infrastructure is conventionally divided into two main blocks by the target functions – social and technical. Technical infrastructure includes the following structural units: electricity supply, gas supply, heating supply, water supply and water disposal, sanitation and waste utilization, transport.

Housing is treated as a set of premises that are suitable for living. It includes the following: residential houses, special buildings (dormitories, special houses for lonely elderly people, orphanages, homes for the disabled and veterans, foster homes and boarding schools), apartments, official accommodation and other residental premisses in buildings (*Osnovni sotsialno-ekonomichni*… 2007).

Lviv city is a large administrative, political, economic and cultural centre in the Western part of Ukraine, one of the nine largest Ukrainian cities. The population of the city is about 800 000 inhabitants. The area – 11 741.9 ha.

Technical infrastructure and residential housing of Lviv has been forming for centuries under the influence of economic policies of different countries: ancient Lviv was one of the biggest and most important cities of Galicia-Volhynian Kingdom, Poland, administrative centre of the Austro-Hungarian Empire as well as regional centre of the Ukrainian Soviet Republic.

With the beginning of 1990s important political transformations and changes in the system of state structure and socio-economic relations that influenced Lviv's political and administrative status occured in Ukraine. The aim of this study is to analyze the changes in technical infrastructure and residential buildings of Lviv that took place at the turn of the 20th century. Chronologically, the period of research covers the years 1990–2010. The following tasks were specified to achieve the aim of the research:

- to describe the condition of housing and technical infrastructure of Lviv for 1990;
- to analyze the changes and identify the main tendencies in residential construction and technical infrastructure of Lviv during 1990–2010;
- to evaluate the changes in residential housing and technical infrastructure that occured under the influence of socio-economic factors.

Presentation of the main research material is based on the changes in residential housing as well as technical and transport infrastructure of Lviv.

1.2. Residental construction

Two stages that characterize significant quantitative and qualitative changes in Lviv's housing can be identified. The first such changes occurred in the 19th – early 20th centuries. New residential areas, Novyi Svit, Novyi Lviv, so called Profesorska and Kryvchytska colonies emerged and the part of the city surrounding these areas was developed during this period. The following figures show the housing construction pace: there were 2594 houses in the city in 1873, mostly one- and two-storey, while in 1900 it already had 4360 buildings three or four storeys high.

The next stage in the development of Lviv's housing was during the Soviet period (1939–1989). Soviet government policy was aimed at transformation of Lviv into a large industrial centre. As a result, a number of enterprises were enlarged, renovated and expanded as well as new factories were brought into operation. Such transformations led to population increase and changes in its composition, which consequently led to the growth of housing demand (*Kompleksnyi plan*… 2001, 2008, Nazaruk 2008).

The housing program launched in the1960s, aimed at providing each family with a separate apartment, was the largest-scale program for Lviv's residential construction during the Soviet period. Mass housing construction was carried out on undeveloped land outside the city boundary on the territories of former villages that were attached to the city in different periods and were built-up with low-rise, often low-value housing, without sufficiently developed infrastructure. In the 1970s–1980s, the large-scale mass housing construction was most intensive. New residential districts were built during this period, particularly in the following streets: Shyroka, Stryiska, Naukova, Kulparkivska, 700-richchya Lvova, Batalna. Nine-storey buildings dominated in the new construction practically everywhere. During 15 years (1950–1975) the housing stock of the city increased 1.5 times as a result of such policy (*Kompleksnyi plan*… 1987).

90% of the new housing was financed by public funds, while the remaining 10% of construction was covered by enterprises and individual building.

In the social sphere, in 1960–1989, the city achieved a significant increase in provision of new housing and relocation of citizens from unfit housing facilities. However, despite the large building volumes, the housing problem of Lviv was one of the most urgent. Housing provision in the USSR was three-four times lower than in developed countries of Europe, America and Japan. Five-year plans for new building, especially building of the maintenance objects, streets and roads as well as utility services were constantly insufficiently performed. Constant lack of funds for repair and restoration works led to the neglect and destruction of many buildings, social infrastructure objects, ancient residental houses etc.

Since 1990, economic changes associated with Ukrainian transition to market economy have taken place: privatization, particularly of residential properties, development of private ownership, decentralization of governance system and increase of local self-governance role. These socio-economic transformations affected all aspects of social life and influenced the housing sector of the city. Primarily, they changed the system of residential construction funding. Other funding sources appeared: state and local budgets, own funds of enterprises, bank loans, foreign investors, citizens.

Currently, building organizations of different ownership types are carrying out housingconstruction in Lviv city. The largest of them are: JSC Karpatbud, JSC Integral-Bud, JSC Vash Dim and the Holding Company Comfort-Service.

Analysis of Lviv's housing volumes during 1990–2010 and their comparison with the period 1960–1989 shows that the total volume of new housing after the recovery during the period of 1985–1990, when the average volume of housing built annually was 200 000–300 000 sq. m, steadily declined until 1995 and stabilized at the level about 100 million sq. m with minor deviations by years (figure 1.1). Some revival in the construction industry started only in 2005. It was due to several factors: improvement of the econom-

ic situation and increase of citizens incomes, an urgent necessity of improving the housing conditions and insufficient development of the economic activity sphere, when investing in residential construction is regarded as the most reliable way to save funds from inflation and to achieve profit by selling accommodation on the secondary market or by renting. Bank lending, which allowed to artificially support the effective demand and supply growth on the housing market, played an important role in that situation. This caused a commotive rise in prices and volumes of building in the city (185 000 sq. m in 2007), which was terminated by the global financial crisis in 2008.

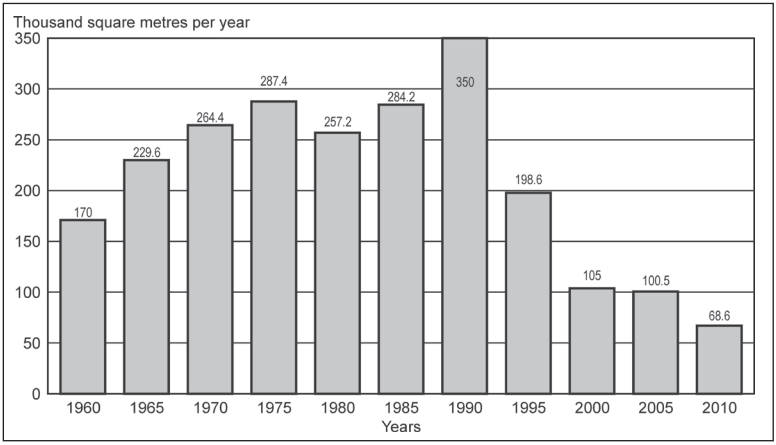

Figure 1.1. Residential building volumes dynamics in Lviv during the period of 1960–2010

Source: *Osnovni sotsialno-ekonomichni*... (2007), http://www.stat-lviv.com

Lviv's housing stock of all forms of ownership, as of 1st January 2011, consist of 24 156 buildings with total floor area of 12.9 million sq. m. The State Housing Fund accounts for 3% of buildings, private – 53.3%, municipal – 41%, collective – 3%. The housing stock is equipped with centralized water supply and sewerage systems at 92.3%, with hot water supply – at 83.4%, with baths and

showers – at 85.1% and with gas at 100% (*Koryhuvannya heneralnoho planu*… 2008).

The fact of mass individual suburban house building both for leisure or permanent residence should be noted in the analysis of Lviv's housing in 1990–2010. Over the past 20 years large quarters of low-rise housing without the appropriate level of infrastructure provision were built around Lviv. Such processes affected the structural changes in territories adjacent to Lviv. They increased housing density, increased pressure on the environment as well as changed the qualitative characteristics of construction – houses with parks, gardens, cottages etc. appeared.

1.3. Evaluation of changes in Lviv's housing

The housing sector in Lviv during the period 1990–2010 years is characterized by both positive and negative changes. The positive aspect, in our opinion, is the fact that the city residents had an opportunity to decide how to improve their living conditions by themselves through purchase and sale. They can also buy land outside the city and build a house there.

The quality of housing under construction improved. Superior accommodations appeared: 5–10-storey buildings that have additional advantages (larger floor area, room layouts, decoration, extended surrounding area, parking etc.). There is such a segment of "luxury housing" – buildings with 5 floors for 20–30 apartments in a prestigious district with the highest possible comfort level, large apartments, advanced planning, additional services (air conditioning and ventilation, decoration, security, garage etc.).

Negative phenomena in housing include:

- lack of economic mechanisms that would activate the housing market in the city. The exit of the State from this market unfortunately was not offset by timely creation of new fundraising mechanisms in housing construction. The construction funding scheme involves selling future housing units to ultimate customers

(citizens). A mortgage credit lending system that allows every citizen with average incomes to obtain in bank or other financial-credit institution a loan and to buy an apartment has not been developed. Credit risks remain high – it is one of the main reasons of high costs for loans that are given for residential construction. There is no state assistance for house building nor mechanism of tax exemptions. In general, the socio-economic situation in the country during the last 20 years did not bring improvement in the purchasing power of citizens. As a result, housing is unattainable for most residents;

- reduction of residential properties as a result of insufficient housing development level and low investment rates in this sector. Construction companies usually build commercial housing for profit. Building is carried out mainly by increasing the existing housing density and removal of non-residential objects from rural territories (figure 1.2).

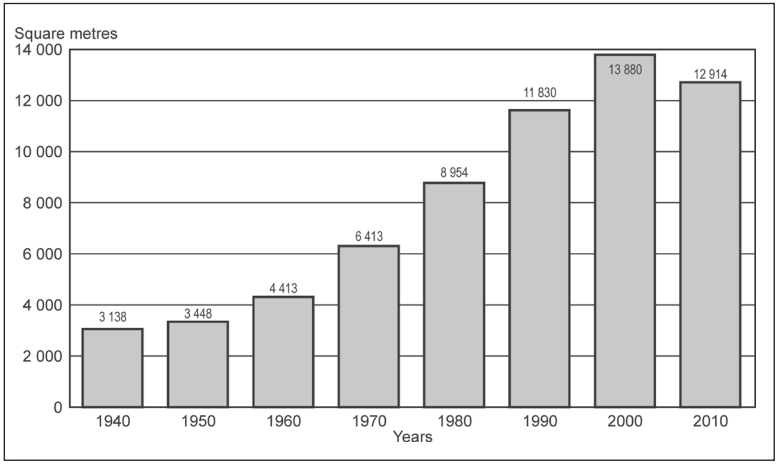

Figure 1.2. Dynamics of changes in residental properties of Lviv during 1940–2010

Source: *Koryhuvannya heneralnoho planu*… (2008), *Osnovni pokaznyky*… (2001), http://www.stat-lviv.com

• deterioration of urban social indicators. Housing provision is equal to 17.8 sq. m per person, which is much lower than the provision in developed countries, where this indicator is 30 sq. m per person. The increase of this indicator compared with its rate in 1991 was mainly caused not by new construction, but by decrease in population (figure 1.3b).

Improvement of the living conditions of the low-income population group remains a problem. Permanent reduction of residential queue as well as of the number of apartments given to the citizens took place during 1990–2010. There were 54 798 families on the waiting list in the housing register as of 1st January 2008 (figure 1.3a), while only 270 apartments were provided in 2007.

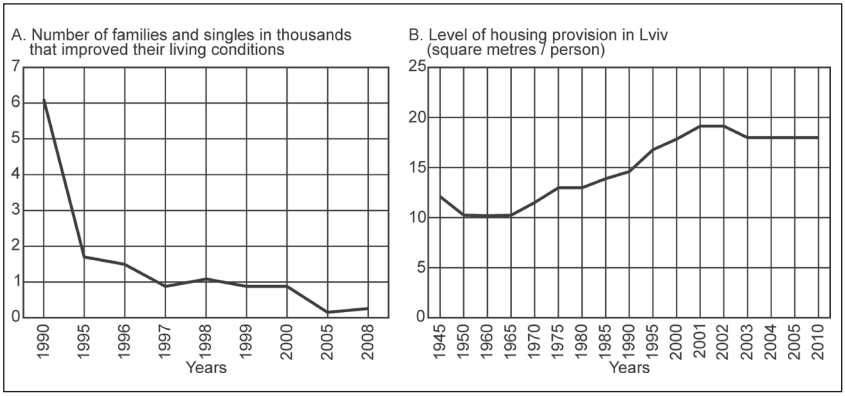

Figure 1.3. Social indicators of improvement of living conditions

Source: *Osnovni sotsialno-ekonomichni*... (2007), http://www.stat-lviv.com

1.4. Technical infrastructure

Technical infrastructure of Lviv consists of water supply, sewage system, heating supply, gas supply, electricity supply, sanitation and waste utilization.

Lviv's *water supply* is provided by public waterworks system. Water supply of the city is entirely from underground sources located at a distance of 20 to 110 km. Water consumption of Lviv is equal to 12 700 cubic m per day, with 98% coverage of urban housing by centralized water supply (*Koryhuvannya heneralnoho planu*… 2008). A project for improvement of water supply to the city has been carried out at the beginning of the 21st century. This situation needed improvement because of insufficient investment in this sphere. On 29th December 2009, a project for modernization of water supply and water disposal systems of Lviv was implemented thanks to World Bank loan. Lviv received full-time water supply as a result of this project.

The sewage network covers 94% of the territory of the city. A part of low-rise buildings in the old city, especially outside the central part, are not connected to the sewage system. This situation creates sanitary and ecological problems. Lviv's sewers receive wastes from Vynnyky, Bryukhovychi, Rava-Ruska and other users, which contributes to the overloading of the sewage system (*Koryhuvannya heneralnoho planu*… 2008).

Domestic waste is removed to the municipal waste disposal site, which has a total area of 33.3 ha and is located 25 km from Lviv. One utility company and 5 private companies gather and utilize industrial wastes. Demonopolization of this sphere made it possible to improve the quality and regularity of garbage disposal in the city.

Waste utilization is one of the most urgent problems in the city. The existing garbage dump was opened in 1956. Its exploitation period ended on 1st January 2006, but the city is still using it for domestic waste disposal. Lviv's garbage dump does not meet sanitary requirements and is becoming an active source of environmental pollution. There is an urgent need to build a waste recycling plant to deal with this situation.

Centralized heating supply in Lviv city is provided for multistoried residential buildings, some low-rise houses, public buildings and industrial objects. The sources of urban centralized heating

supply are Central Heating and Power Plants, and district, quarter and individual boiler houses.

Gas supply of the city is organized by a system of gas pipelines undlying the suburban territory. Currently the city is 100% provided with gas.

Electricity supply includes a set of energy networks (power transmission lines, power substations, service units) that provide electricity to consumers. Electrical loads are provided by the Lviv load centre through three basic substation with voltage of 220 kV and 330 kV as well as municipal substantions with voltage of 110 kV (19 units) and 35 kV (3 units). Most substations were built in the 1950s and currently they have exhausted their normative exploitation period (45 years) (*Koryhuvannya heneralnoho planu*… 2008).

Lviv's technical infrastructure is the most difficult sphere of Lviv public utilities. Research carried out by domestic and foreign experts show that most of the technical infrastructure networks in Lviv have exhausted their normative exploitation period and are in unsatisfactory condition. Improvement of the situation in water supply of the city, including full-time water supply, was observed in technical infrastructure of the city during 1990–2010. Changes in the technical infrustructure of the city require new approaches. Until recently, problems of technical infrastructure were solved in an extensive way: the city was expanding and parallely, but with lagging behind the needs, technical networks were being built. Thus, in the years 1960–1980 the increase in capital investment volumes for public utilities development did not ensure proper balance between their development level and the development level of other sectors of city's economy. The expansion and improvement of infrastructure networks did not meet the needs of the constantly growing population. Currently, the plan for improvement of the technical infrastructure in an intensive way is based on the principles of advanced manufacturing technologies and scientific-technological progress achievements.

1.5. Transport infrastructure

Lviv is the main transport hub of the Western region that comprises important transport lines. The advantageous location of Lviv makes it an important centre of trade and transport lines within the territory of Western Ukraine. The distance from Lviv to Kyiv is 575 km, to the border with Poland – 73 km (Shehyni) and 72 km (Krakovets); with Slovak Republic – 262 km (Uzhhorod); with Hungary – 253 km (Chop); with Romania – 290 km (Parubne).

Lviv's transport infrastructure gains importance taking into account the role of the city in national cross-border cooperation development programs and its location at the crossroads of European transport corridors.

Lviv's transport system consists of the following elements:

1. Railway transport;
2. Air transport;
3. Automobile transport;
4. Highway street network;
5. Public transport (tram, trolleybus, bus).

External communication of the city is provided by railway, automobile and air transport. Intracity transportation is provided by automobile and public electric transport.

Ad 1. Lviv railways constructed in 1860 are one of the oldest in Ukraine. Their construction provided an impulse for development of the city: there was a rapid growth of industry, acompanied by creation of infrastructure, which resulted in appearance of new jobs (Nazaruk 2008). During 1960–1989, Lviv railways underwent considerable structural changes, in particular: the rolling stock was renewed, electrification was provided and a complex system of efficient wagon use was developed. In 1988 Lviv railways began to operate on the self-accounting and self-financing basis (*Kompleksnyi plan*… 1982, 1987).

After 1990, freight transport decreased by 50%. The majority of freight switched from railway to automobile transport, which is much more advantageous at medium distance (up to 1000 km).

Railway transport continued to carry fuel and energy and metallurgical materials as well as construction materials, timber and cereals (*Koryhuvannya heneralnoho planu*… 2001).

At the end of 2010 Lviv railways had 15 international traffic lines. Railway lines in 9 directions meet in Lviv, including those from the countries of Western Europe. Lviv railways cover 7 western regions of Ukraine, carry more than 30% of all freight and 36% of passangers in the region. A high speed railway connection between Lviv and Kyiv has been opened recently (*Koryhuvannya heneralnoho planu*… 2008).

Improvement of the speed and quality of the services as well as construction of European-standard railroads are now major challenges for the city railways.

Ad 2. International airport "Lviv" is located in the north-western suburb of Lviv. The airport was constructed before 1940 for light aircrafts. After the Second World War the airport was repeatedly reconstructed. At the end of 1980s it was used intensively, mainly by local airlines. As of 1st January 2008, the intensity of flights was only 15–20% of the volumes at the beginning of the 1990s (*Koryhuvannya heneralnoho planu*… 2001, 2008).

The airport service zone, apart from Lviv and the region, comprises Ivano-Frankivsk, Chernivtsi, Uzhhorod, Ternopil, Lutsk, Rivne and Khmelnytskyi with relevant regions. Considering its geographical position, the State International Airport "Lviv" possesses capability to transform into true Cenral European aviation hub. Additional and profit-oriented activities as well as business operations in "non-basic activities" (non-aviation activity) can be developed due to increasing volume of air traffic and improvement of the quality of services.

Ad 3. International (M-06 Kyiv–Chop through Lviv, Mukachevo, Uzhhorod; M-09 Lviv–Rava-Ruska, M-10 Lviv–Krakovets, M-11 Lviv–Shehyni), national and regional roads are the basic roads that form Lviv automobile hub. Transit transport flows in main directions pass mostly outside the city through a bypass highway. Its total length is 45 km. Automobile connections are organized with many Ukrainian cities as well as with EU-members: Republic of Poland (Warsaw,

Krakow, Katowice, Wrocław), Germany (Dresden, Karlsruhe), Great Britain (London, Manchester), France (Paris), Greece (Athens), Italy (Rome), Belgium (Brussels), Czech Republic (Prague), Lithuania (Vilnius) and Latvia (Riga).

Ad 4. Total length of public automobile roads is 580.4 km. Lviv's road network consists of more than 1000 km of roads and quarter passages (figure 1.4). The characteristics of Lviv's transport network are the following:

- insufficient width of streets in the historical part of the city, which does not provide necessary carrying capacity for urban transport (incl. passenger transport);
- passing of the shortest routes that connect the majority of districts through the city centre because of the radial street system;
- high density and historical value of housing, which makes it impossible to modernize and reconstruct main roads;
- combined road surfaces that considerably influences the choice of routes as well as speed and safety of traffic.

Figure 1.4. Lviv's public transport scheme

Source: *Koryhuvannya heneralnoho planu*... (2008)

Ad 5. City passenger transport system comprises trams, trolleybuses, buses (state and private), microbuses and light vehicles. 99 routes operate in the city (9 – tram, 13 – trolleybus, 23 – bus and 53 – microbus) with 1235 units of the rolling stock. Approximately 4500 taxes operate in the city in addition to mass passenger transport (*Koryhuvannya heneralnoho planu*… 2008).

During the period 1990–2010, significant changes took place in the city transport system, in particular:

• redistribution of freight and passenger traffic among all types of transport. Automobile transport is the basic transport mode (figure 1.5);

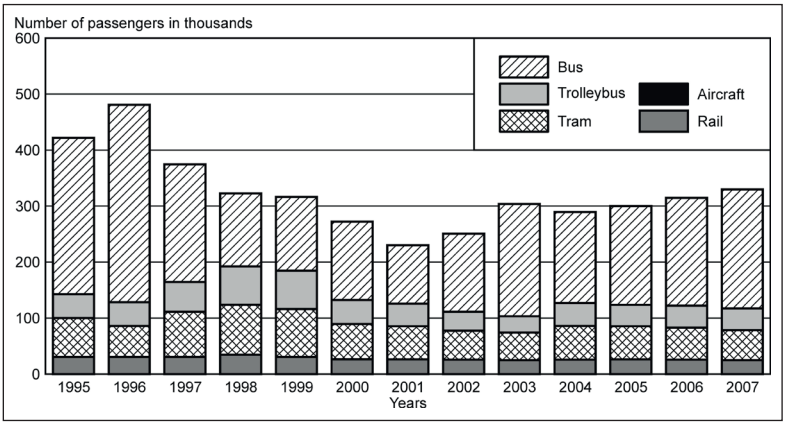

Figure 1.5. Dynamics of passenger transport by transport modes in Lviv region

Source: *Koryhuvannya heneralnoho planu*… (2008)

• increase in motorization level. During the last 10 years the pace of vehicles park growth was 10% per year. In 2010 the city had approximately 115 000 individual motor vehicles (160 automobiles per 1000 persons). Moreover, nearly 7830 freight vehicles, 3330 buses and 4540 special purpose vehicles are registered in the city.

A negative feature is that there was no modernization of the electric transport rolling stock (tram, trolleybus) and transport lines since 1990 (figure 1.6).

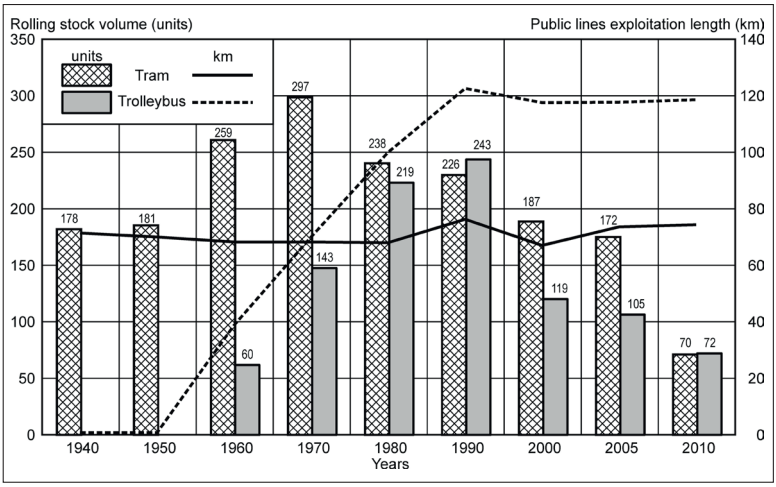

Figure 1.6. Basic indicators of Lviv's public transport

Source: *Osnovni pokaznyky*... (2001)

The city transport system development level significantly falls behind the pace of the city's economic development, and has the range of problems:

- non-conformity of street network with the needs of modern urban transport. The street network of the central part of the city endures the highest pressure. Practice shows that 60% (more than 60 000 automobiles) out of 100 000 vehicles registered in Lviv region use the city road network (figure 1.6);
- considerable lack of parking space. This results in cars parking in two or even three rows, or even in the middle of the street, creating obstacles for further movement;
- emission of combustion products to the atmosphere, vibration, overdusting of the atmosphere and excessive noise affect the health and vital activity of the population;
- comfort level of passenger transport remains low.

The existing transport infrastructure in the city is unable to meet the challenge of increasing transport and passenger flows. All the spheres of this system need modernization. It especially concerns

the quality of roads and passenger transportation as well as redistribution of city transport flows. Special attention should be payed to external transport connections by railway, automobile and air. Main resolutions of the current *Master Plan* are directed at improvement of public transport services. However, without implementation of effective financial mechanisms, the issue of transport infrastructure improvement cannot be resolved satisfactorily.

Inclusion of Lviv on the list of European football championships (Euro-2012) hosting cities provided a unique possibility for the city to resolve some social and economic problems, including those in the transport sector. Due to preparation to Euro-2012 Lviv region's economy received 9 603 700 hrn from the state budget, of which 2 259 700 mln hrn came in 2008–2010 (figure 1.7). Just to compare, in the period 2002–2007 Lviv's regional economy obtained 1 394 300 hrn from state budget (*Koryhuvannya heneralnoho planu*… 2001). Near 60% of all state and local budget expenditures were directed at improvement of the regional transport infrastructure (figure 1.8).

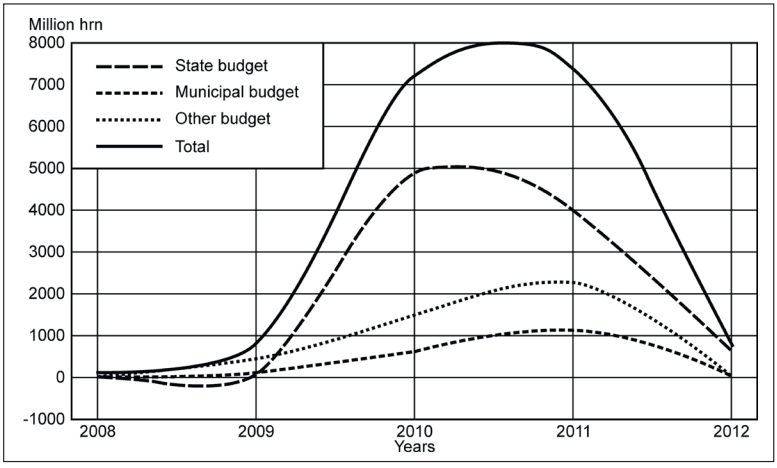

Figure 1.7. Dynamics of funding volumes in Lviv

Source: own elaboration

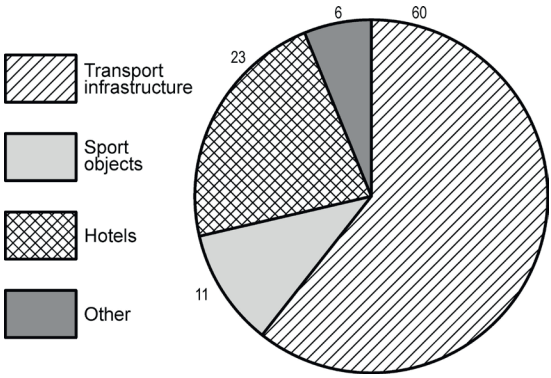

Figure 1.8. Lviv's preparation to Euro-2012 expenditures structure

Source: own elaboration

In the framework of Lviv's preparation for Euro-2012 the following measures were undertaken in the field of transport infrastructure:

- reconstruction of Lviv airport, in particular, lengthening of artificial runway to 3.5 km in order to receive high class airplanes and to enable direct connections with America and Asia; construction of a new air terminal with capacity of 2000 passengers per hour;
- expansion and improvement of transport infrastructure (modernization of trams, trolleybuses and city buses, construction and reconstruction of tram and trolleybus lines, construction of transport junctions as well as improvement of the roads).

It is expected that investment in transport infrastructure will contribute to development of the city and the region in the sphere of transport logistics as well as considerably strengthen economic, touristic, business and other relations of Lviv region with EU, and in future will create sustainable advantages for urban and regional economy, create new jobs, attract investors, and improve the quality of life of the city's and region's population.

1.6. Conclusions

Housing and technical infrastructure development in Lviv are important spheres of urban management that considerably influence the quality of residents' life. In terms of market economy the developed transport and technical infrastructure provide a basis for attracting investment into other sectors of city economy.

Over the last 20 years the volume of housing construction in the city has declined. The level of technical and transport infrastructure development does not correspond to the needs of the residents. The most urgent problems of the city include poor condition of the transport sectortransport issue, obsolescence of city networks and engineering system equipment, and unresolved issues of processing and recycling of hard domestic wastes. This situation is caused by insufficient funding of these spheres not only during the last 20 years but also almost at all stages of the development of the city. Current situation requires new approaches to solution of housing construction and technical infrastructure problems in on the basis of new technologies implementation.

The conducted analysis made it possible to determine the importance of economic mechanisms and funding sources for maintenance of the city's infrastructural systems. Preparations for hosting the European football championship provided a major stimulus for economic development acceleration.

Bartosz Bartosiewicz

University of Łódź

2. TECHNICAL INFRASTRUCTURE AND HOUSING IN ŁÓDŹ

2.1. Introduction

Because of their role in shaping urban space, the technical infrastructure and housing construction should be considered independently from one another. This does not mean they do not share interdependencies. The first of these areas is largely determined by urban development, which greatly affects its spatial distribution. However, the fact remains that in analysing a city's technical infrastructure, one should examine both its current state as well as trends in its development, whereas in the case of housing construction, only the process of erecting new structures needs to be considered.

Although both the technical infrastructure and housing construction significantly shape urban space, the former plays a more dominant role. Broadly conceived as the facilities and equipment used to provide public services that fulfil social or economic needs, the technical infrastructure is a major determiner of a community's overall living and economic conditions. The concept of technical infrastructure includes aspects of municipal systems related

to: transport (automotive, rail, air, water, and other forms), energy (electricity, gas and heat), and water (water supply, sewage, and waste water treatment) (Bartosiewicz 2010).

The technical infrastructure is an essential element of any community. It is its lifeblood; without it, people cannot function properly. It is also a decisive factor in determining the attractiveness of a given place or location. Development of the technical infrastructure needs to be a primary consideration guiding the work of city planners (Bartosiewicz 2010). Unfortunately, in Poland, where building regulations clearly define the conditions for building construction, including the permitting process for connecting a private plot to a public road, and to gas, electrical, and water mains (although, unfortunately, it also allows the digging of a well), the role of the technical infrastructure is generally underappreciated (cf. *Prawo budowlane* 1994). Very rarely in Poland do local governments (which are responsible for maintaining most elements of the infrastructure) take a long-term perspective when planning the future development of the infrastructure; this should include, for instance, providing utilities to areas designated in spatial policy documents as priority development areas. Such actions are taken too rarely, and, very often, those action taken are not in line with the intended goals of these planning documents. There are at least two reasons for this. The first and most basic is the still dominant trend toward "chasing" needs when planning the technical infrastructure. A history of neglect, resulting from a lack of or poorly constructed development plans, requires that most infrastructure investments serve existing buildings, which consumes most of the budget resources allocated for these purposes. The second reason is the lack of development plans in many cities. This is often deliberate, serving in the minds of the authorities as a means to promote new investment, which generates revenue for the city budget.

Unfortunately, such an approach overlooks the benefits derived from using the technical infrastructure as a planning tool that when properly utilised gives authorities greater control over spatial de-

velopment. This results in significant benefits, such as preventing uncontrolled urban sprawl. It also raises the standard of living and economic activity in a given area, with the increase in attractiveness providing greater long-term benefits than those reaped in the short term from permitting uncontrolled urban sprawl.

A lack of coordination in development and infrastructure planning can most easily be seen on the outskirts of major cities and their surrounding area, which are currently the most attractive areas for investment. This has been confirmed by the results of research conducted within the Poznań urban agglomeration. These suburban municipalities are not non-isolated cases in terms of their practices, which resemble those of similar areas around Warsaw or Cracow. Guided by the aforementioned allure of immediate gain, they allocate the lion's share of the land in their development planning documents to residential housing. This often leads to a paradox. Even cursory calculations are sufficient to establish that the plans adopted call for increasing the number of residents in the city or municipality by two or even three times, which even over the span of 20 years is unrealistic. Such actions have serious negative consequences. The resulting new construction is dispersed, which, of course, increases the cost of expanding the infrastructure. According to research carried out in Poznan, if spatial planning is carried out in an uncontrolled and unrestricted manner, the consequences can be very far-reaching. It was calculated that given existing financial capabilities, it could take as long as 1000 years to supply utilities to such an area. This requires no comment, and constitutes a challenge that needs to be addressed during the drafting of changes to the Law on Spatial Planning.

In considering the key role of the technical infrastructure in a city's development, we cannot forget the economic aspect. As shown by D. Stawasz (2005), there is a strong positive correlation between infrastructure spending and socio-economic development. This means that the better-developed the technical infrastructure, the higher the level of economic development, and vice versa. This

relationship extends from the local to the international level. For this reason, indicators describing the state of the technical infrastructure are used in almost every ranking of economic development (for cities, regions or countries).

In the case of the technical infrastructure, it is important to consider the external impact both during its development and after its completion (Kupiec 2006).

The first case results in the so-called income effect. An increase in infrastructure investment translates into increased revenue for the companies carrying out the work and their employees, which, in turn, leads to growth in the rate of consumption. Such a situation occurred in Poland before Euro-2012, when investments, particularly infrastructure investments carried out with EU funds, allowed Poland to maintain a positive economic growth rate.

In the latter case, the technical infrastructure, and more specifically its growth, translates into improved economic conditions in the enterprise sector. This means that an entrepreneur, by choosing a location where infrastructure construction is planned (such as new roads, power lines etc.) indirectly benefits from more favourable conditions for his activities, which can translate directly into improved productivity.

The above aspects of the technical infrastructure should act as an important starting point and a guide for its future development in cities. This is confirmed by urban development theory. As early as the 1960s, B. Malisz (1966) emphasized the importance of so-called "urban development thresholds", among which technical infrastructure is considered the most important.

A slightly different role in the urban space is played by housing construction, that is, the process of erecting new buildings. It may not have as great an impact on the functioning of the city, particularly in terms of its socio-economic development, but the dynamics and directions of spatial development affect both the attractiveness of a given location as a place of residence (manifested in its attraction to developers and in housing prices) and define the trends in the shaping of urban space.

A good case study for analysing the technical infrastructure and the role of housing in shaping urban space is Łódź. It is the third largest city in Poland, and has one of the highest indicators of population density. The city was created and grew rapidly in the 19th century and the first half of the 20th century, a period when little attention was paid to the quality of buildings being constructed, and the technical infrastructure was often ignored during the development planning process. These phenomena are reflected in modern-day Łódź, especially in the city centre, which is characterized by a badly neglected infrastructure and decaying residential housing.

The aim of this article is to characterize and assess the main features of the development of construction and the technical infrastructure in Łódź in the 21st century, and to indicate potential future development trends in light of the city's current planning documents.

Because of its importance, the author will devote more attention to the technical infrastructure, which, from the point of view of the city as a whole, plays a much greater role in determining the proper directions for the city's spatial and socio-economic development.

2.2. Technical infrastructure

2.2.1. Transport system

Due to its central location in Poland, Łódź is characterized by a potentially very favourable position in the national transport network, particularly in terms of its location along important motorways used for national and international transport. Taking into account investments in highways already realized and those planned in the near future, the city is set to become one of the most easily accessed urban centres in Poland.

Two major transit routes intersect at a short distance from Łódź. These are the A1 highway, running north to south through Poland,

and the A2, linking Warsaw with the country's western border and Berlin. In 2014, the first of these roads will allow one to travel by highway from central Poland to Gdańsk. Meanwhile, the road should be completed to the south by 2018, after construction of the final 150 km section, which will link Łódź with the northern edge of the Katowice conurbation. The A1 currently continues southbound from this point, leading to the border with the Czech Republic.

At the same time, the A1 and A2 highways also act as bypass roads for Łódź, running along, respectively, the city's northern and eastern sides. Beginning in mid-2014, a similar role will be played south of the city by the S8 express road. Ultimately, it will provide a connection between Łódź and Wrocław to the south-west, and will function as an alternative to the A2 road to Warsaw. At this point, the city will be missing only the western side of a fully closed ring road around it. According to previously-approved plans, this will be an express road connecting a highway junction on the A2 to the north to the S8 express road to the south. Unfortunately, except for a small section of road comprising the Pabianice bypass and a connector carrying traffic from the S8 to Łódź, this investment has been postponed and will probably not be completed before 2020.

The city's external road system is comprised of four national roads and two provincial roads. Their course outside of Łódź primarily follows the course of the express roads. All of them carry traffic into the city.

The city's internal road transport system includes a total of more than 1000 km of roads (*Studium*… 2010). In the city centre, that is, inside the so-called "ring railway", which defines its boundaries, they form an unusual, in terms of Poland, rectangular street grid. It is a very dense system, with a dominant share of narrow, single-lane, often one-way streets.

Outside of the city centre, the main road system is comprised of streets running in a radial arrangement, carrying traffic into housing estates located outside the city centre. The road network in this area is much less dense. At the same time, there is a significant increase in the share of two-lane streets, with two or three lanes running in

both directions. Unfortunately, in terms of combined length, such roads comprise no more than 10% of all the public roads citywide.

The total density of the road network in Łódź is 3.6 sq. km/ 1 sq. km, but leaving out roads with the lowest technical ranking (local and access roads), the number only slightly exceeds 1 sq. km/ 1 sq. km. These figures are very low, which translates into serious problems for organising transport in the city (*Studium*… 2010).

The most serious of these problems is the lack of a complete system of bypass roads in the city centre with sufficient parameters to allow the free movement of traffic between the city's districts while avoiding the strict city centre. In the north-south direction, this role is played by the two most important transit routes in the city: Jana Pawła Avenue/Włókniarzy Avenue, which runs west of the city centre; and, to the east side, Śmigłego-Rydza Avenue/Kopcińskiego Street/Pałki Avenue. However, the capacity of these roads is insufficient. At present, there is no need to build new roads running north-south. Any decisions here should be postponed until all the express roads planned around the city have been completed, to which some of the transit traffic in the city should theoretically be diverted.

A much bigger problem is east-west travel. Currently, most of the traffic in this direction travels along the W-Z route (short in Polish for East-West), which is comprised of Mickiewicza Street and Pilsudskiego Avenue. It is *de facto* the only road in running latitudinally through the city with parameters classifying it as a main street. In addition, the W-Z route runs through the very centre of the city, so it *de facto* does not fulfil the role of a bypass road (see table 2.2). Unfortunately, the dense layout of the buildings in the city centre and the existing road system exclude any investment likely to facilitate movement, such as the construction of a new east-west bypass. Plans call for the extension of Wojska Polskiego Street in a westerly direction (this street runs through the northern part of the city centre), but this investment is not likely to be implemented in the coming years.

According to official data, nearly 50% of Łódź's streets require a thorough overhaul due to their poor condition; thus, the actions of

the municipal authorities are focused primarily on this aspect (*Studium*… 2010). These actions are, of course, necessary, but they will not solve the city's existing transport problems. In just the last 5 years, the number of cars and trucks registered in the city (per 1000 inhabitants) has increased from 450 to more than 540 vehicles (GUS 2012). This obviously translates into a higher level of traffic, particularly in the city centre, and consequently, increased congestion.

Serious transport problems are not seen outside of the city centre (that is, outside the area within the ring railway), where apart from the exit road to the north, in the direction of Zgierz, traffic flows smoothly even during the morning and afternoon rush hours (Bartosiewicz, Pielesiak 2012).

Investments liked to the city's road system, especially those realized in recent years, have been closely linked to the public transport system, which in the case of Łódź is based on trams and buses.

The tram network in the city itself is 225 km in length. In addition, Łódź also supports three suburban tram lines: to Pabianice, Lutomierska and Ozorków; this is the only system of its kind in Poland. Moreover, the latter of these is also the longest tram line in Poland, with a length of more than 20 km (considering just the section located outside of Łódź).

The most serious problem facing Łódź's tram transport system is its tendency to share routes with vehicular traffic. Approximately 30% of the lines run along roadways, which unfortunately slows travel time. At the same time, most of these tracks are located in the city centre, which significantly limits the possibilities for improving the system's functioning (*Studium*… 2010).

Bus transport in the city is provided by 78 lines, plus 7 night lines (their total length runs more than 900 km). As in the case of trams, some of these lines serve areas outside the city. Buses travel to, e.g. Alexandrów Łódzki, Zgierz, Stryków, Brzeziny, Rzgów, that is, to cities as far as 20 km away from Łódź.

From the point of view of the proper operation of the urban transport infrastructure, an important role is played by the parking system. There is a paid parking zone in Łódź encompassing

the streets within the city centre. The vast majority of these parking places are located alongside roads, on sidewalks, or directly on the street. Less common are specially designed parking bays. A drawback of the current system, especially in the vicinity of the city centre, is the lack of urban Park & Ride car parks. To some extent, this role is filled by numerous private parking lots. These are above-ground lots, most of which are located in the city centre on undeveloped residential lots.

The problem of parking also applies to areas outside the city centre, particularly to the largest housing estates built in the 1970s and 1980s. During their planning, no thought was given to the possibility of an increase in automobile ownership like that of today. As a result, residents park their cars in green areas and on access roads leading to buildings.

In order to present a fuller picture of the existing transport system today, it is necessary also to identify the main trends in its development over the last several years. Most of the investments realized over this period consisted of modernizing the existing road or tram system, in particular, the main roads running through the city centre. These repairs were often holistic, and included reconstruction of the underground infrastructure networks, street lighting, pedestrian crossings, and a complete replacement of the road surface. The intensity of work has increased notably in recent years with the advent of European funds.

The second key investment trend has been improving the functioning of public transport. The biggest investment in this area was the construction of a so-called regional tram, which according to initial plans, was to include a thorough modernization of the tram line from Zgierz in the north, through Łódź, to Pabianic in the south. Unfortunately, this investment has been realized only within Łódź itself, and due to a lack of agreement with neighboring cities will likely not be implemented further in the future. This modernization included replacement of the power lines, railways, and tram stops, as well as the installation of a traffic control system, designed to streamline the movement of the trams. In some cases, the

construction of a tram line was combined with the modernization of the street along which the track runs. This especially concerned a critical section along Piotrowska Street, the only fully modernized route where the tram track was built on the roadway. One lane was set aside exclusively for public transport, at the expense of automobile traffic. This investment was followed by other similar projects aimed at improving public transport in the city centre.

A similar profile was adopted for investments carried out outside the strict city centre. A number of streets were modernized, among which the largest project was the full renovation of the most important north-south bypass in Łódź (Jana Pawła II Avenue and Włókniarzy Avenue).

In the case of several streets leading out of the city, major roadwork was performed to widen them into two-lane roads. For the most part, this was a continuation of work previously carried out in the past.

From the point of view of the organization of transport in the city, the railway infrastructure currently plays an insignificant role. No important railway lines run through Łódź, which is located peripherally in relation to the national railway system. With the exception of the railway line running in the direction of Warsaw, the other lines, which run west (toward Kalisz), north (towards Kutno), and north-west (towards Łowicz), are characterized by low technical parameters, which limit train speeds to a maximum of 60–80 km/h, or 90 km/h along the latter line.

Circling the Łódź city centre is the previously mentioned ring railway, linking the rail lines extending outward from the city centre. In the near future, the ring railway will become a main link in the creation of a suburban railway network. For this purpose, railway stops are being renovated or built anew, and the tracks gradually modernized. However, due to the course of the individual routes, the suburban rail system will not play a major role in transport within the city. The ring railway is located relatively far from major residential districts, and away from the city centre. However, the building of a suburban railway network can obviously help limit

congestion by reducing the number of commuters travelling in and out of the city by car. Integrating the suburban railway network with the city's public transport system is planned as a means of encourage drivers to make such a change, but to date no concrete measures have been proposed in this regard. What has been achieved is the creation of a common ticket within the urban agglomeration, allowing one to travel on both trains and public transport.

Although the railway infrastructure has no significant impact on the organization of transport in the city, it is now playing a major role in the reconstruction of the road system and public transport in the city centre. This is associated with the construction of the new Łódź Fabryczna railway station. In place of the old station, a new underground facility is being built. In connection with this investment, a series of parallel activities are being undertaken, aimed at reorganising traffic around the new station. A multimodal station is being built that will house a transfer station for trains, long-distance buses, and public transport (trams and buses). This will require reconstruction of the road and tram line (which will lead directly into the station). The existing street system will be significantly overhauled, and new roads will be built to carry traffic away from the station. This is all part of a larger project, which is currently the city's most important urban planning project: the construction of the so-called "new city centre". Completion of the infrastructure phase of this work is planned for 2015–2016. It is interesting to note that this is the first infrastructure investment of this scale carried out in the city centre over the past several decades.

In 2013, a second major investment in transport began, i.e. the reconstruction of the main east-west road through the city centre (the previously mentioned W-Z route). Plans call for the tracks along the whole route to be replaced and a tunnel to be built running through the strict city centre. Transit traffic will be routed through the tunnel, while on the surface, a tram transfer station will be built.

The project is controversial because it does not contribute to greater improvements in easing automobile traffic in the city centre, but according to the author, this project is necessary, serving to

lessen traffic in the strict city centre and expand the pedestrian and cycling zone. This will undoubtedly contribute to increasing the attractiveness of this part of the city.

The third and final major road investment, being carried out in the southern area of the city, is the so-called "upper route". Ultimately, it will comprise the southern part of the city's ring road, linking north-south transit routes in the western part of the city (Jana Pawła Avenue/Włókniarzy Avenue) with the A1 highway running to the east. This investment is very important for the residents of housing estates in the south of the city, through which the majority of traffic from north to south currently runs.

These three investments, although they will help improve the transport system in Łódź, will not address all of its needs, among which the following should be mentioned:

- expansion of the road system serving to lessen traffic on streets in the city centre. Mainly through a system of bypasses of the city centre;
- further modernization of the existing road system to improve technical parameters;
- expansion of the traffic management system;
- favouring public transport and separating traffic in the city centre;
- construction of a system of multi-level Park & Ride car parks in the outer zone of the city centre;
- expansion of the transport system serving pedestrians and cyclists.

2.2.2. Water and sewage system

Łódź, like Lviv, is situated on a watershed. By the mid-19th century, as the textile industry expanded, problems arose in terms of the availability of clean water, both for residents and for use in industrial processes at many of the city's factories. A significant reservoir of underground water was discovered at that time and began to be

exploited. As industry began once again to grow after 1945, these resources proved inadequate to meet increasing demands. An idea from the pre-war era resurfaced, first proposed by Lindley, the builder of the first Łódź water and sewage system. Work was started in the 1960s on the building of a retaining reservoir on the river Pilica (approximately 40–50 km from Łódź) to serve as a water reservoir for Łódź. Two high-efficiency aqueducts were then built to provide water for industry and households in the city. However, after 1990, with the closure of most of the water-intensive industrial plants, demand for water in Łódź began to rapidly decline. At the same time, groundwater began to be more effectively exploited. This resulted in a significant reduction in the use of the water-supply system, which ceased to transfer water from the river. This water became a supplement to groundwater sources from the city, and provided water to the those living in the vicinity of Tomaszów Mazowiecki and Sulejów.

In the 1980s, water consumption in Łódź was less than 130 000 cubic dm per year (including use in industry). Currently, the consumption is less than 50 000 cubic dm per year, and continues to follow a downward trend. At the same time, the current water supply capacity exceeds usage by approximately 30%, which in the long run ensures a steady water supply for the city (GUS 2012).

The Łódź waterworks system is over 1300 km in total length and supplies 95% of the population, a figure that meets the standards of service in this field (Łyp 2008). In recent years, the network has increased slightly in length, primarily as a result of areas of new construction being connected to the system (cf. table 2.1).

It should be emphasized that Łódź enjoys clean and healthy water, which is not the norm among major cities in Poland. By using almost exclusively underground water from the Upper Cretaceous, the city supplies users with water that has properties similar to those found in bottled spring water. Problems remain, unfortunately, in the technical condition of the water-supply system, especially in the city centre. Cast iron pipes are still often used, which can lead to the contamination of clean water running through them before it reaches the public. For this reason, numerous modernization projects

are being carried out to replace old pipes, many of which were laid before the Second World War.

Sewage disposal in the city is carried out by a system of sanitary sewers with a total length of 1100 km, serving more than 85% of the population (cf. table 2.1). A combined sewer system, most of which was built in the 1920s and 1930s, serves most of the city centre.

Since 2002, the sewer system in the city has expanded in length by 32%, mainly due to expansion of the system into neighborhoods dominated by single-family housing that previously lacked access to it. At the same time, as with the water-supply system, numerous projects are undertaken to modernize the city's sewers, consisting primarily of replacing the oldest sections of the system in the city centre.

Table 2.1. Selected features of the water-supply and sewer system in Łódź in 2002, 2007 and 2012

Feature	Year		
	2002	2007	2012
Length o water-supply system (in km)	1 179.9	1 223.3	1 309.8
Length of sewer system (in km)	838.8	914.9	1 115.1
Population using water-supply system (in %)	94.5	94.6	94.7 (2011)
Population using sewer system (in %)	83.3	85.0	86.0 (2011)
Average water usage per 1 resident (in cubic m/year)	51.5	42.9	40.4

Source: own elaboration based on data from the Central Statistic Office (GUS 2012).

With the exception of water from the storm sewer system, all of the city's sewage is directed to the wastewater treatment plant located in the western part of the city. Most sewage is carried by means of conventional gravity sewers. The current capacity of the municipal wastewater treatment plant significantly exceeds the level of sewage produced. For this reason, waste from neighboring cities and municipalities is also processed there.

Łódź has a well-developed water-supply and sewer system, which in the coming years will not require major investments. We should expect continued modernization and expansion work in areas where new investments are being carried out, and in single-family housing estates, where access was previously lacking.

2.2.3. Power-supply system

Electrical power is provided to Łódź by three municipal power and heat-supply plants, supplying approximately 60% of the city's demand for electricity, and from three high-voltage transformer substations that supply power from the national grid.

The city is served by more than 40 km of HV lines, nearly 900 km of MV lines, and more than 5500 km of LV lines, most of which are underground cable lines. The surplus capacity of the existing system during the period of peak consumption, which falls in the winter months, exceeds 75% of current demand (*Studium*… 2010).

The shortcomings of the city's power-supply system include inadequate supply to areas of new investment, particularly to those areas where plans call for construction of single-family housing, and the low efficiency of the system in the city centre, where an expansion of transformer stations that would enable increased consumption of electricity is hindered by dense urban layout, and in the districts of Dąbrowa and Teofilów (*Studium*… 2010).

The strengths of the municipal power-supply system are its large reserves, and well-equipped infrastructure in the city's industrial districts, particularly in the south east.

Year-to-year increases in electricity consumption in Łódź correspond with trends nationwide. This is currently approximately 860 kWh per inhabitant, which is 20% higher than in the year 2000 (see table 2.2).

The gas-supply network in the city has a length of almost 1100 km, and supplies more than 80% of the population (cf. table 2.2). The network in Łódź is powered by high pressure pipelines which ring the entire city.

Table 2.2. Selected features of the gas- and power-supply system in Łódź in 2002, 2007 and 2012

Feature	Year		
	2002	2007	2011
Length of gas distribution network (in km)	1 015.0	1 057.8	1 087.2
Population using gas supply system (in %)	82.1	82.8	81.9
Average gas usage (in cubic m/year per user)	113.9	145.9	120.7
Average electrical power usage (in kWh/year per resident)	754.9	797.2	858.29

Source: own elaboration based on data from the Central Statistic Office (GUS 2012).

The gas-supply network is most dense in the city centre and in multi-family housing estates. The network serves residents of single-family housing estates on the outskirts of the city only to a limited extent. Meanwhile, in these areas, natural gas is used for heating, whereas merely a few percent of those living in the city centre use gas for this purpose. The reason for this state of affairs is the high degree of decay in the network in the city centre, which prevents gas from being supplied in quantities sufficient for heating purposes. An equally important reason for this situation is the existing heating network in the city, powered by the three aforementioned plants. This network supplies heat to all the major housing estates in the city and to the city centre. Its existence, however, does not solve the main problem in terms of thermal energy in the centre of the city, where in buildings built during the interwar period an important role is played by individual heating solutions in the form of coal-fired furnaces. In this context, modernization of the gas system in the city centre should be, according to the author, a priority in the coming years.

2.3. Housing construction

Since the political changes in 1989, residential construction in Łódź has been carried out in an uncoordinated manner. This is due both to a lack of planning studies, especially for the outskirts of the city, where the process has been the most chaotic, and to the lack of a coordinated policy, although in the latter case, some positive changes can be observed.

First, in 2012, the city adopted a written housing policy (*Polityka*… 2012). While its contents mainly refer to municipal building – Łódź is the largest owner of residential housing among Poland's largest cities – this document represents a crucial milestone. In it, a problem was first identified that has been growing since 1989, that is, the significant depreciation of pre-war residential buildings, especially in the strict city centre. According to various sources, some 50% of the buildings are not suitable for use.

Secondly, the Study of Conditions and Spatial Planning (the basic planning document at the city level) currently being prepared anticipates a reorientation of the city's development trends towards the city centre. The aim of this move is both to halt the uncontrolled and chaotic development of available building sites on the city outskirts, and to fill in gaps between existing buildings in the city centre and replace degraded housing and industrial sites with new construction, primarily residential housing. By creating such conditions, the municipal authorities are seeking to renew interest in living in the city centre, which is best achieved by investments in infrastructure, particularly in transport, like those described above.

In the 20th century, housing development in Łódź proceeded in a spatially organized fashion. Up until 1945, and even afterwards, the city developed primarily within the ring railway, that is, within the present borders of the wider city centre. This was primarily rental housing. Unfortunately, due to the dynamic development of industrial Łódź since the mid-19th century, the city's urban fabric is chaotic, with industrial and residential structures standing side by side, which to this day plays a significant and negative role in terms of the spatial structure of the city.

In the 1960s, plans began for the development of the city beyond the ring railway. New residential areas were built next to industrial areas – in the form of large-slab housing blocs. These were built around the older parts of the city.

After 1945, single-family housing had a marginal impact on the city's development – slow growth has been recorded only since the 1980s. This type of housing dominated primarily in villages that were incorporated as city precincts in the 20th century.

The situation in the housing market changed radically after 1989. In the 1990s, several investments which were started in the 1980s were successfully finished, above all, the Radogoszcz-Wschód housing estate – but the state, the main investor then, ceased to pursue further projects. As a result of the economic crisis that manifested itself during the period of political transformation, housing development practically ground to a halt.

Not until the mid-1990s was an increase in housing investment observed, initially, mainly on the part of the private (construction of single-family housing) and housing-cooperative sectors. The most significant construction boom in Łódź took place in the early years of the 21st century. During this period, an average of 450 new residential buildings were completed annually (cf. figure 2.1). The majority of these structures were, of course, single-family homes.

More reliable information on construction activity in Łódź in recent years is provided by the number of dwellings built. Here, dynamic growth can clearly be seen in multi-family housing, particularly after 2004, when developers began to rapidly expand construction in Łódź of multifamily buildings, offering individual flats for sale (cf. figure 2.2).

The trends in the spatial development of housing construction in Łódź in recent years can be divided into three dominant tendencies.

First, multi-family housing development has taken place outside of the wider city centre. This includes both the construction of new buildings on undeveloped plots, mostly former industrial or storage sites, and the transformation of industrial facilities into residential housing (so-called lofts). This development trend has gained momentum over the last few years, and in light of the city's previously-mentioned spatial policy, this trend should dominate in the future.

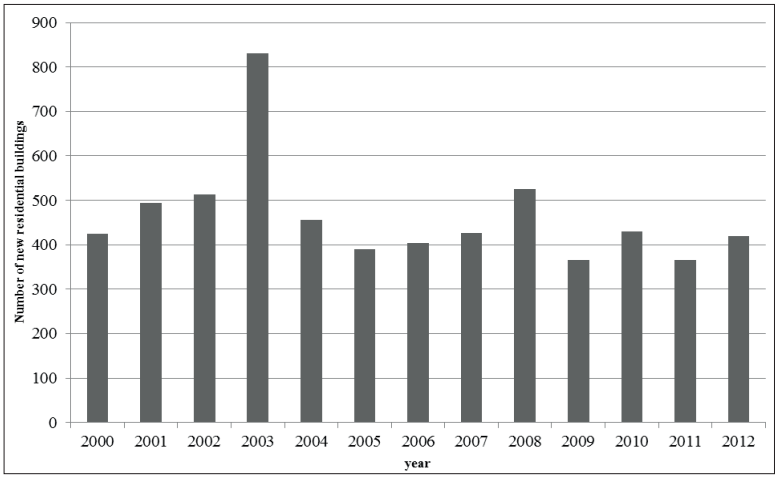

Figure 2.1. Number of new residential structures built in Łódź, 2000–2012

Source: own elaboration based on data from the Central Statistic Office (GUS 2012)

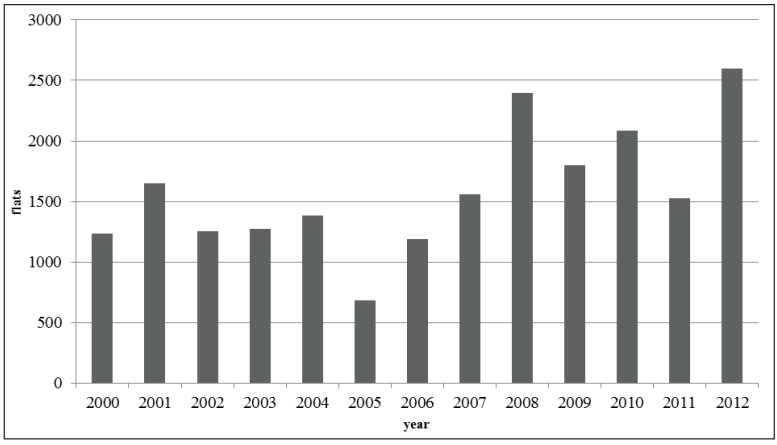

Figure 2.2. Number of new flats built in Łódź, 2000–2012

Source: own elaboration based on data from the Central Statistic Office (GUS 2012)

The second trend, which is also associated with multi-family housing construction, is the building of new housing estates outside of the city centre. Most are these are located close to existing residential areas built during the 1970s and 1980s, and, to a lesser extent, on the outskirts of the city.

Since 2000, in Łódź a total of more than 14 300 flats have been completed in multi-family buildings. The largest share of these flats were built for sale or rent by developers (70%). The remainder were built by housing cooperatives (approx. 2000 flats), or by the city as municipal or social housing (approx. 1100 flats) (cf. figure 2.3).

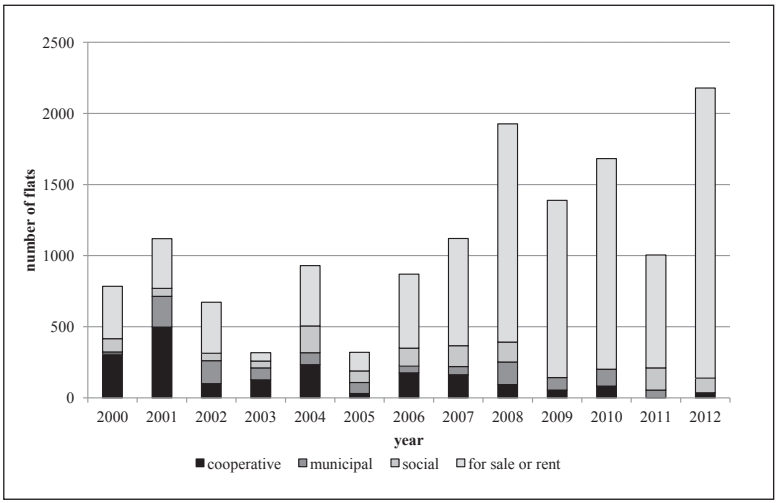

Figure 2.3. Number of new flats built in multi-family buildings in Łódź, 2000–2012

Source: own elaboration based on data from the Central Statistic Office (GUS 2012)

The largest increase in new dwellings was recorded over the last 5 years, when nearly 60% of all the housing construction during the analyzed period was completed. While up until 2005 the invest-

ment structure of new housing was highly diverse, after this date, the developer sector begins to significantly dominate. In the past 5 years, this sector has built virtually all new multi-family buildings in the city. During this period, the number of buildings erected by the remaining groups has ranged from 1–2 sites per annum.

This rapid rate of growth in housing in recent years has been dictated by at least two factors. The first was the introduced of new legislation in 2004 that, among other things, rescinded the spatial development plans in force before that year. In many cases, this opened up the possibility of building in new areas, particularly in cities (Milewska-Osiecka 2010). Secondly, the construction of multi-family buildings is a longer process than in the case of single-family housing, especially in the preparatory stages. Many developers took the decision to launch an investment project in 2005–2007, when Poland was experiencing a significant real estate boom. A number of these projects came to completion only in the last 2–3 years because developers held back investments following the collapse of the housing market caused by the crisis in financial markets.

The average size of a new flat built in Łódź in 2000–2012 is 68 sq. m, but in recent years a downward trend has been witnessed. In 2012, when a record number of flats was completed, the average size was only 60 sq. m.

Along with the decrease in size of new flats, the average number of rooms per dwelling has decreased as well. While at the beginning of the period, this fluctuated around 3.5 rooms, recently the number has not exceed three.

The trend in housing construction in Łódź towards multi-dwelling buildings should continue at a similar level. Further increases should be expected in the number of newly completed flats, along with a continued decline in their average size, due to increased interest among buyers in smaller flats.

The third trend is related to the spatial development of single-family housing, which is concentrated primarily on the outskirts of the city. This is particularly the case in the north-eastern and eastern

Table 2.3. Newly constructed singly-family homes in Łódź, 2000–2012 – selected indicators

Feature/ year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Number of buildings	448	533	583	956	454	362	316	437	471	411	400	520	417
Average area of buildings (in sq. m)	167.4	177.6	172.3	181.7	183.0	183.6	185.7	161.6	159.4	147.8	147.5	117.0	130.3
Average number of rooms	5.2	5.5	5.3	5.5	6.0	6.2	6.5	5.9	5.7	5.3	5.1	4.4	4.9

Source: own elaboration based on data from the Central Statistic Office (GUS 2012).

parts of the city, which have the largest number of open spaces, and, in the first case, its close proximity to areas valued for their natural beauty, including the largest forest complex in the city – Las Łagiewnicki.

Since 2000, a total of more than 6300 single-family homes have been built in Łódź, which yields an average of nearly 500 dwellings per year.

The average floor space of a newly built single-family home is approximately 160 sq. m. Such homes have an average of five residential rooms. Whereas before 2006 there was a steady increase in the floor space of newly-built homes, with the advent of the economic crisis in 2007–2008, which led to a tightening of the requirements banks take into account when making a decision to grant a mortgage, the average size began to decrease. In the last 3 years, this has amounted to just approximately 130 sq. m (cf. table 2.3).

The single-family homes being built in Łódź do not stand out from those nationwide. Most of these buildings are single-storey structures featuring usable attic space, built by means of conventional technology. According to data from the Central Statistical Office (GUS), the average time required to build such a dwelling was approximately 2 years.

In the coming years, we should expect a similar trend in the development of single-family housing. At the same time, it can also be assumed that as the economy recovers and banks ease their lending policies, the average number of new homes completed will rise.

2.4. Conclusions

Łódź, one of the largest cities in Poland, continues to struggle with many problems that are a consequence of the changes that occurred after 1989. The city, which for over 100 years was a monofunctional industrial city, lost its economic base practically overnight, changing the face of the city economically. This had far-reaching consequences, with which, in many cases for objective reasons, the city has been unable to cope. The city's existing problems affect most areas of

social and economic life, including the technical infrastructure and housing construction. The situation has been further worsened by demographic trends. The city is facing a rapid population decline resulting from a negative birth rate and a net loss in terms of migration. These phenomena are intensified by a rapidly aging society. These processes are taking place faster in Łódź than in other major cities in Poland.

These factors directly affect the city's development potential. Fortunately, a major impetus for development has been provided by European funds, which have enabled the city to launch a number of new projects. This has been particularly noticeable in the past few years. Since 1989, never have so many major infrastructure projects been implemented at the same time in Łódź as today. In many cases, these investments arouse public controversy, for instance, when they make it difficult to travel around the city or when it seems the money could have been spent more effectively. Perhaps in some cases this is true, but we should consider that in Łódź's city centre, major infrastructure projects aimed at improving the functioning of transport in the area are being implemented for the first time in decades. After this work is completed, the investment attractiveness of Łódź can be expected to increase, particularly in parts of the city centre, which will directly translate into an increase in construction investment in this area, including investments in housing.

Anna Hoblyk

National Academy of Science of Ukraine

3. ECONOMIC SPACE OF LVIV

3.1. Introduction

In its development, Lviv has passed a historic era from a craft-trading town to a major academic, industrial and cultural centre.

During the Austro-Hungarian monarchy an important role in development of the city as an economic and trade centre was played by the railway, constructed in 1861, which connected Lviv through Przemyśl and Cracow with Vienna. As a result, the city of Lviv became a major railway junction region. The status of the capital city of the province of Galitsiya and strategically advantageous geographical location caused investments, and socio-economic development of the city. Hotels, banks, casinos, cafes, shops and cinemas rapidly began to appear in the city. The institutions of higher education also developed dynamically. On the eve of the First World War there were about 100 industrial enterprises employing over 20 people.

From 1918 to 1939, during the Polish government, there was a rapid development of many industrial branches: engineering, electrical, chemical, mineral, construction, printing, food processing, textiles, footwear, garment and other industries. The largest companies in Lviv included two glass factories, three tanneries,

confectioneries, distilleries and canned food plants. Metal industry was represented by rail and tram repair shops. In addition, there were plants producing electrical products, fire equipment, water pumps, instrumentation, and low voltage lamps. Other branches that should be mentioned included oil-refining, ultramarine factories, paint factory, perfume and cosmetics factories, several printing companies and factories of printing equipment and Lviv power plant. There also was a furniture factory and a veneer plant (Nazaruk 2008, pp. 145–149).

Areas to accommodate industrial projects were selected taking into account features of the natural environment, transport accessibility and the cost of land. In the early 20th century the northern industrial area began to emerge, located between the hills of Roztochchya to the east, Kortumova mountain to the west and the river Poltva.

In 1937, there were 3988 industrial and craft enterprises in Lviv. Of these, large and medium-sized enterprises accounted for 7%, the rest were small entities mainly engaged in handicraft (*Lviv v tsyfrakh*… 2006, p. 12).

After the joining of Western Ukraine with the USSR in 1939, nationalization of the means of production was carried out in Lviv – private trade was reorganized into state sector.

In the post-war years the era of industrialization began in Lviv. The restoration of industry and municipal economy of the city happened rapidly. In June 1945 there already were 221 different companies, including the steam-locomotive repair, electric bulbs production, leather plants, garment and shoe factories. Along with the restoration and expansion of existing enterprises began the building of new industrial facilities, from which the northern, western and southern industrial areas were formed. The northern region began to emerge in the early 20th century. The western and southern industrial areas began to develop rapidly after the Second World War. The specialization of the western area was engineering industry, while the economic foundation of the southern region were enterprises of electrical and energy industries.

In the years 1945–1947 the factories that were put into operation produced telegraph equipment, electrical appliances, lamps, agricultural machinery, mechanized window glass and hosiery, and there also was a cotton-spinning factory. In 1948 a grease plant was opened, and in 1949 – an autoloader plant and cardboard factory.

In 1946 began the construction of a bus factory. During 1951–1956 the plant produced cranes, in February 1956 it produced the first experimental bus, and in 1980 the production of buses reached to 14 200.

On the basis of a bike-assembly company was established the plant "Motozavod", which produced bicycles. In 1958 it began the production of mopeds, reaching the highest level of output (240 000) in 1980 .

In 1950, the industrial production in the city was 3.5 times higher than the volume of production in the prewar period, and in 1955 – it increased by 8 times. In 1975, the industrial output of enterprises was 20 times the level of 1950 and more than 150 times the pre-war level (*Lviv v tsyfrakh*… 2006, p. 14).

At the end of the 1970s, there were 42 industrial associations, which comprised several similar companies: in the machine-building industry – Lvivsilhospmash, Avtonavantazhuvach (Forklift), in instruments making – Elektron, Kineskop, Lvivprylad, Lenin, 50th Anniversary of October, in the food industry – Colossus, Svitoch and others. The leading role in the economy of the city was played by mechanical engineering and instruments production. A significant part of enterprises belonged to the military-industrial complex (Nazaruk 2008, p. 156). It is important to note that the industry of the city accounted for 97% of the country's bus production, and 25% of TV-set production. The city concentrated all the manufacture of scooters, autoloaders and load-carrying conveyors.

In 1980, the population of the city was 691 200, 150 000 of which, i.e. almost 2/3 of employees, were employed in the industry of the city (Nazaruk 2008, p. 158). For comparison, in 1960, the city's population was 434 100.

3.2. Changes in the economic space of the city of Lviv in 1991–2000

In the early 1990s the most significant economic sector of Lviv was industry, which has a diversified structure (table 3.1).

Table 3.1. The structure of employment in the national economic complex of Lviv

Specification	The number of workers and employees	
	thousand people	in %% of total
I. The state sector		
1 Industry	221.7	43.5
2. Construction	27.9	5.5
3. Transport and communications	44.6	8.7
4. Trade, food procurement and logistics supply	39.4	7.7
5. Health, physical education, and welfare	25.0	4.9
6. Housing, utilities and public services	25.1	4.9
7. Education	40.4	7.9
8. Science and scientific services	29.7	5.8
9. Culture	6.6	1.3
10. Agriculture and forestry sector	2.4	0.5
11. Other industries	21.3	4.2
Total	484.1	94.9
II. The private sector		
1. Industry	7.2	1.4
2. Construction	7.2	1.4
3. Trade, public catering, logistics	1.0	0.3
4. Other industries	10.7	2.0
Total	26.1	5.1
All workers and employees	510.2	100.0

Source: based on data from *Lviv Master Plan*, 1992.

221 700 persons, or 43.5% of total workforce, were employed in industry. Most employees were involved in the machine building sector (table 3.2).

The following picture of the spatial organization of the city in the early 1990s, which was spatially formed by major elements of the city's economy, is presented in the city master plan, developed by Mistoproekt and approved by the resolution of the Lviv City Council of 29th July 1993 (figure 3.1).

Table 3.2. Major enterprises of Lviv as of 1st January 1993

Enterprise	Number of employees, thousand people	Main products
1	2	3
Kineskop	12.8	CRT
LORTA	10.5	Radio and telegraph equipment
LAZ	8.9	Buses
Elektron (main plant)	8.6	TV sets
Lvivprylad	7.2	Radio and electric measurement technology
Telegraph equipment factory	6.9	Telegraph equipment
Avtonavantazhuvach	6.8	Autoloader
Polyaron (main plant)	6.7	Microcircuitry
Elektron – Ryasne	6.5	Color TV sets
Iskra	5.8	Electric lamps
Lvivkhimsilgospmash	4.5	Agricultural technics
Promin	4.4	Apparel
Progres	3.9	Shoes
Mikroprylad	3.6	Microcircuitry
Konveyer	2.8	Conveyor
Motozavod	2.7	Mopeds, bicycles
Svitoch	2.5	Confectionery

Table 3.2 (cont.)

1	2	3
REMA	2.4	Medicine technics
Mayak	2.2	Apparel
Biofizprylad	2.0	Biophysical technics
Svitanok	2.0	Leather
Meat processing plant "Prykarpattya"	1.8	Meat foods
Kolos	1.5	Beer
Yunist	1.4	Knitted wear
Prykarpatpromarmatura	1.3	Reinforcement
Milling machines factory	961.0	Milling machines
Instruments producing plant	845.0	Instruments
Jewelry factory	937.0	Jewelry
Cotton-spinning mill	662.0	Cotton yarn

Source: Nazaruk (2008, p. 162).

Main industrial territories of the city with industrial, warehousing, transportation objects and areas of outside transport (railways, airports, bus stations) are concentrated in the peripheral planning sections in the monofunctional industrial-territorial units on the main transport axes of the city.

A significant part of industrial areas was formed by companies located outside industrial zones (industrial hubs, industrial areas) – they were scattered all over the city including residential areas. First of all it concerns the central planning area within which there is still a significant number of manufacturing objects.

In the north-eastern planning district between Zamarstynivskya and Lypynskogo streets and Lviv–Kyiv railway there is an industrial area comprising North and North-East industrial centres .

In the southern planning district along the railway Lviv–Khodoriv and Zelena Street there is a manufacturing area, comprising South-East industrial hub near Sykhiv railway station and South-East industrial zone.

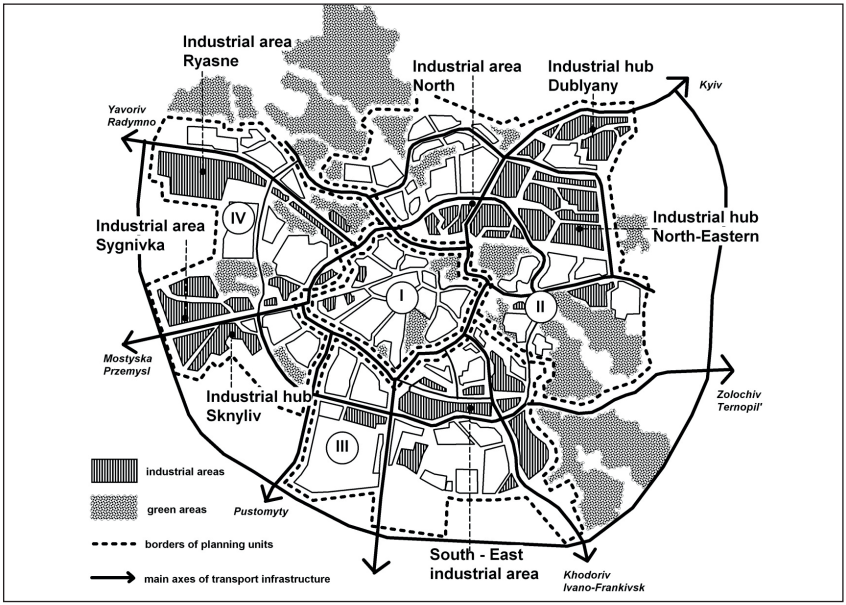

Figure 3.1. Scheme of industrial areas in the planning structure of the city of Lviv (late 20th century)

I – Central district, II – North-East district, III – South district, IV – West district

Source: Mazur and Posatskyy (2008)

In the western planning district two industrial zones were formed: "Sknyliv" and "Sygnivka" along Gorodotska Street, and "Ryasne" industrial hub along Shevchenko Street.

The industrial facilities located outside industrial zones included enterprises that occupied large, intensely used areas with highly durable buildings, such as a group of enterprises in the western part of the central planning district (near the railroad) and in its northern part (Kineskop, Avtonavantazhuvach, Elektron, Lvivkhimsilhospmash FTA etc.) (*Generalnyy plan Lvova*… 1992, pp. 213–214).

The 1993 *Lviv Master Plan* contained a forecast of the city's development up to 2011 and provided for further territorial expansion up to 14 074 ha. More specifically, it was planned to expand:

service and auxiliary departments by 914 ha, industrial territories by 392 ha, community facilities by 277 ha, pipelines and networks corridors by 212 ha, power supply enterprises by 136 ha, external transport by 125 ha, and construction sites by 53 ha.

It is obvious that such a forecast of the city's growth was somewhat "optimistic" because estimates of the size of land necessary for new construction in the city were based on the forecasted population increase to 950 000 000 and maintaining the growth rate of the economy, and did not consider the negative social and economic processes that appeared in the early 1990s.

With the collapse of the Soviet Union and Ukraine's independence, Lviv, like all the former Soviet Union cities, found itself in a difficult socio-economic conditions caused by the collapse of the former single Union economy and breaking of formerly organized industrial relations. The logical consequence of a fall in production was the falling living standards of the majority of the population and a significant outflow of qualified personnel to Western Europe and North America. Significant changes occurred in the spatial structure of cities that are a natural consequence of not always reasonable and transparent privatization, and denationalization of capital assets.

During the first decade of independence of Ukraine the structure of industrial production of Lviv changed substantially. During the 1960s–1980s, the leading place among industries belonged to mechanical engineering and metal-working (59.3% in 1991), dominated by production of the military-industrial complex, namely instruments making. At the beginning of the 21th century, the food industry became dominant, which at the end of 2001 accounted for 39.4% of total industrial production. The share of the engineering and metal industry was 17.6%, light industry 6.2%, chemicals and oil 6%, energy 4.9%, and construction materials industry 5.5% (Nazaruk 2008, p. 161).

The distribution of entities in the EDRPOU[1] by the type of economic activity, as of 1st January 2001, with total number

[1] EDRPOU – the National State Registry of Ukrainian Enterprises and Organizations.

of 22 515 units, is presented in figure 3.2. Most of the entities in the EDRPOU were in section "Wholesale and retail trade". Their share is 32% or 5679 units.

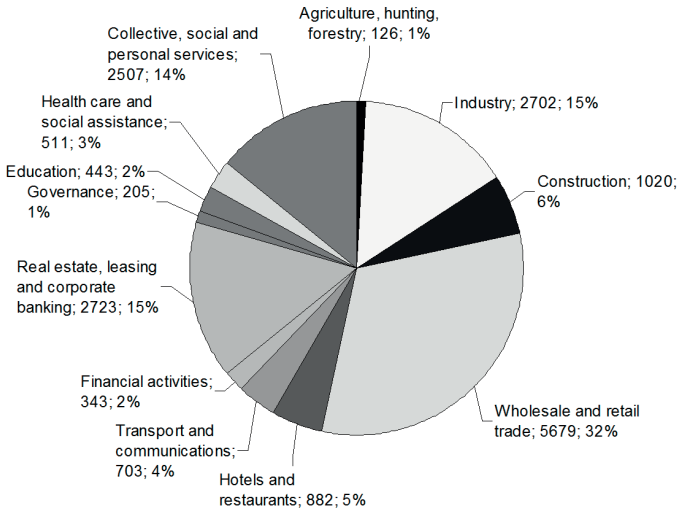

Figure 3.2. Distribution of entities in the EDRPOU, by type of economic activity on 1st January 2001, per cent of total

Source: based on data from Lviv Statistics Office

The second place is shared by enterprises and organizations involved in real estate and industry. Their share was 15% each, or 2723 and 2702 units respectively. In the third place are companies and organizations in the field of collective, public and personal services, whose share is 14% or 2507 units (*Lviv v tsyfrakh*... 2006).

By 1st January 2001 there were 7519 small businesses. The majority of small businesses were concentrated in retail trade and public catering – 58.3%, industry – 18.4%, building industry – 6% in personal services – 4.8%, in other areas – 12.5%.

By the year 2000, compared to 1990, the number of employees in all sectors decreased by 228 300 (table 3.3). In particular, the largest

loss of jobs was in industry, building, education and science, where the numbers were respectively: 163 600, 16 200 and 17 300.

Table 3.3. Average number of employees by sectors of economy

Specification	1990	1995	1999	2000
	thousand people			
Economic sectors	516.2	371.3	297.7	287.9
Industry	243.3	144.0	89.2	79.7
Construction	33.9	30.7	19.7	17.7
Transport and communication	46.1	34.1	47.0	37.8
Trade, catering	46.5	22.4	23.1	22.5
Procurement, logistics and supply	18.8	14.0	19.3	24.7
Health and social care	29.4	28.7	28.6	29.7
Education and science	62.9	56.5	45.7	45.6
Culture and arts	7.0	6.1	5.6	5.6
Other institutions and organizations	27.4	34.8	19.5	24.6

Source: based on data from the Lviv Statistics Office.

Changes in industrial structure are presented in table 3.4, which shows the dynamics of major industrial products of the city for 1980–2001 years.

As shown in table 3.4, during 1990–2001 there was a rapid decline in major industrial products, which previously were a visiting card of the city. In particular, production of buses declined 27 times, lift trucks – 3186 times, TV sets – 375 times. The production of mopeds and conveyors stopped completely.

Table 3.4. Production of main industrial products

Specification	1980	1990	1995	2001
Buses, pieces	14 237	12 118	2 119	514
Autoloaders, pieces	19 117	21 084	1069	6
Hanging carrying conveyor, pieces	1 702	1 804	42	–

Cutting machine tools, pieces	94	1 036	214	2
Gas cookers, thousand pieces	192	235	18.5	–
Water heaters, thousand pieces	154	138	7.1	–
Illuminating electric lamps, million pieces	165.5	366.5	183.2	232.6
Spraying and dusting machines, pieces	beginning of production	25 602	1 025	384
Soft roofing materials and isolating materials, million square meters	27 109	21.5	5.8	0.3
TV sets, thousand pieces	674.4	1 232.6	28	1.8
Mopeds, thousand pieces	240	132.9	0.1	–
Shoes, thousand pairs	10 025	3 883	405	856
Tights and socks, thousand pairs	19 400	14 030	956	792
Hosiery, thousand pieces	18 100	5 009	688	6 713

Source: based on data from the Lviv Statistics Office.

3.3. The development of economic space of Lviv in 2001–2011

Among the positive economic developments that have taken place over the past decade in Lviv should be noted the winning by Ukraine (in 2007) of the right to hold the football championship Euro-2012, which gave a stimulus for economic recovery in the city. Today, work is being completed on construction of a new airport terminal with capacity of 1000 passengers per hour and the stadium "Lions Arena" for 34 915 spectators, as well as a railway station and the railway station square; the hotel industry is expanding, and a road networks being developed.

As far as economic development is concerned, no large-scale industries/enterprises were created in the last decade, despite a significant increase in the number of enterprises and organizations (over 10 000 entities) compared to 2001 (see table 3.5). Most start-ups are small businesses with average annual revenue of

60 000 dollars and with 5 employees, and focus on products and services with low added value. Investments in innovation represent only about 3% of fixed investment, which is twice lower than in Kiev, and 9 times less than in Prague (*Strategiya*... 2010, pp. 10–15). As shown in the diagram (figure 3.3) the largest number of enterprises are operating in the field of trade.

Table 3.5. Number of entities in the EDRPOU

Specification	2001	2006	2007	2008	2009	2010
	on 1st January, items					
Lviv	22 515	28 345	29 552	30 965	32 158	32 923
Lviv Oblast	44 997	55 336	58 080	60 364	62 115	63 999

Source: based on data from Lviv Statistics Office.

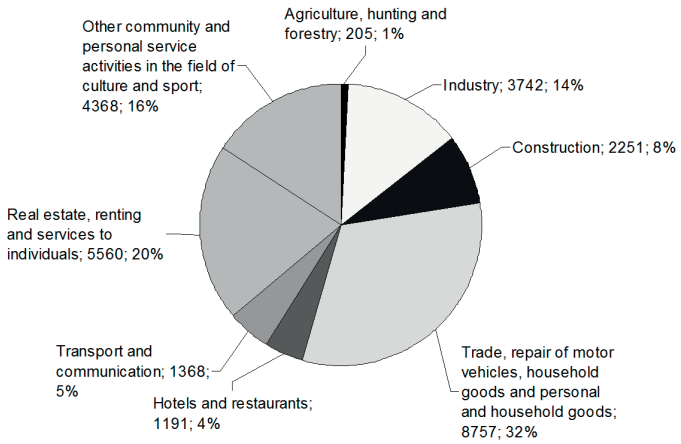

Figure 3.3. Distribution of entities in the EDRPOU, by type of economic activity, on 1st January 2011

Source: based on data from the Lviv Statistics Office

Shadow economy negatively affects investment and city development. According to various experts, it constitutes from 30% to 80% of the city's economy. Estimated share of shadow economy

in Lviv is 21% in industrial production, 35% – in construction and 30% – in services and trade. Informal employment is estimated at 18%, and wages – 35% of the formal sector. As a result, the city budget receives less revenue from taxes to fund the services and infrastructure of the city (*Strategiya*… 2010, p. 15).

The logical consequence of structural changes in Lviv economy is significant structural changes in the functional use of territory, mainly caused by bankruptcy and redistribution of property. The *Master Plan*, adopted in 1993, could not provide effective management of spatial and socio-economic development of the city in the new market economy. So, in 2001, the State Institute of Urban Design "Mistoproekt" began work on adjusting *Lviv Master Plan*, which was approved by resolution of Lviv city council on 30th September 2010.

Table 3.6 shows the comparison of basic indicators of city development to 2010, forecast by the *Master Plan* in 1993, and actually reached in 2008 year. These numbers again confirm the negative trends of socio-economic development that took place during the second decade of the independence of Ukraine, in particular the depopulation caused by migration of population and low birth rate, "outflow of intelligence", and job losses.

Table 3.6. The comparison of actual and planned indicators of city development

Indicator	1990	2010 (indicators projected in 1993 *Master Plan*)	Actual indicators as on 1.01.2008 (% of 1993 *Master Plan* projections)
Population, thousand people	802.2	950.0	732.8 77.1%
Employment, thousand working places	537.2	620.0	407.7 65.8%
Housing, thousand square meters	11 557.5	22 292.8	12 914.5 57.9%
The amount of housing construction, thousand square meters	–	9 493	2 340 24.6%

Source: *Koryhuvannya heneralnoho planu…* (2008, p. 8).

The main postulates of the *Master Plan* 2010 are: preservation of material and spiritual resources of the city, revival of the status of unofficial capital of Western Ukraine, development of the city as an international tourist centre, an industrial centre based on high-tech and non-waste production and an international transport hub.

In this regard, the *Master Plan* contains measures relating to reconstruction of the city (upgrading the existing systems to ensure their proper functioning), improvement of the planning structure, change in the functional use of a number of territories, preservation and restoration of the historical heritage, and protection and recovery of the environment.

It is planned to develop the city as a multifunctional centre, providing employment to 406 000 people. Priority is given to development of tourism and a related system of services, based on the great historical and cultural potential of the city and the recreational potential of Lviv Carpathians. It is expected that the number of tourists will increase to 900 000 per year, and including one-day-stay tourists it will reach 200 000 per year. To support this tourist flow it is planned to increase the number of hotel rooms 2 times, the existing capacity being about 3500 places (1840 rooms) (*Koryhuvannya heneralnoho planu…* 2008).

Important is the development of science and education, which are traditional activities for the city. Lviv has 38 higher education institutions where almost 123 000 students (15% of the population) study (by 1.01.2011). 31% of these students study economics, business, 22% – engineering science, 23% are studying medicine, humanities and law. This situation creates significant potential of human resources and is an important factor for the formation of a modern city economy (*Pro sotsialno-ekonomichnu sytuatsiyu u Lvovi*… 2011).

High priority is attached to development of market infrastructure, taking into consideration the city's location on the intersection of international transport corridors, significant human potential and presence of metropolitan functions. These functions of the city are generated by the presence of representations and enterprises of transnational companies, transnational financial and credit institu-

tions; convenient national and international transport links, agencies and institutions of higher order services , universities, research institutes and technology centres, large and well-known cultural institutions, organization of cultural events at national and international level, specific "spirit of place", foreign missions, and honorary consulates (Posatskyy 2005, pp. 39–40). However, the negative factor for the formation of market infrastructure today is the lack of modern office infrastructure in Lviv. Total office space in the city is 150 000 sq. m. Of these, 54 000 sq. m are in class "B" and "B +" offices. Lviv still does not have offices of the highest class "A".

As bankruptcy of many enterprises has led to inefficient use of urban land, the *Master Plan* provides for restructuring of production facilities and expansion of the sectoral structure of economic activity. The sites designated for industrial activity within the city are mainly situated within the existing industrial areas (a total of around 1400 ha), while market infrastructure objects (mainly logistics centres) are to be located on the outskirts, in areas near main roads and railway lines (Birkivska, Zymnovodivska and Soroky Lvivski Village) (figure 3.4).

According to the *Master Plan*, 998 ha is allocated for new housing (6 800 000 sq. m of floor space), to increase the housing stock to 18 800 000 sq. m and provide resettlement for about 765 000 inhabitants. Within the existing city limits the following areas are designated: North area, area of Varshavska Street and Ryasne-1 (at the expense of allotment gardens), areas of Ryasne-2 and Levandivka (on unused land); the streets Zelena – Vashyngton, Khutorivka, and Stryiska – on sites vacated by liquidated companies and warehouses, and military units and facilities removed to other parts of the city (*Koryhuvannya heneralnoho planu…* 2008, p. 14).

The appearance of new residential areas will entail the need for development of the service system. Also today, there are serious imbalances in the service system of the city. In particular, as noted above, the indicators for trade and public catering are much higher than demand (by DBN 360-92**), while health, culture and sports facilities meet the needs of the city in 40–60%. So the *Master Plan* provides for creation of a four-service system, which is a polycentric

structure comprising the city centre, facilities for transport interchange nodes and entrances to the city, centres of large residential units, and local centres. According to the *Master Plan*, the city centre will expand to the north (Chornovola Avenue), and sub-centre will be in the railway station area and near the crossing of Stryiska-Luganska streets (Lviv – City).

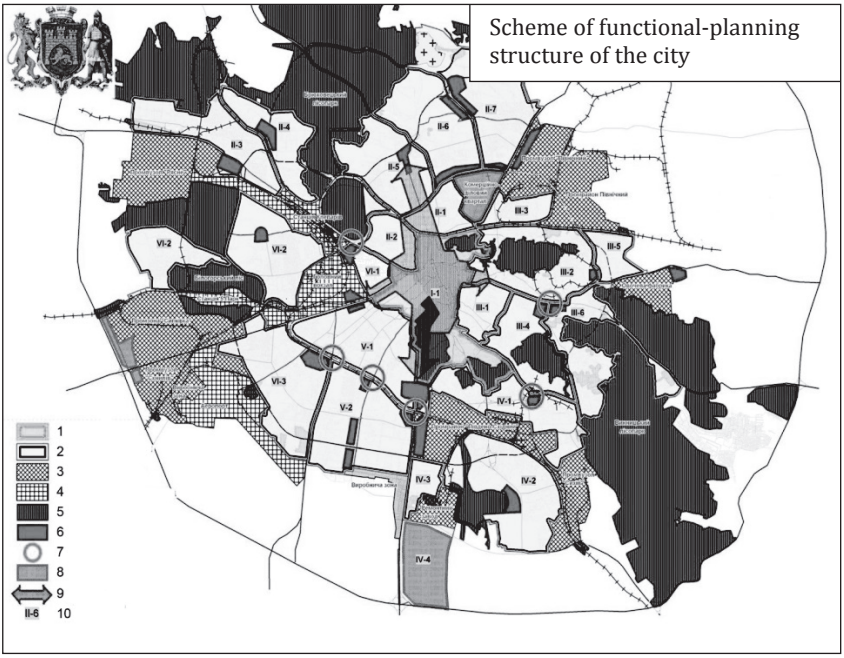

Figure 3.4. Scheme of functional-planning structure of the city

1 – Galytskyy administrative region, 2 – residential planning areas, 3 – industrial area, 4 – territories of external transport, 5 – recreational areas, 6 – public centres of residential areas, 7 – buffer sub-centres of services, 8 – specialized centres (sports, health, shopping etc.), 9 – direction of development of the city centre, 10 – numbers of residential areas Administrative regions: I – Galytsky, II – Shevchenkivsky, III – Lychakivsky, IV – Sykhivsky, V – Frankivsky, VI – Zaliznychny

Source: *Lviv Master Plan*, 2025

The *Master Plan* also contains proposals for construction of facilities for the European football championship Euro-2012. As noted above, major items such as a stadium and a new airport terminal have been completed.

The city is continuing work on reconstruction and development of the transport infrastructure. There also is the question of making good use of the post-Euro-2012 infrastructure, finding funds for maintaining the new facilities, and developing the territory (300 ha) around the stadium.

To this end, in June 2011 the City Council invited to Lviv international experts (architects, planners, economists, lawyers), members of the International Association of Urban Planning CUPA (Cooperative Urban Planning Approaches), who assessed the potential of the city and prepared a proposal for functional development of the territory around the stadium (figure 3.5). The experts propose to locate there a balanced mix of functions: trade, health care, housing, transnational level business, sports and culture. This balance of function, they believe, will ensure the livelihoods of the area.

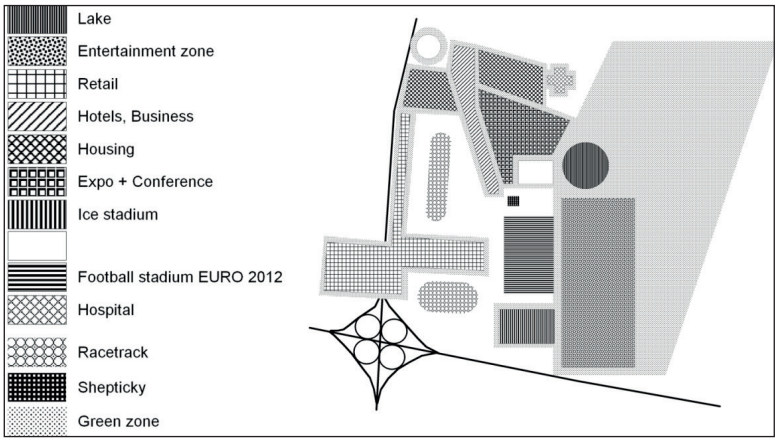

Figure 3.5. Scheme of the functional use of the territory around the stadium Euro-2012 in Lviv

Source: Huibert A. Haccoû (2011, pp. 10–12)

To facilitate business development, ensuring competitiveness and economic development of the city, specialists from the Monitoring Group together with Lviv City Council formulated *Strategy for Improving Lviv's Competitiveness until 2015* (*Strategiya*… 2010).

According to provisions of the strategy, there are the prerequisites for the formation of more than 40 clusters (geographically close groups of interconnected companies and related institutions in a particular area) that can form the foundation of economic competitiveness. The project identified primary "meta-clusters" and auxiliary platforms as potential areas of interest for economic competitiveness and growth. The structure of the main meta-clusters is formed by: applied science (IT, pharmaceutics, measurement instruments), logistics and infrastructure, and tourism. Other clusters include: food, production of clothing/footwear, timber industry, infrastructure construction and heavy engineering industry. Along with specific clusters there are more platforms, which, on condition of being improved, can contribute to the development and growth of other clusters. These consist of financial and business services, publishing, and education and science.

In the opinion of experts, tourism and business services clusters are of primary importance for economic development.

3.4. Conclusions

Transformation of the economic structure of the city over the past 20 years has led to the decline of many industries that could form the basis of today's economic well-being of the city. The authors of *Strategy for Improving Lviv's Competitiveness until 2015* noted the following features of the economy of Lviv today:

- the city's economy is based on local industries and has no clear direction of development;
- absence of big business, predominance of small and medium businesses with low capital, which inhibits further economic growth;

• non-transparent business environment, presence of corruption and a significant proportion of shadow economy.

Today, experts and city officials have proclaimed development of tourism and business services as the main locomotive of the economy. However, development of tourist activities, involving reorientation and retraining of people to provide services in tourism, will lead to natural reduction of the intellectual potential of the city. Already, CUPA international experts have noted a commercial – entertainment character of space development in the city, which is not in line with postulates about the need for innovation towards development of the city's economy. It requires preparation and accumulation in the city of highly qualified specialists, efficient use of existing scientific potential and creation of competitive science-intensive products. Therefore, a cluster of business services and IT technologies is an important factor for the development of innovative activity in the city.

Stanisław J. Kozłowski

University of Łódź

4. ECONOMIC SPACE OF ŁÓDŹ

The economic structure of a city and its future development depends to a considerable degree on the so called previous path of the development. It has a great direct influence on the present structure of employment in different branches of the economy and indirectly on the level of education of employees, revenues of the city and its investment possibilities. As a result, the technical and social infrastructure of the city and the level of life of the inhabitants depend on these factors. The inhabitants' level of education largely determines the possibility of innovation and as a consequence the ability to create high technology enterprises. So, it is important to outline a short history of the economy of Łódź before the actual economic structure of the city is presented.

Łódź is a relatively young city – it was established in 1820 by government decision. The authorities began to attract investors in textile production and create a weaver settlement. A similar policy was realized in the whole Duchy of Warsaw and later in the Kingdom of Poland. They tried to encourage inhabitants of Bohemia, Silesia, Saxony, Prussia and other German countries to settle in Polish towns. At that time Łódź had 787 inhabitants. In 1824 the Emperor of Russia liquidated the customs-border between the Kingdom of Poland and the Empire of Russia. The result was fast economic expansion of many Polish towns into the eastern markets.

The policy of the Polish government resulted in development of the textile industry: production of wool, flax and cotton. During a short time many entrepreneurs and merchants settled in Łódź, mainly of German and Jewish origin. They imported not only single machines, but also complete machine equipment for their factories, and modernized the process of textile production. Their national, religious and financial connections in Europe caused that the textile industry, mainly cotton production, dominated the economy of the city. Many European firms specializing in machine production and factory equipment opened their branches and agencies in Łódź. The number of inhabitants was growing fast. Ten years after the town was established, about 250 craftsmen were working there.

The financing of investments and production growth was possible thanks to capital provided not only by the Bank of Poland (established in 1828) but also accumulated by manufacturers, merchants, later by factory owners, immigrants, and Polish landowners. Firms were growing fast, and great family fortunes grew thanks to concentration of capital. The fast expansion of Łódź resulted in a specific spatial organization of the town. The factories built one after another, mostly on the green-fields, were surrounded by houses for workers. This mix of industry and housing is still visible in Łódź landscape.

The next impulse for the development of Łódź was given by technological progress in the sphere of transportation. Apart from development of hard surface roads, Łódź was connected in 1866 by railway lines with Warsaw, Petersburg and Vienna. It considerably reduced the costs of supplies of coal, food and other deliveries, and as a consequence diminished the costs of production and exportation of goods. Accumulation of capital was progressing fast. Great possibilities of quick profits attracted new entrepreneurs and people looking for jobs. Work in textile factories did not require education and professional qualifications, so during the 19th century employment of low-paid women dominated in Łódź industry. In consequence, the level of life of Łódź workers was relatively lower than in other Polish towns and cities. People did not have motivation

to upgrade their education and qualifications. All these factors contributed to establishment of the employment structure in industry, low productivity and domination of people with very low income.

The textile industry had the greatest influence on the economic development of Łódź. Apart from this, only the food industry played an important role (mills, breweries, distilleries etc.). At the beginning of the 1860s, industrial production of Łódź constituted 24% of the whole industrial production of the Kingdom of Poland. The rapidly growing number of inhabitants caused development of service functions, especially in trade. Łódź became an important centre of international trade specialized in textile goods. This specialization exerted influence on the style of built-up areas inside the city, with plenty of stores and warehouses, existing up to our days in central districts of Łódź. There were 20 hotels in the city before the First World War.

In the year 1900 Łódź had 300 000 inhabitants and it was the fifth city of the Russian Empire. Thanks to the development of other industries in this period, the middle-class group increased in Łódź, and the city became more similar to other cities of Europe, in spite of the fact that textile industry still accounted for more than 94% of the production. The population structure changed as well. The share of Polish population grew to 46%, while the percentage of German origin inhabitants diminished to 21% and Jewish to 30%. Employment in services connected with handicraft increased to more than 5000 employees, whereas public services oriented to inhabitants of the city were neglected. The image of an ugly, dirty and neglected industrial city with difficult living conditions was strengthened.

The rapid growth of the city's population with very limited budget caused underdevelopment of important municipal functions, including the sphere of health, education and building of streets. The deficit of schools and mass immigration of people from rural areas caused that Łódź had a large percentage of illiterate people (79% in 1864). The fast growing city required construction of a water supply system and sewerage system. Plans of their construction began in

the 19th century, but because of the very low budget of the city and credits they were not accepted by the government of the Russian Empire. First works in this field were not undertaken until before the end of the First World War. On the other hand, the first electric tramway line in the Kingdom of Poland was built in Łódź (1898).

The end of the First World War brought independence for the country, but the city of Łódź was in ruins. Germans carried out machines, raw materials and ready production of many factories. Credits of the enterprises could not be paid off, so many of them went bankrupt, and almost 50% of the city inhabitants lost their source of income. The textile industry – economic basis of the city – ceased existing.

After the war, new local authorities adopted a policy of universal education (level of illiterate in the city reached 60%). It was the first Polish city which undertook such a decision. Gradually new schools were built; many educational establishments were temporarily located in rented buildings. There also existed about 30 German schools and 30 Jewish schools. Local government decided to build a water and sewerage system, but the process of construction was not finished before the beginning of the Second World War. At the beginning of the interwar period, industry again had a dominating position in the economy of Łódź (more than 57% of inhabitants were employed in industry, compared with about 70% in 1931). Apart from the textile industry other branches developed, such as engineering industry, chemical, timber industry, food industry, and printing industry (table 4.1).

White collar workers constituted 9.4% of the labor force; the others groups were independent employees, employers and bourgeoisie. In some sectors the majority of workers consisted of Jewish citizens, especially in trade and insurance. Gradually, the domination of industry diminished, and other endogenous functions of the economy developed, such as communication, trade, culture, health protection, education and technical services of the city. Generally, by the beginning of the war the functional structure of Łódź had changed significantly.

Table 4.1. Sources of income of Łódź inhabitants in the years 1921 and 1931

Branches of economy	1921		1931	
	inhabi-tants	%	inhabi-tants	%
Industry and handicraft	260 022	57.5	375 972	62.2
In this: textile industry	170 322	37.7	209 852	34.7
Trade and insurance	86 250	19.1	103 214	17.1
Communication and transport	22 396	4.9	29 271	4.8
Public service	13 129	2.9	22 050	3.6
Home servants	12 467	2.8	20 534	3.4
Health services and hygiene	7 558	1.7	14 925	2.5
Culture and education	7 136	1.6	12 900	2.1
Agriculture and similar activities	4 071	0.9	2 992	0.5
Other activities and professions	38 945	8.6	22 771	3.8
Total	451 974	100.0	604 629	100.0

Source: *Statystyka Polski* (1928, 1937), Mroczka (1987), Dzieciuchowicz (2009).

After the Second World War, the process of changes in the functional structure of the city was dominated by sovietization of the economy of the whole country: nationalization of almost entire trade and industry and liquidation of private handicraft. At the same time Łódź, not being destroyed in the war, attracted large numbers of inhabitants of Warsaw and other towns and cities and became a centre with great potential of intellect and culture. Many scientists, artists and poets found their place of living in this city. On the other hand, common opinion about Łódź as a prospering city caused delay in the sphere of renovation of the housing and technical infrastructure. The result was deterioration of the quality of life of the inhabitants and neglect of the existing built-up areas in central districts of the city. Revival of trade and other sectors of the economy began after 1956.

The problem of maintenance of the housing stock has not been eliminated up to now, in spite of fact that in the 1970s the technical infrastructure, including the water supply and sewerage system, was expanded, and many new modern housing estates were built on the peripheral zones of the city. In 1970, more than 54% of the city inhabitants earned their living in industry. Gradual degradation of housing accompanied deprivation in social spheres. There was agrowing percentage of poor inhabitants, numerous disfunctional families, drug abuse, alcohol problems and so on. After 1990 began the unemployment problem because employment in industry diminished by 50%. Unemployment rose to 19% in 1993, and central districts of the city became a place of concentration of neglected and ruined houses, industrial plants, poverty and crime. Summarizing post-war changes in the economy it is important to underline a diminishing role of industry and expansion of services for inhabitants and business. The variety of municipal services and endogenous functions has increased. This process was more visible after 1990 when the textile industry collapsed – on the one hand it was cut off from the Eastern European market and was completely uncompetitive on the world market, but on other hand a rapid growth of import possibilities of new private firms caused reduced sale of local industry on the domestic market. The fall of industry, sometimes equipped with machines from the beginning of the 20th century, and underinvestment in other branches of the city's economy, including housing and technical infrastructure, disclosed a lack of a proper way of development of the economy in the city of Łódź. For example, as regards the size of industrial factories, in the 1980s dominated great plants employing several thousand workers, which had troubles with changing their products, modernization of technology and fast changes of the purchase structure. A considerably lower level of salaries and income of the inhabitants caused a lower budget level of the city in comparison with other cities in Poland. As a result, negligence of housing, public communication and technical infrastructure was growing. Additionally, low income of the inhabitants caused their low purchasing power, so retail trade turnover were on very low level. Business services were developing very slowly too.

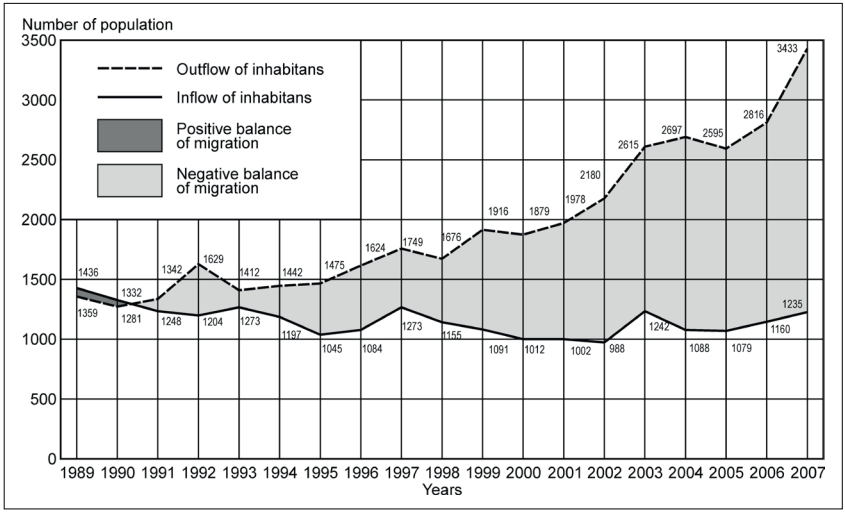

Figure 4.1. Migrations in Łódź 1989–2007
Source: *Próba delimitacji*... (2008)

Table 4.2. Number of entities of the national economy per 1000 inhabitants in Poland's largest cities

City	2002	2010 (1st quarter)
Łódź	112.0	114.8
Warsaw	155.4	193.0
Cracow	130.7	148.1
Poznań	143.9	173.1
Wrocław	145.3	156.1

Source: Kwiatkowski (2014).

All those factors, especially the huge loss of workplaces, brought the greatest in Poland outflow of inhabitants from the city and decrease of the birth-rate. Deterioration of the inhabitants age structure has increased (figure 4.1). In the years 1990–2010 the number of

inhabitants of Łódź diminished by 113 000 people (from 851 700 in 1989 to 738 800 in 2010).

If we compare the number of firms *per capita* in the largest Polish cities, we can see that initiative of local and outside investors is rather weak, too (table 4.2).

In the mid-1990s the government created 14 **Special Economic Zones** (SEZ, which are to operate until 2026), one of which is located in Łódź region (figure 4.4). The main idea of their establishment was to attract new investors to the regions in Poland which have the problem of unemployment. In these zones new enterprises can conduct their business under preferential conditions and take advantage of the technical infrastructure prepared for them. After 10 years of existence, the zone in Łódź region is evaluated as the best in Poland and the 4th in the world. As a matter of fact, many of the new firms, including foreign capital enterprises, are located not in the city of Łódź but in the surrounding region. Nevertheless, many important industrial and service firms from abroad located their activity in the city during the last 15 years (among them: Gillette, Indesit Co., Dell, Philips, ABB, Bosch-Siemens Group, Danfoss, Fujitsu, Procter & Gamble, Pepsi-Cola, Coca-Cola, Shell). This initiative began the process of revival of the economy of Łódź. However, a characteristic feature of the first industrial investments was location of some famous firms together with their subcontractors. As a result of this policy new Polish enterprises did not come into existence.

Apart from the economic stimulus provided by SEZ, local government undertook a program of **regeneration** of the oldest monuments of architecture in the city. Their terrible appearance and state not only have contributed to the escape of the inhabitants but also have driven away investors (figure 4.2).

Unfavorable appearance of closed places on ground floors, and the necessity of living in dilapidated houses influenced the decision of many inhabitants to migrate out of the city. A wide-ranging program of regeneration is gradually improving the image of the streets in Łódź but this is a rather long-term and very expensive undertaking. At the same time Polish Parliament passed a new act which

practically permits construction of new buildings on the green areas in the cities. It is much cheaper and comfortable for developers to build new structures on green-fields than on brown-fields in central districts of Polish cities. As a result we can expect that cooperation between the public sector (city, region and government) and the private sector will be seriously limited. Almost all efforts in the frame of regeneration programs should be realized and financed by the public sector. It can be expected that private sector will be interested mostly in construction outside of existing built-up areas.

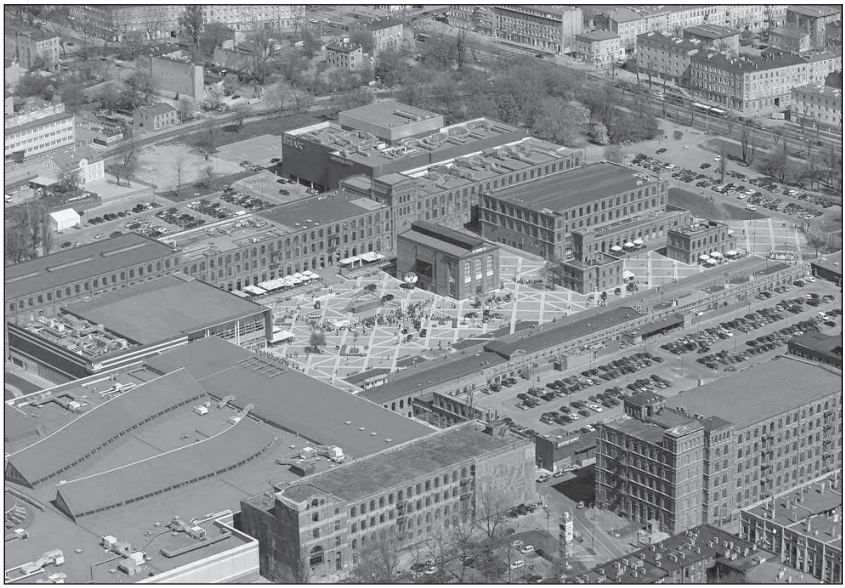

Figure 4.2. Symbol of regeneration process in Łódź – the greatest 19th century industrial complex in Łódź called Manufaktura. Today it is a centre of shopping, services and different events in the core of the city

Source: Agencja Gazeta

Nevertheless, local authorities and central government support the program of regeneration of the city. Under realization is "Initiative Mia 100 Tenements", concerning major repairs of 19th and

20th century tenements. Up to now about 100 old buildings have been repaired, but the needs are really great (over 14 000). Another problem is created by old 20th century factories. Post-industrial regeneration is very expensive and concentration of closed plants in Łódź is really enormous. During last years the process of regeneration was completed in 45 single objects or architectural complexes, but there are further 120 post-industrial monuments waiting for renovation. Thanks to these regeneration works the economic structure of the city is changing, because completely new functions are being located in these objects: large shopping galleries, hypermarkets, first class hotels, offices, banks, newspaper agencies, famous international corporations, various new services etc. One of the best examples is Manufaktura located in the greatest 19th century industrial complex in Łódź (figure 4.2). Thousands of new jobs come into existence in these places and gradually the economic situation of the inhabitants is improving, the purchasing power of the people is increasing and locational factors for further investments are more favourable.

The process of regeneration of thousands of different beautiful but neglected objects, tenements, palaces and villas will be supported by the government – at the end of 2013 the city received a further € 104 000 000 for continuation of this program (figure 4.3). There is a great chance connected with European funds in the following years because on the one hand Łódź is among the most neglected cities in Poland and on the other hand the European Union will allocate much more money for regeneration programs of towns and cities. Łódź has been designated by Prime Minister as a candidate for organization of the so called thematic Expo in 2020. The subject of this event will be regeneration of cities.

One of the results of economic growth and regeneration of built-up areas is fast increase of the number of hotels in Łódź. Today there are more than 70 hotels in the city, including eight 4-star hotels mostly belonging to international networks like Hilton, Holliday Inn, Novotel, Campanille, Qubus, Ambassador, Fo-

cus. Construction of two other hotels belonging to Puro and one of the greatest world hotel networks, Best Western, has already been decided.

Figure 4.3. Beginning of construction of a new railway station in place of demolished station Łódź Fabryczna. Surrounding quarters will also be rebuilt

Source: Agencja Gazeta

A weakness of Polish statistics is lack of data regarding employment in small firms with less than 9 employees. In the year 2010, official data indicate that in all national economy there were about 234 000 persons employed in entities employing 9 persons and more. We know from other official statistics that there are nearly 88 000 small firms and average employment in these firms is about one person (some of them are not in operation). In this number there are about 65 000 natural persons conducting economic activity in Łódź.

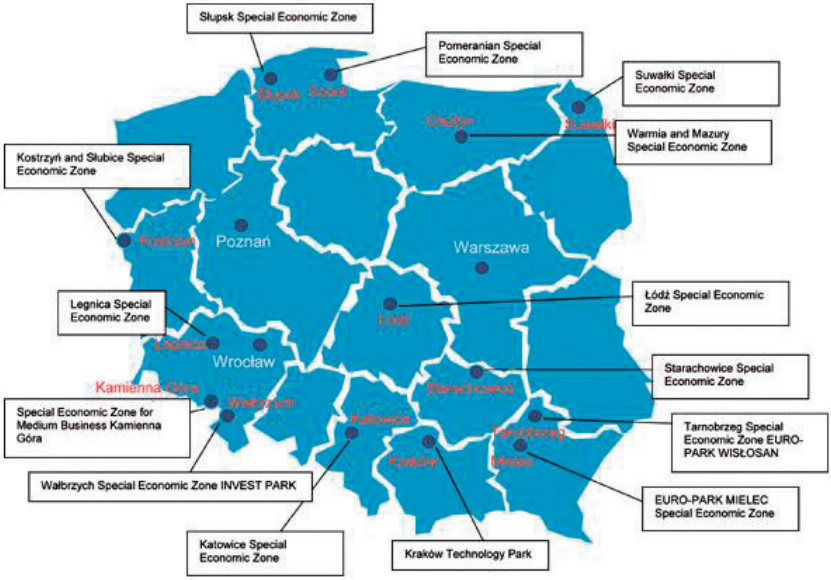

Figure 4.4. Location of Special Economic Zones

Source: http://investing-in-poland.pl/zones.html

As is shown in figure 4.5, **industry** is still a dominant sector of economic activity in Łódź. Strong traditions of the industry which collapsed in the 1990s are seen by local authorities and the inhabitants as the main factor restraining the city's economy and its future development in reproducing industry. An important element of the policy of attracting investments were relatively low wages in Łódź. Gradually, in the outlying parts of the city were located new factories, basing on the relatively cheap and qualified labor. Some of the new plants were established in traditional textile industry, but they are much smaller than the ones 20 years before. It seems that some of these firms exist in the "grey zone". They profit from the skills of workers and owners of the past period.

One of advisable directions of industry changes is the case of the American computer firm Dell. They moved production from

a unique in Europe plant in Ireland to Łódź in 2007. The cost of the investment reached € 190 000 000, but they received more than € 54 000 000 as a subsidy from the regional authority for development of computer production in Łódź.

Table 4.3. Percentage of employed persons in Łódź by groups of sectors in 2005 and 2010

Employment in % of total	2005	2010
Total	100.0	100.0
Agriculture, forestry, fishing	1.0	0.9
Industry & construction	29.8	27.3
Trade, repair of motor vehicles, transportation storage, hotels, accommodation and catering, information and communication (G, H, I, J)	23.2	23.9
Financial and insurance activities, real estate	6.0	6.6
Other services	40.0	41.3

Note: Excluded are economic entities employing up to 9 persons.

Source: *Łódzkie Voivodship*... (2011).

Employment in the **construction industry** reflects the present tendency to invest in the city and region. In the last years these numbers oscillate between 7000 and 8000 workers and are rather stable, which is shown by data on average employment in these years. It is more credible, because data regarding employment in construction industry at the end of a year are reduced (figure 4.5).

The share of **sector G** (trade and repair of motor vehicles) in employment in the city is quite large – 32 328 persons in 2009. In spite of the establishment of new shops, supermarkets, hypermarkets and great galleries, employment in retail and wholesale trade is not growing. We can expect that in the near future this sector will grow again thanks to new motorways which cross near the city of Łódź in the centre of Poland (A1 connecting Warsaw with Berlin by Poznań and A2 running from Gdańsk port to southern Poland and the Czech Republic). In this way Łódź will become a unique city in

the central part of Poland where two main motorways cross. Up to now several important logistic firms have been located near Łódź in Stryków, and undoubtedly it will be a very attractive place for many firms connected with wholesale trade and distribution of goods on a large scale.

A similar situation is in **sector H** (transportation and storage), where employment was 11 663 at the end of 2011. The main reason is the slow but steady development of the city and the crossing of the main Polish motorways just outside the city. Łódź and the space between the city and motorway crossing of will be an excellent place for location of many firms connected with production, storage and transportation of goods.

A relatively low and not stable employment in **sector J** (information and communication, including publishers, film, music and TV production, IT and programming) is rather surprising. There are symptoms that employment in the information technology sector is declining. According to official statistics, this process seems to concern greater firms employing more than 9 persons. On the other hand, it is known that there is a tendency to set up the very small firms in the sphere of information and computer services, and often these firms are created by young people which abandoned their jobs in bigger enterprises. As mentioned above, it is difficult to prove it in numbers, because these micro firms are not embraced by statistics, but it can be estimated that employment in this sector is growing. Official statistic shows decline in employment in sector J – from 3620 in 2009 to 3169 in 2011.[1] Employment in the publishing sector is also declining because editions of books and journals are smaller from year to year .

The share of **sector P** (education) in employment in 2009 was 11.5%. It can be expected to decrease in the next period because of a diminishing number of young people in the city, its region and in

[1] ERICPOL, IT enterprise in Łódź producing computer programs employs about 600 persons. It is a unique Polish firm classified in ranking of 500 greatest firms of the world in this sector (http://lodz.gazeta.pl/lodz/1,72937,12574784,Lodzka_firma_goni_swiatowa_czolowke__69_mln_dolarow_.html).

the whole country. However, it is interesting to note that the University is the greatest employer in Łódź.

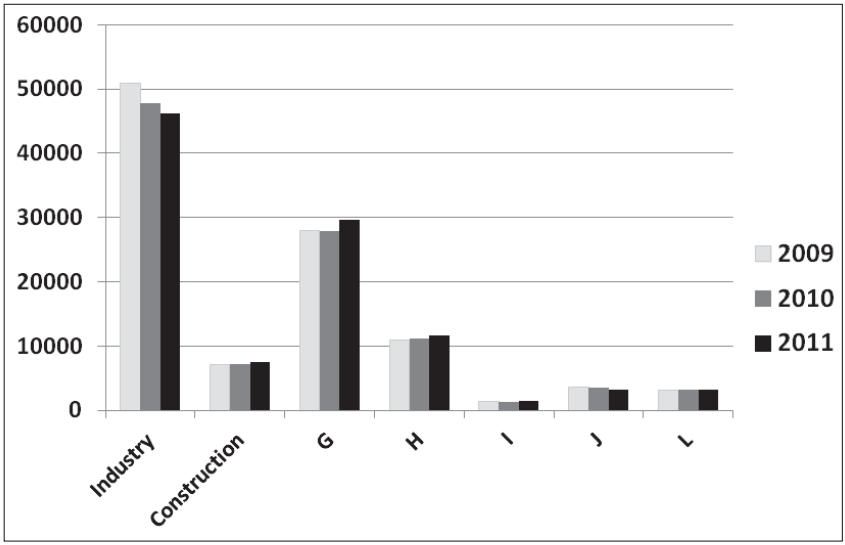

Figure 4.5. Employment in some sectors in Łódź in 2009–2011, end of year: G – trade, repair of motor vehicles, H – transportation and storage, I – accommodation and catering, J – information and communication, L – real estate activities

Source: *Statystyka społeczno-gospodarcza*... (2012, pp. 36–37)

Economic prospects of Łódź seem optimistic. During the last 20 years many new industrial plants were built, especially by foreign investors. Plenty of super- and hypermarkets opened their activity in the city (TESCO, E. Leclerc, Real, Macro Cash & Carry, Kaufland, Praktiker, Carrefour, Jula, Leroy Merlin, Lidl, Jeronimo Martins, Castorama, Aldi, IKEA, Media Markt, OBI, JYSK), so the structure of shopping in the city is changing. It is, however, connected with changes in the spatial behavior of people because these facilities are located mostly outside the city centre and many older shops and services in the centre have problems because of the reduced number of customers.

Table 4.4. Number of persons employed in Łódź as of 31st December 2010

Sectors of activity	Total number	%	In firms > 9 persons
Total	304 642	100.0	234 068
Agriculture, forestry and fishing	2 218	0.7	2 203
Industry and construction	81 923	26.9	63 801
Trade, repair of motor vehicles, transportation and storage, accommodation and catering, information and communication	87 431	28.7	56 000
Financial and insurance, real estate activities	18 909	6.2	15 506
Other services	114 161	37.5	96 558

Source: *Łódzkie voivodship*... (2011).

The second important change in the economy observed in the city is a fast growth of the number of firms and employment in the offshoring sector in the last years. They employ highly educated white-collar and mostly very young people with perfect knowledge of foreign languages. Most of those firms are connected with computer software, economic consulting and so on. Some of them are quoted on the Warsaw Stock Exchange (Comarch – 220 employees + 1000 from the year 2014, Ericpol – 500 employees + 300 from 2015 and they are building a new office). Other famous IT firms are MakoLab – 80 employed, Infosys BPO Poland – 2000 + 260 from 2015, Hewelett Packard, Fujitsu, and French enterprise Sii. Overall, there are more than 4000 people employed in IT sector and this number is growing fast. In foreign centres of IT business services more than 120 000 people are employed in all Poland, which is more than in coal mining (113 000).[2]

[2] http://biznes.onet.pl/praca/centra-uslug-wyprzedzily-kopalnie,18493,5601008,5451429,462,1,news-detal

Table 4.5. Budget of main Polish cities in 2009

Specification	Łódź	Warsaw	Cracow	Poznań	Wrocław
In million zlotys	2 682	10 117	3 160	2 372	2 737
In zlotys *per capita*	3 602	5 911	4 187	4 267	4 330

Source: *Statistics of Łódź 2010* (2011).

At present the budget of the city is quite big, much bigger than in the previous period, so further improvement of Łódź's infrastructure and economy can be expected (table 4.5). If we add money for regeneration of the neglected areas inside the city directed in the next years from the European Union and from the central budget, we can expect that the image of the city of Łódź will be much better.

Svitlana Shults

National Academy of Sciences of Ukraine

5. SOCIO-ECONOMIC LINKAGES OF LVIV

Back in ancient times Lviv, which is located at the crossroads of major trade routes between East and West, was a powerful centre of socio-cultural and economic connections. Foreign trade relations during the Galicia-Volyn Kingdom period extended to Genoa, Cracow and the Black Sea. Due to business activity and entrepreneurial talent of the city's population it always kept pro-European and nationalistic face. That is why the city of Lviv was traditionally positioned as a powerful economic centre of Western Ukraine as well as a communicational centre of spatial relations in the national and world economic space. Convenient geographical location of the city (Lviv is located 160 km from the geographical centre of Europe) and also current international transport corridors passing through it contributed to this fact.

Currently the capital of Western Ukraine actively develops and maintains its position at European, national, macro-regional and intra-regional levels. Accordingly, spatial economic relations of the city should be considered exactly at these levels. Destroyed economic relations that were based largely on the development of industrial cooperation are changing into qualitatively new relations in the internal national space based on other organizational principles of integration. Lviv city concentrates the education, information,

infrastructure, cooperative-industrial, trade and other flows, simultaneously retaining its role in the surrounding areas. Intra-national integration potential of Lviv is generally rated by researchers as high. The highest indicators of regional economic integration are typical for Dnipropetrovsk, Ivano-Frankivsk, Kyiv and Volyn' regions (Storonyanska 2009).

Network structures development in different areas of economic activity promotes strengthening of spatial economic relations of Lviv in the national economic space. Trade networks of international, national and regional levels are efficiently functioning on the territory of the city. Big cities including Lviv attract interest of network businesses structures. Development of these forms of economic activity is accompanied by expansion of network companies on the markets of different territorial levels, extension of national level networks and active development of regional networks. The latter become active participants in inter-regional integration processes. As the enlargement of influence areas is the strategic development purpose of all network companies, so the network structures at the regional and other levels are trying to move beyond their regional markets. Thus, international trading networks such as Metro (Germany), Auchan (France), Praktiker, Epicentre as well as national trading networks (Silpo, Cocktail, Foxtrot) and representatives of other regional networks, such as Our Land and Vopak (Volyn' region) and others are functioning in Lviv. As we can see, the cooperative industrial relations that were dominating in the economic space of the country are replaced by qualitatively new spatial economic relations based on the principles of network economics and spatial competition.

An important role in these processes regulation belongs to local authorities. It also refers to the creation of favourable environment for attraction of businesses, investment and skilled personnel. It should be noted that external spatial relations are more intensive than domestic. Current position of local authorities in expansion of the urban spatial relations, particularly in the innovation sphere, is also active. Thus, the following activities are carried out involving

US Civilian Research and Development Fund: creation of the Lviv centre of innovation, conducting of periodic consultations, studies and trainings on the technological entrepreneurship development, business planning and development of new mechanisms of cooperation between small businesses and local authorities. In order to attract investment to the municipal economy the local government has developed and approved the *Lviv Program of Investment Attraction for 2011–2013* as well as the *Program of External Relations Organization*. The implementation of these programs is aimed at expansion of urban social and economic connections, improvement of cooperation with partner cities, participation of the city in international projects and programs as well as promotion of the city.

Lviv International Economic Forum that is held annually at the initiative of Lviv local authorities contributes to the expansion of international cooperation of the authorities, businesses and financial institutions. As a result of this, proposals for cooperation with leading global companies have been received, funds for the most acute problems of socio-economic development have been allocated, urban investment opportunities have been analyzed, and issues related to the integration processes have been resolved. The city is not only the initiator of its own economic forum, but also participates in international, national and regional investment forums and other events where agreements on further economic cooperation are achieved. The following could be examples of such events: Turkish exhibition-summit ISTANBUL REestate, III Ukrainian-Dutch Business Forum "Energy Efficiency. Energy Saving. Sustainable Development" and international exhibition of real estate MIPIM-2010, where investment and infrastructure projects of Lviv are presented and discussed.

National Days and periodic meetings with official delegations and representatives of governmental institutions are held in Lviv in order to develop economic cooperation with European countries. Thus, the Belgian Prince Philip Economic Mission that visited the city on 21st–24th November 2010 was held with representatives of more than 140 Belgian enterprises operating in different economic sectors.

The recently established business forum has good prospects for being held frequently. In its framework the participants can reconcile their interests on joint projects implementation and set the priorities for investment and innovation economy development as well as get acquainted with the economic potential of the region.

In consequence of cooperation with international institutions, including consulting company Monitor Group, the *Lviv Strategy of Economic Competitiveness to 2015* was developed. International interaction was emphasized as a priority direction of urban development among the four identified areas that will support the competitiveness of the city (*Stratehiya pidvyshchennya*… 2010, p. 9). International cooperation is a strategically important area for further economic development of the city due to a high degree of economy dependence on foreign investment as well as efficient external economic relations.

As is noted in the Strategy, the development of tourism cluster and a cluster of business services are the priorities. Creation of a tourism cluster will enable the use of small and medium business potential and increase the number of tourists from 400 000 to more than 1 000 000 over the next 5–10 years (currently Lviv receives about 400 000 tourists per year). For efficient cluster development the presence of the city in information-travel channels must be increased as well as priority tourism segments must be identified. The main tourist markets are: Ukraine, Poland, Russia, Germany and Austria.

The functioning of the tourism cluster will ensure the development of international economic relations in the future. The growth of tourist flows will lead not only to the tourist infrastructure network expansion and improvement of services development sphere, but also to the establishment of new cost-effective connections for municipal entities and substantial replenishment of the city budget.

Lviv has good starting points for development of the business services cluster. Thus, the headquarters of several companies that are operating in business services and more than 100 companies that serve Ukrainian and international clients are located in the city.

The main areas of prospective market opportunities for existing Ukrainian and potential foreign companies are: development and support of application programs, call centres, outsourcing of analytical processes, CDMA networks, software localization, embedded systems and IT consulting. An important priority for Lviv is joining a network of Central and Eastern Europe business services outsourcing market institutions. Among potential foreign investors are multinational service providers and representatives of specialized industries, while among domestic investors – companies specialized in finance, telecommunications and IT, which can be attracted by the possibility of costs decrease through outsourcing.

For successfull competition with other cities of Central-Eastern Europe it is necessary to eliminate a number of key barriers in Lviv. In particular, it needs to train the required skills among graduates, improve the level of managerial skills among middle managers, resolve the problem of insufficient amount of office premises and scarce number of transport links, create a package of stimuli and an organizational structure for attracting companies to Lviv. This cluster will not only ensure the city a position on the European market of business services, but also promote the attraction of innovation into the city's economy.

The proposal (included in the developed strategy) for creation of an investment promotion agency, the activity of which intensifies foreign capital flows and pursues the policy of business environment improvement, is also an important aspect in the abovementioned context. Currently a number of international and leading consulting firms (J&L Consulting, Munk, Andersen & Feilberg) and institutions in recruiting (Ancor, SYNERGY Consulting) and legal consulting spheres (D&D Lawyers, Arzinger) are operating in Lviv as in the business centre of Western Ukraine. These structures are strategic partners and active participants in the forming of urban business environment.

Currently Lviv maintains relationships with 20 sister-cities, which are located in 14 countries. The cities include Cracow, Wrocław, Łódź, Przemyśl, Lublin (Poland), Winnipeg (Canada), Kotlend (USA),

Banja Luka (Bosnia and Herzegovina), Rochdale (United Kingdom), Novi Sad (Serbia), St. Petersburg (Russia), Freiburg (Germany), Budapest (Hungary), Kutaisi (Georgia), and Amiens (France). Established contacts are used in the implementation of bilateral and international projects. Lviv has been actively involved in the following projects: *Local Economic Development of Ukrainian Cities* and *Capacity Building for Economically Justified Development Planning for Ukrainian Regions and Cities* (Canada), *First Regional Condominiums Forum* (Norway, Lithuania), *Municipal Development and Modernization of Lviv's Old Town* (Germany), *Pidzamche Modernization Project* (Poland) and others (*Sayt VII Lvivskoho…* 2012). These and other projects are implemented due to cooperation with international financial institutions as well as obtaining credit funds and international technical assistance: EBRD, World Bank, KfW, GTZ, USAID.

Loan and grant funds are used for implementation of projects in the spheres public transport and city road infrastructure development, urban heating supply improvement, architectural and historical heritage preservation and solid wastes processing. Thus, loans from the European Bank for Reconstruction and Development are used for reconstruction of city streets, improvement of public transport infrastructure, and upgrading of the tram stock and increasing its energy efficiency.

International technical assistance received from the US Agency for International Development USAID is allocated for realization of projects on energy management and heating supply; from the German state development bank KfW – for the strategy of urban transport system development; from the German Federal Ministry for Economic Cooperation and Development (BMZ) – for the project *Urban Transport System Improving*; from the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety – for the project *Climate Favorable Concept of Sustainable Mobility*.

Lviv is involved in world community life by maintaining relations with various international organizations. Thus, the city is a member of Eurocities, European Cities Marketing, OWHC (Organi-

zation of World Heritage Cities), Energie-Cites organizations as well as of Global City Indicator Facility Fund (GCIF) that conducts global monitoring of urban development productivity indicators. This system of standardized indicators contains 140 different indicators of urban vital activity, according to which analytical information on the urban socio-economic development is provided to various international organizations including UN, World Bank, OECD.

Prospects for development of foreign economic relations in the investment area are confirmed by results of state statistical monitoring and independent external experts research. Thus, according to the survey that was held in 2009–2010 by the newspaper *Financial Times*, Lviv ranked in the third place in the rating of strategies for foreign direct investment attraction.

During the last 10 years the dynamics of foreign investment of Lviv has risen as shown by a general indicator of foreign direct investment volume as well as by this indicator *per capita* (figure 5.1).

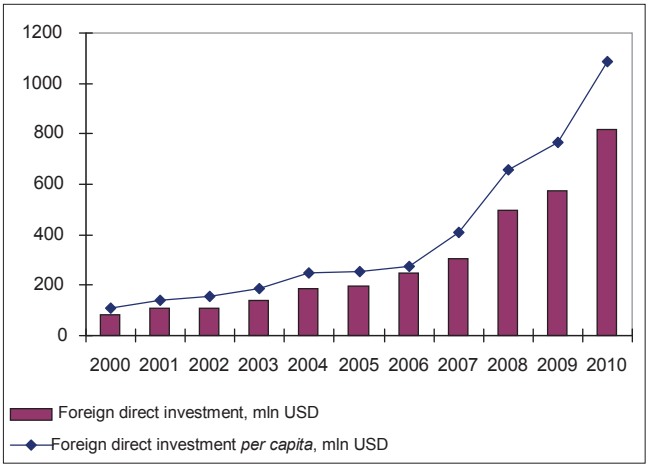

Figure 5.1. Dynamics of foreign direct investment in the development of the city during 2000–2010

Source: own elaboration

The city of Lviv ranked fourth in terms of the level of foreign investment *per capita* among other Ukrainian cities – after Kyiv, Dnipropetrovsk and Kharkiv. For every Lviv citizen it was 768.76 US dollars in 2008, in 2010 – 1084 US dollars and in the first half of 2011 this indicator increased to 1112 US dollars, that is 2.1 times larger than the average regional index value (*Prohrama spryyannya*… 2012). Positive dynamics of foreign investment income in the city's economy is observed throughout the last decade, but since 2007 the annual increase in foreign investment reached 30–40%. Significant role in the rising dynamics of foreign investment was certainly played by Euro-2012 Championship. Funds involved in preparing for this event were used for building a new stadium as well as reconstruction of transport and other infrastructure of the city.

Foreign investment is coming into the city from Poland, Austria, Cyprus, USA, Denmark, Germany, Italy and other countries. The first four mentioned countries have provided three-quarters of total foreign direct investment received last year by the city's economy. In 2010 the main areas of investment traditionally were: financial activity (51% of total investment), real estate activity, renting, engineering and corporate services (16.7%), food, beverages and tobacco manufacturing (7.2 %), trade (8.1%), and post and communications (5.2%).

The largest volume of foreign investment last year was attracted by PJSC Kredobank (Poland), JSC Volksbank (Austria), JSC Insurance Company Grawe Ukraine (Austria), Subsidiary Enterprise FAKRO--Lviv (Poland), JSC Concern Khlibprom (Liechtenstein), Ukrainian--Belgian joint venture Reykard and Partners, JSC Galnaftogaz (UK, Cyprus), LLC Ave Umvelt Ukraine (Austria), LLC Ukrainian-Canadian JV Rosan (Canada), private enterprise Shtaynhoff Properties Ltd (Germany), LLC Phoenix-capital (UK), LLC Inpartus Ltd (Cyprus) etc.

Creation of enterprises with foreign capital is a common form of attracting foreign investment to the economy of a city. There are about 700 registered companies with foreign capital in Lviv; among the largest are: Auchan, Metro, Pricewaterhouse Coopers, Austria Airlines, Cargo Partner, Energie AG, Rewe Group, Cash & Carry Ukraine and others. Current activity of the Swiss company Nestle also involves considerable amounts of foreign capital. By opening Joint

Business Service Centre in Lviv (third in the world) this company not only invests in its development, but also creates jobs and promotes the image of the city as a business centre. Building of production capacity is an important step for the municipal economy. A new factory built by Coca-Cola should be mentioned as a good example.

The annual growth of international trade in goods and services testifies to the intensification of international cooperation of the city in the economic sphere. Foreign trade turnover of Lviv in 2010 increased by 31% in comparison with 2009. The share of the city in Lviv region's export of goods in 2010 was 34.1%, and the export of services accounted for 40.5%. The volume of goods import in 2010 reached almost two-thirds of the total regional indicator. Moreover, import of goods of Lviv increased by 34.9% against 2009. The share of the regional centre of foreign trade services amounted to 40% in export and 58.1% in import.

As a result of the financial crisis, a downword trend was noted in the dynamics of export-import operations in 2009. According to indicators presented in figure 5.2, in 2010 the situation improved slightly, but failed to achieve the level of 2008.

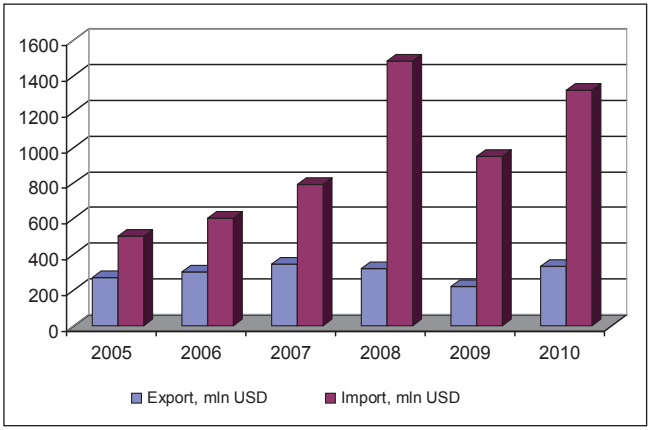

Figure 5.2. Dynamics of export and import of goods in Lviv

Source: own elaboration

A positive phenomenon is maintenance of the dominance of services export over import (figure 5.3).

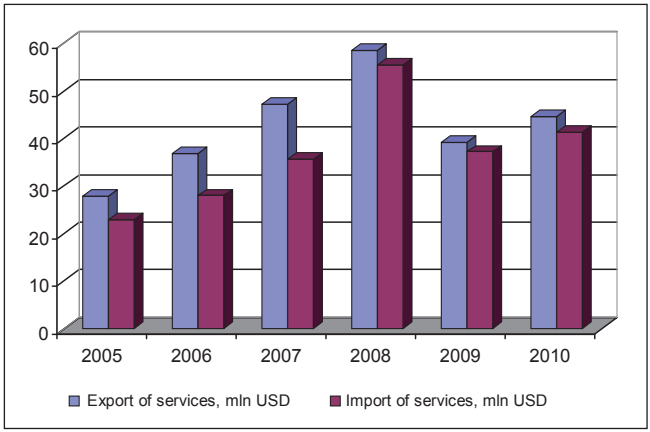

Figure 5.3. Dynamics of export and import of services in Lviv

Source: own elaboration

A negative balance of foreign economic activity was noted only for goods turnover operations, while external services trade balance in 2010 was positive and amounted to 4 200 000 US dollars. In these conditions a negative balance of foreign economic activity and its instability indicates a decrease in consumption level as well as the effect of urban economy restructuring, which is shown in its reorientation to intensive development of the services sector.

EU and CIS countries traditionally are the main partner countries in foreign trade of goods and services of the city. Export geography includes 76 countries of the world. The city exports its products to Russia, Poland, Germany, UK, Belarus and Denmark. The exports include fats and oils (mostly sunflower oil), textiles and textile products, machines, and electrical equipment and its parts, foodstuffs, wood and wooden products, chemicals, base metals and metal artworks. The list of countries-importers of goods is much wider (101 countries). Almost one third of imported goods come

from Belarus and the rest comes from Poland, Lithuania, Germany and Russia. Energy-providing materials, oil and distillation products, plant products, base metals and metal artworks, polymers, plastic and rubber, and products of the chemical industry and connected branches dominate in import.

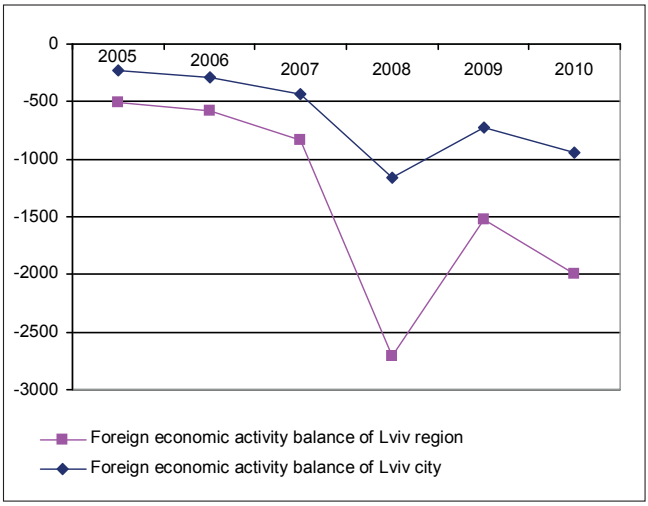

Figure 5.4. Dynamics of foreign economic activity balance of Lviv and Lviv region

Source: own elaboration

Poland with about 20% share of total export, USA, Germany, Russia and Canada are the main partners of Lviv in the export of services. Currently, transport and communications services, licensing and informatization services, hotel and catering services as well as services in the sphere of architecture and construction dominate among the imported services.

Intra-regional links, particularly links between the city and its suburban zone and the Lviv agglomeration territories, play an important role in forming of the spatial relations of Lviv city. Analysis

of socio-economic development of Lviv and Lviv region confirms not only significant concentration of economic activity in the regional centre, but also indicates the presence of significant intra-regional differences. The share of Lviv in almost all indicators for Lviv region except the population, residential buildings construction and industrial products is more than 50% (table 5.1).

Table 5.1. Comparison of Lviv's and Lviv region's development indicators as of 1st January 2011

Indicators	Lviv region	Lviv city	Share of Lviv city in Lviv region
Population, thous.	2 544.7	760.0	29.9
Number of entities in the National State Registry of Ukrainian Enterprises and Organizations	65 668.0	33 826.0	51.5
Number of employees in enterprises, institutions and organizations, thous.	646.4	320.0	49.5
New residential buildings, thous. sq. m of total area	642.0	184.5	28.9
Fixed capital investments, mln UAH	8287.3	4 358.8	52.6
Foreign direct investments, mln USD	1 273.8	837.1	65.7
Volume of sold products, mln UAH	25 806.9	10 450.4	40.5
Volume of industrial products, mln UAH	16 317.5	6 624.9	40.6
Services rendered, mln UAH	11 928.9	7 140.1	59.8
Retail trade turnover, mln UAH	14 504.9	8 806.4	60.7

Source: Storonyanska (2009).

Existence of intra-regional imbalances encourages movement of regional labor resources and activates intra-regional migration flows. The regional centre is daily visited by workers from the surrounding settlements that belong to the category of commuters. These migration flows in Ukraine cover from 10% to 25% of sub-

urban areas citizens. In the 1970s–1980s Lviv was daily visited by 135 000 people from the suburban zone. Commuting migration of rural inhabitants to the city was associated with daily trips to work.

Currently these processes are still taking place but on a much smaller scale. Analysis of the structure of suburban population employment indicates that the proportion of urban area population is 83.4% of the total number of working-age population (Lysyak 2006, p. 93).

An increasing level of motorization, present specifics of suburban population forming and structural transformation of the urban economy are changing the commuters structure. If earlier a significant proportion of commuters was composed of employees of urban industrial enterprises, today these flows are formed mostly by students, officials, employers and employees of the service sector.

Another aim of commuting migration of rural population to Lviv is to gain access to cultural and welfare services. Considering the growth of the private services sector and increased opportunities for satisfaction of cultural and welfare needs of suburban population, the city remains attractive for this group of population. It should be added that the migration of urban citizens to rural areas connected with the agricultural and recreational component of urban life (garden and cottage management) and family homes visitings constitutes an important migrational flow.

The analysis of the migrants' structure by the flows and settlement types in Lviv region shows increased influx of population to the region's cities and increased migration flows from rural areas.

Indicators of intra-regional migration of the Lviv city population (figure 5.5) in recent years indicate a decrease in this migration flow balance and appearance of a new trend: migration flows from the city to the region are bigger than *vice versa*. It is caused by the worsening of the economic situation in the country, reduced employment opportunities in the city and increasing proportion of retirement age people.

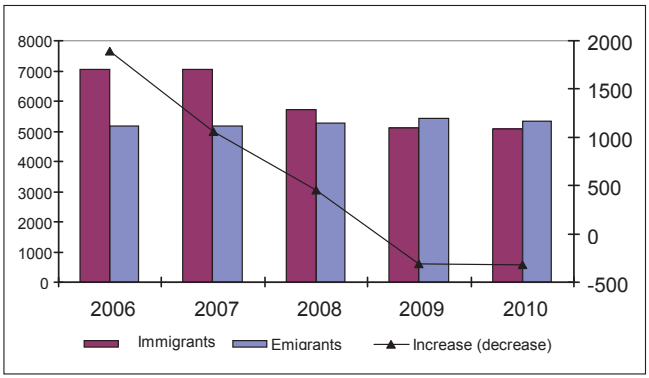

Figure 5.5. Dynamics of intra-regional migration of Lviv's population

Source: own elaboration

Rather well-developed transport infrastructure plays an important role in the development of spatial relations of Lviv city. International airport "Lviv" that is located in the city provides air connections of the city with various Ukrainian and world regions. More than 100 000 passengers and about 40 tons of high-cost goods per year go through the Lviv airport (*Sayt VII Lvivskoho*… 2012).

The amount of transport services export has decreased by 30% during 2007–2010, while import increased by 14%. The geographic structure of transport services export includes Germany, Poland, Russia and Italy, while import is from Poland, Turkmenistan, Hungary, Germany and other countries. The structure of dispatching cargo by Lviv railway department is the following: coal, oil and oil products, timber, grain, chemicals and mineral fertilizers, cement and scrap metal.

Cargo and passenger transportation carried by Lviv motor transport has the largest share in total transportation. Thus, in 2009, cargo transport increased by 24% in comparison to 2005, and passenger transport – by 53%. The necessity of renewal and development of highways and rolling stock of all transport types

is the main problem in the transport infrastructure that should be solved in order to improve spatial urban relationships.

Summarizing all the above-mentioned information, it should be noted that the prospects of expanding the city's spatial economic relations rest on economic clusters formation, development of inter-regional relations in the national economic space, increase of investment and access to world and European goods and services markets.

Iwona Pielesiak
University of Łódź

6. SOCIO-ECONOMIC LINKAGES OF ŁÓDŹ

6.1. Introduction

Łódź, despite its relatively long history, became an important node of socio-economic linkages not so long ago. It has played this role since 19th century, which brought industrial revolution and economic prosperity. The nodal character of the city was afterwards strengthened due to 20th century administrative reforms and again, during the transition period which followed them at the turn of the century. As the third most populated urban centre in the country, Łódź remains the biggest employment market in the region, causing considerable workforce flows from its surrounding. Other kinds of spatial linkages have evolved due to the fact that the city accommodates well developed, exogenous high order services, especially those related to culture and education. And finally, due to its size, the role in the administrative system and the central location, Łódź has considerably influenced the spatial pattern of infrastructural networks in the region.

6.2. Ownership and financial relations

Among the crucial economic linkages generated by big cities are capital relations between business entities and linkages resulting from infrastructural investment. The first of the mentioned kinds is represented by the ownership-financial relations (the share in ownership of capital in particular business) and the relations attributed to entrepreneurial activity (supply, sale, business services etc.). Due to the confidentiality of business information, relations of the second kind, although undeniably interesting for geographers, are extremely difficult to be reliably examined on a large scale. As for the ownership-financial relations, research projects conducted so far have focused only on the biggest enterprises. Moreover, information about this phenomenon was not related to particular cities – the location of business activities was analyzed within wider areas, which included both, urban centres and the suburbs (Śleszyński 2008, 2010).

According to Śleszyński (2010), the strongest organizational and ownership relations, which were generated by the biggest enterprises, bound Łódź with the capital city. Other linkages – with Poznań, and, to a much lesser extent, with Cracow and the Tricity, were rather marginal. Taking the absolute values under consideration, in 2006 there were 108 connections registered between business departments in Łódź and their headquarters located in Warsaw. This number was not the highest in the country. Despite a greater physical distance, much stronger relations were observed between the capital city, Cracow, Poznań and Wrocław.

The missing data referring to the flows of goods and capital between settlement centres, which were necessary for assessing the actual relations in the presented project, were estimated by the use of the gravity model. In this model, aggregated GDP in 2004 was taken under consideration, while NUTS-3 sub-regions were adopted as the basic units for the analysis. In this theoretical examination, Łódź also appeared to be most strongly related to Warsaw, as well as to Piotrków Trybunalski, which is a much less significant

administrative centre, located in łódzkie voivodship. Moreover, the model indicated quite strong possible relations with Częstochowa, Płock and Kalisz – the sub-regional centres of the surrounding voivodships (Śleszyński 2008).

6.3. Technical infrastructure linkages

The flows of people, goods, capital and information are strongly determined by the level of development and the spatial distribution of technical infrastructure. Due to its central location, Łódź ought to be extremely privileged, at least as far as the transport accessibility is concerned. This assumption proves to be true in case of the road network, however, it completely does not refer to the railways.

Łódź lies in the proximity of the second and the sixth Trans European Network corridors (Berlin–Warsaw–Minsk–Moscow and Gdańsk–Warsaw/Łódź–Ostrava, respectively). The centre of the city is located about 19 km from the country's most important motorway crossing (figure 6.1). At the moment A2 highway offers the city a direct connection to Polish-German border (via Poznań), but as soon as the governmental plans are finally realized, Łódź will also gain comfortable access to Belarus (via Warsaw), and, through A1 motorway, to the Baltic Sea (in Gdańsk) and the Czech Republic (via Upper Silesia).

The city remains a node for four national (no. 1: Gdańsk–Toruń–Bielsko-Biała–Cieszyn, no. 14: Sieradz–Łowicz, no. 71: Łódź–Rzgów and no. 72: Konin–Rawa Mazowiecka) and eleven provincial roads (connecting it with Uniejów, Bełchatów, Kutno, Skierniewice, Ozorków, Szadek, Ujazd, Tomaszów Mazowiecki, Opoczno and Piotrków Trybunalski). Soon also S8 expressway is about to improve its accessibility from Wrocław.

Apart from the high speed routes, Łódź remains a node in which other national and provincial roads, providing more access ways to Warsaw, Gdańsk, Poznań, Kalisz, Częstochowa, Radom, Lublin etc., meet. The important role in channeling traffic between other parts of the country, together with the lack of the ring road, results in high

congestion affecting its roads. This problem ought to be considerably reduced as soon as the missing sections of A1 motorway, as well as S8 and S14 expressways are constructed and put into use.

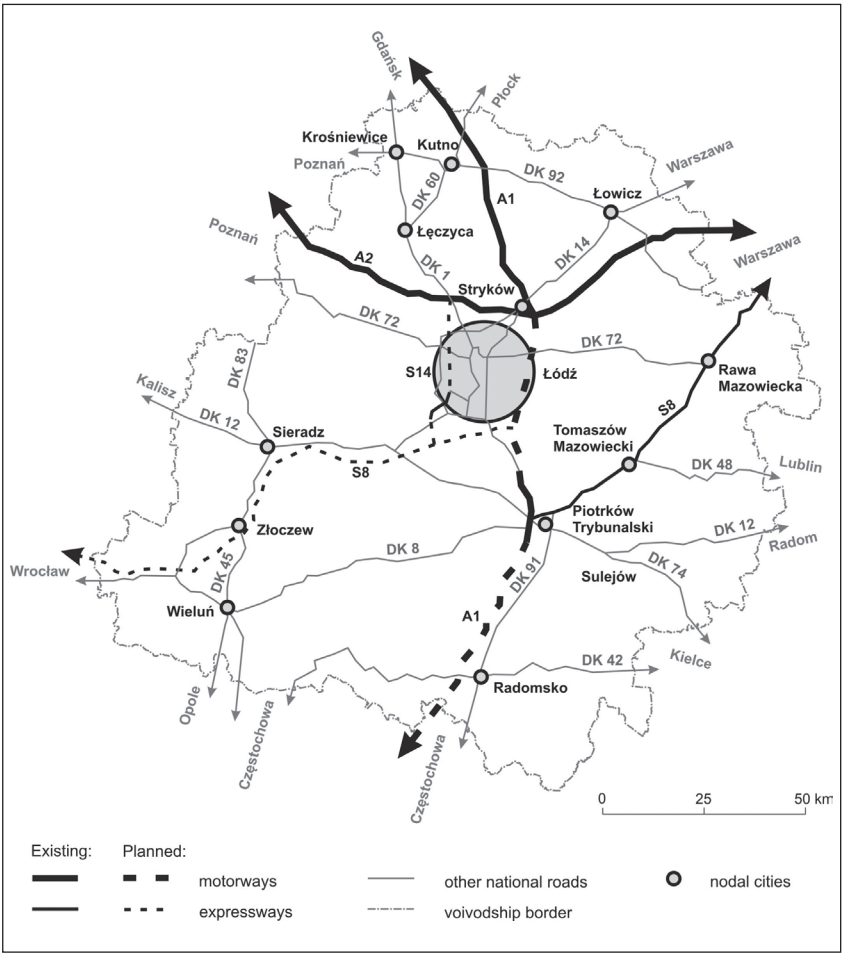

Figure 6.1. Łódź in the road network of the voivodship in 2013

Source: elaboration based on the data published by General Directorate for National Roads and Motorways

The advantageous location in the centre of Poland and within the main road network results in good accessibility of Łódź as far as bus transport is concerned. Bus connections are provided by several national and regional carriers. At the moment, due to construction works in the central part of the city, passengers generally use two main bus stations. The more important one is Łódź Kaliska, which is located near the railway station. This object was designed for serving direct national carriages, as well as those to other countries e.g. Austria (Vienna, Innsbruck), Belarus (Minsk), Belgium (Liege, Bruxelles), Czech Republic (Prague), Germany (Berlin), Hungary (Budapest), France (Paris, Bordeaux), Italy (Milan, Torino), Lithuania (Vilnius), Latvia (Riga) and Estonia (Tallinn), Norway (Oslo), Ukraine (Kyiv, Lviv), and Slovakia (Bratislava). As for national linkages, there are usually several direct connections to the biggest cities in Poland per working day. The strongest relations are those with Warsaw, Wrocław, Poznań, Częstochowa, Katowice, Kraków, Kielce, Włocławek and Toruń (figure 6.2). The more peripherally located the cities, the weaker bus linkages are, however, connections with the South-Eastern part of the country are evidently stronger than with the Northern part. This phenomena could possibly be attributed to the specificity of the Polish settlement system, as well as to the administrative separation of the North-Western part of Polish lands in the past.

The other important bus station in Łódź, called the Northern Station, is used for shorter distance connections. It offers carriages to middle and smaller size towns (e.g. administrative district centres like Brzeziny, Łęczyca, Kutno and Gostynin), which are usually located within 90-kilometre radius. On a typical working day there are usually one to twelve direct connections on offer.

Bus linkages are also well developed at the sub-regional level. In this case they are provided by both municipal and private operators. The most important entity in this group – Urban Communication Company in Łódź, considerably strengthens the connections between the core of the agglomeration and closely located cities and towns (such as Zgierz, Stryków, Brzeziny, Rzgów and Aleksandrów Łódzki), as well as with the settlement centres of the rural areas that

surround it. The offer of the municipal transport companies operating in Pabianice and Zgierz additionally contributes to tightening the relations with Łódź. Moreover, numerous private carriers provide relatively quick, comfortable and cheap connections to Zgierz, Ozorków, Stryków, Głowno, Andrespol, Pabianice and Aleksandrów Łódzki. The time of travel in case of those lines is directly proportional to the physical distance between each settlement centre and Łódź. This results from the fact that such connections are generally offered on the shortest distances and on roads that are highly positioned in the road hierarchy (Bartosiewicz, Pielesiak 2012).

Contrary to the situation characterized above, the role of the analyzed city cannot be described as crucial for the national railway system. The specificity of the socio-economic development of Łódź, as well as the previous underestimating of its potential in the system of territorial administration of Polish lands, were very disadvantageous for its position in this field. Although the city finally became the administrative and economic centre of the region, it remained peripherally located in relation to the important railway lines of the voivodship and the whole country.

Łódź lies in the centre of a triangle formed by evidently more important railway nodes of Kutno, Koluszki and Zduńska Wola. Crucial railway lines – no. 1 (Warszawa–Upper Silesia), no. 3 (Warszawa–Frankfurt-an-der-Oder) and no. 131 (Upper Silesia-Pomerania) run at a distances of about 20–30 km from the city. Apart from the modernized gauge section to Koluszki, the infrastructure which connects Łódź with the major lines is characterized by low technical parameters. Those factors cause its insufficient accessibility from the biggest Polish cities and, especially, foreign urban centres (Pielesiak 2012b). At the moment such connections are provided mainly from Warsaw, Poznań, Gdańsk and Katowice. The situation in which such a big and centrally located city like Łódź does not play any role in maintaining international operations, although even much smaller centres like Bydgoszcz and Gdynia do, clearly indicates a problem with the whole national railway system.

The marginal role of Łódź as a railway node becomes even more evident if the volume and the spatial extent of direct connections

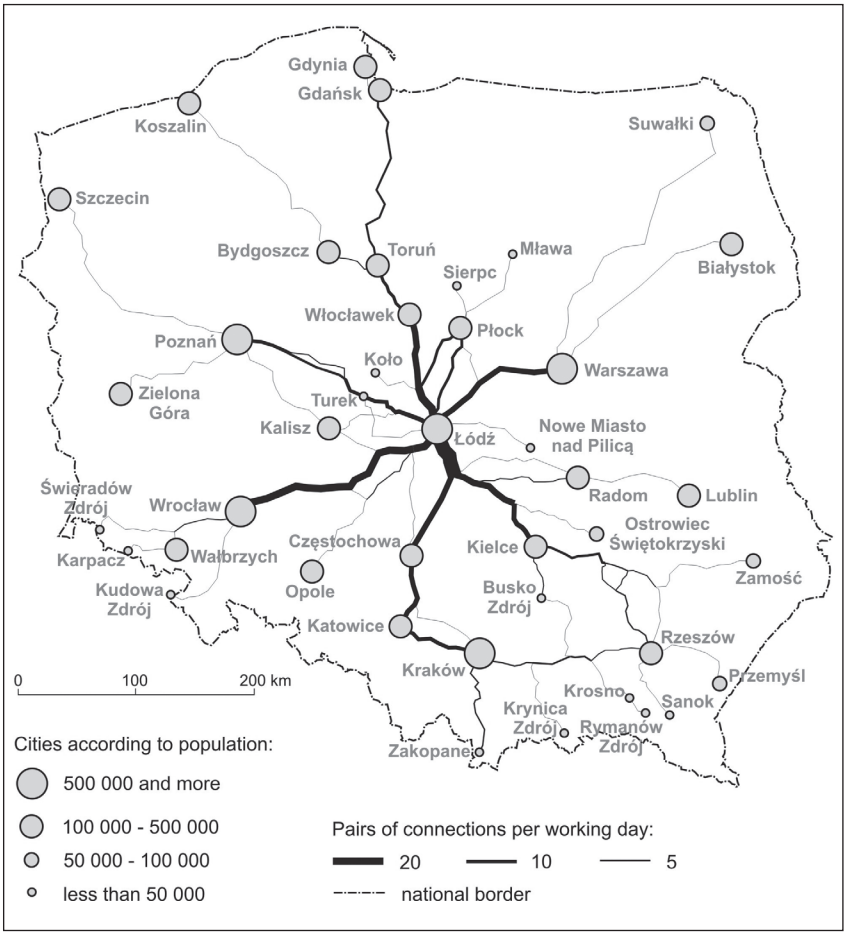

Figure 6.2. Supra-regional bus connections of Łódź in 2013

Source: elaboration based on bus carriers' timetables

are taken into consideration. The strongest linkages are those with Warsaw and, to a much lesser extent, with Toruń and Poznań (figure 6.3). The situation is worsening each year – more and more connections are shut down, which is explained by their unprofitableness.

Of course, the whole Polish railway system is constantly experiencing restructuring after the transition period, and the shutting down of unprofitable lines is obvious in this situation. For Łódź, however, this process is more problematic. It inevitably leads to further economic marginalization of the city, despite the fact that it lies in the very centre of Poland and is the third most populated settlement centre in the country. Even passengers' pressure to reestablish direct

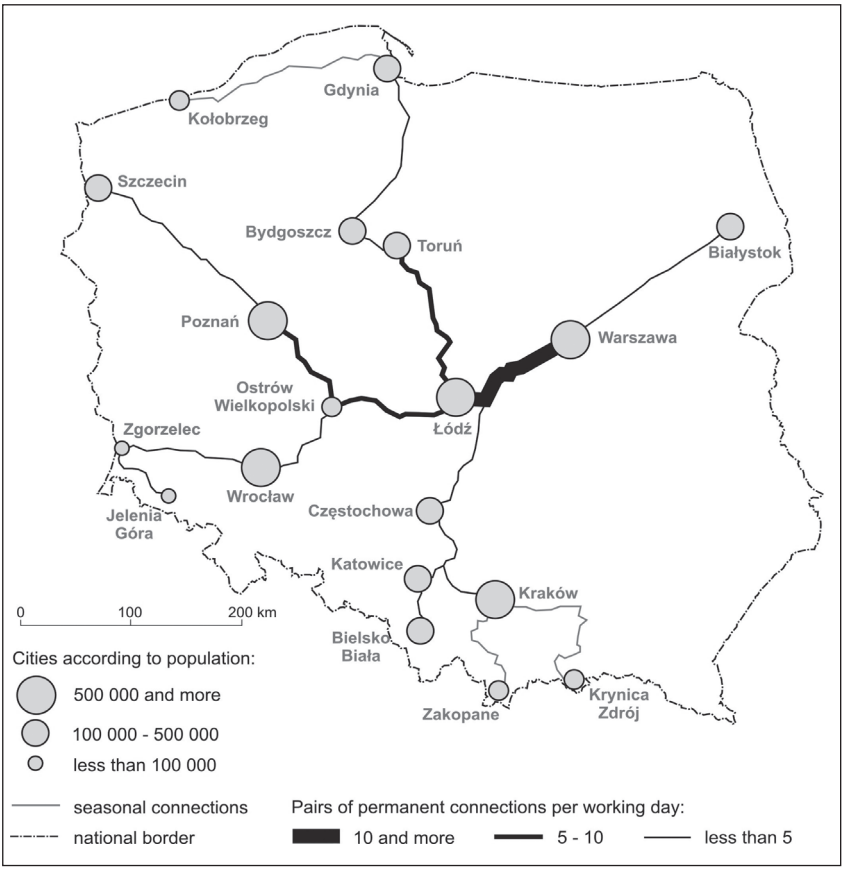

Figure 6.3. Supra-regional railway connections of Łódź in 2013

Source: elaboration based on railway carrier's timetables

connections to some cities (e.g. Lublin via Radom) does not bring any positive results. People are forced to use indirect lines, mostly via Warsaw, which extends the time of travel for another few hours and makes this way of travelling unattractive.

In spite of such unfavourable circumstances, not so long ago Łódź almost succeeded in taking on the role of one of the major railway nodes in the country. This indeed could happen if the project of "Y" railway system was realized. This idea assumed constructing the network for high speed trains, which could operate between Warsaw, Poznań and Wrocław via branching in Łodź. The project was also aimed at constructing an underground diameter line and reconstructing the main railway station (Łódź Fabryczna). Although at first the prospects for building the Y line were very promising and the construction works on the underground western tunnel as well as the railway station were initiated, Polish government eventually withdrew from the realization of the high speed railway project. Now the city is only going through an investment process which ought to result in creating comfortable, but at the same time very expensive and technically difficult, direct line between the major railway stations. The present plans still include reconstruction of Łódź Fabryczna, which is supposed to mark the new centre of the city.

Considering the needs of the agglomeration railway system and the economic efficiency of this investment, many doubts arise. On the other hand, the realization of the diameter line and construction of a new railway station will certainly enrich the surrounding urban tissue and contribute to the revival of this important but nowadays neglected part of the city. Despite the criticism in this matter, it should also be mentioned that the new infrastructural objects will become very useful for the concept of Łódź Agglomeration Railway. This recent project is aimed at strengthening slow and infrequent connections between the centre of the voivodship and the nodes in Kutno, Zduńska Wola, Koluszki and Łowicz. So far its realization has resulted in modernization or construction of numerous railway stations and purchasing of modern fleet. Due to the present construction works in the heart of Łódź, the major railway lines, which used to be

serviced by two main railway stations (only one of them located in the central part of the city), will be joined and that ought to increase the efficiency of their utilization. As a consequence, passengers arriving in Łódź from all possible directions will gain the opportunity to comfortably and quickly reach its central part.

Contrary to passenger railway carriages, cargo shipments via Łódź are relatively important in the national and international system. The lines which cross the city from the South-West to the East are classified as corridors in terms of European Agreement on Main International Railway Lines (AGC) and European Agreement on Important International Combined Transport Lines and Related Installations (AGTC). They are provided with a transshipment terminal (Łódź Olechów), which was constructed in the 1980s and now is capable of servicing 100 arriving and 100 departing containers per day. It is possible to store about 3000 to 5000 containers at the station, however, its capacity is not fully utilized due to siding limitations. In 2009, the terminal utilized about 70% of its transshipment capability. The object gradually increases its role, which, to some extent, may be attributed to the growing import from South-Eastern Asia (*Study of Conditions*… 2009).

Apart from the railways, also suburban trams highly contribute to strengthening the relations between Łódź and the settlement centres that surround it. The oldest elements of this system were established in the central city as early as the end of 19th century and soon the first suburban lines were put into service. Nowadays tram operators provide the city with connections to Zgierz and Ozorków (to the North), Konstantynów Łódzki and Lutomiersk (to the West) as well as with Ksawerów and Pabianice (to the South). The most important line is the one leading to Zgierz, which offers over 100 connections per working day. During the rush hours, trams depart with 10-minute intervals. Other suburban lines run at longer time intervals – there are 17 to 60 pairs of trams per working day. Connections on the Western line to Lutomiersk, characterized by over one-hour intervals, are definitely the least frequent.

In the past, there were also three other tram lines leading from Łódź to Tuszyn, Aleksandrów Łódzki and Rzgów. They were liqui-

dated in 1978, 1991 and 1993 respectively, which was the result of changes in traffic organization and the pursuit for economic efficiency. There is now a discussion whether the last suburban tram lines should continue to be operated. It is claimed that they are a serious burden for municipal budgets and, taking the number of passengers into consideration, they are underutilized. On the other hand, such external tram network is desired by many agglomerations since it may relieve the road system that nowadays regularly experiences congestion. Anyway, the efficiency of the remaining lines is additionally reduced by the serious underinvestment of their material base. The future of Łódź suburban tram system is uncertain, even despite the fact that a few years ago a project for building "Łódź Regional Tram" was announced. However, so far it has only brought some advancements in the infrastructure of the central city.

Infrastructural linkages have been also generated by Łódź on the basis of air transport. Passengers use the international Władysław Reymont's airport which is also known as Lublinek. In this case Łódź, again, is rather unprivileged, because the contemporary offer is very limited. Apart from charter flights (mostly to Israel and the airports serving tourist resorts in Bulgaria, Greece, Egypt, Tunisia and Turkey), there are only few regular direct connections to Great Britain (London Stansted, Liverpool, east Midlands), Ireland (Dublin) and Denmark (Copenhagen). In October 2013 there are 8, 2, 5, 3 and 8 flights to those cities per week. This low frequency of carriages results from the size of the airport. Lublinek is a small object with only limited possibilities of spatial extension of the runways. Moreover, despite the proximity of the railway line to Sieradz, there is no siding which would directly lead to the airport.

Last year the third terminal was opened at the airport, capable of serving 3 000 000 passengers per year. However, the number of its actual users is much smaller (oscillating between 300 000 and 400 000 people) and it does not seem to reflect any considerable upward trend. There was an increase in passenger volume last year, however, it was caused by temporarily taking over some operations from the main national airport in Warsaw. On the other hand, cargo shipments have increased considerably – from no carriages in 2008

and 4600 kg in 2009 to over 2 500 000 in 2013 (according to data published by airport authorities).

Apart from the conventional transport, infrastructural linkages include the transfer of energy. Electro energy supply in Łódź relies basically on a brown coal power plant located in Rogowiec by Bełchatów (figure 6.4).

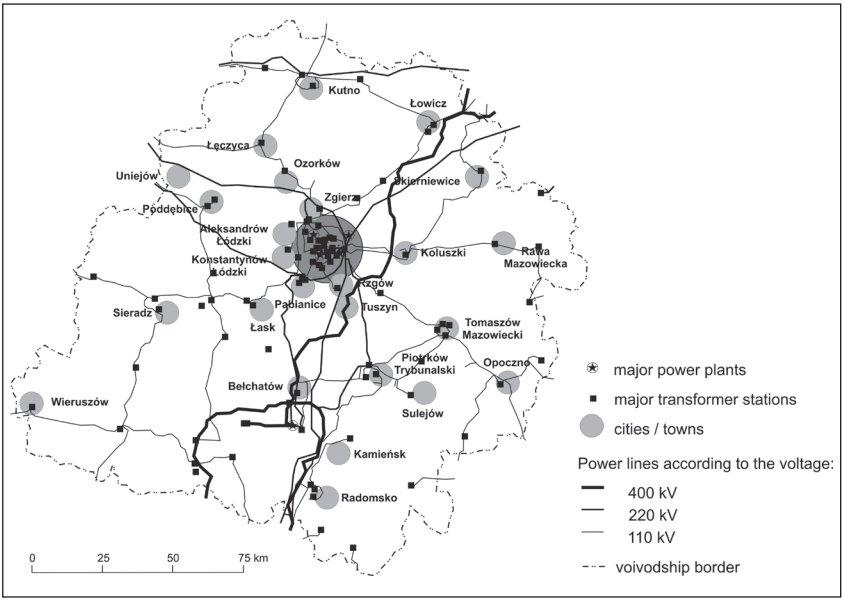

Figure 6.4. Łódź in the regional electro energetic distribution network

Source: elaboration based on the *Updated Land Development Plan of Łódź Voivodship* (2010)

The system is also supplemented by the production of three thermal power stations in the agglomeration core. Energy transit relies on lines running to the East of the city, from Bełchatów to Warsaw. One of three major high voltage transformer stations in the agglomeration is located in Łódź, the others were constructed in Zgierz and Pabianice. As for the medium voltage network, although Łódź

directly supplies the energy systems in three neighboring municipalities (Nowosolna, Andrespol and Rzgów), it is not considered the main distribution node in the urban region. The reasons for this situation are, on the one hand, very high demand within the city, and on the other – insufficient development of the material base, which should be provided with more connections between installations in Łódź and the surrounding network. This could increase infrastructural efficiency as well as general reliability of power supply. Unfortunately, creation of such electro energetic ring has been postponed because of its enormous costs.

Contrary to the electro energetic system, middle pressure gas network forms a ring that encircles Łódź (figure 6.5).

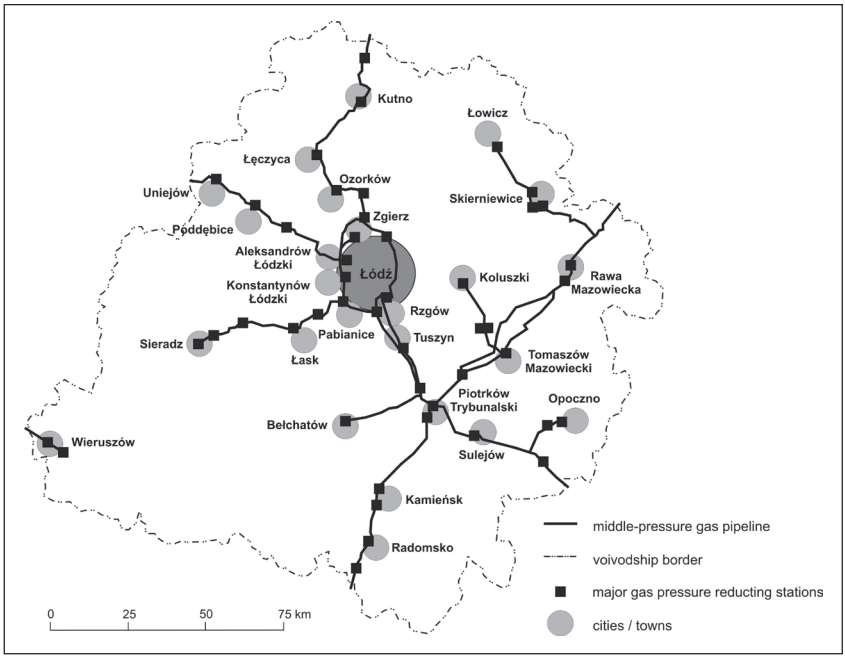

Figure 6.5. Łódź in the regional gas distribution network

Source: elaboration based on the *Updated Land Development Plan of Łódź Voivodship* (2010)

It is supplied from the North, through pipelines cooperating with the main node in Gustrzyn. This installation sends good quality gas, submitting it directly from the Yamal-Europe pipeline. The second important linkage binds the city through a southern offshoot with the gas main Mory–Rawa Mazowiecka–Tomaszów Mazowiecki–Piotrków Trybunalski–Radomsko–Częstochowa. There is another option to supply the sub-regional system, with the use of the installations in Turek. Gas in this case is synthetically produced and characterized by high content of nitrogen. This fact explains why the supply from the Western direction is usually cut off by the station located in Uniejów (Pielesiak 2012b).

Apart from the linkages created in order to distribute energy, there are also three other infrastructural connections between Łódź and territorial units located in its surrounding. Insufficient capacity of municipal uptakes of water is a very important factor which stimulates cooperation in this field. Although local authorities aim at self-sufficient water management, urban municipalities often deliver water to their rural neighborhoods. Łódź is the crucial deliverer in the agglomeration, although, paradoxically, its own supply relies on imported resources. In the 1950s a water pipeline between Łódź and the uptake on the Pilica river in Tomaszów Mazowiecki was constructed, but soon it occurred that it did not satisfy the growing demand for water, reported by the industrial sector. And so the pipeline system was considerably developed, which included diming up water in the Pilica river, creating another water uptake in Rokiciny, and gradual switching from surface to underground uptakes. Nowadays Łódź has got secured and diversified water resources and this allows the city to supply other settlements located along the pipeline (Tomaszów Mazowiecki, Rokiciny, Andrespol and several villages between them). Moreover, the city delivers water to the neighboring municipalities of Stryków and Rzgów. On the other hand, in the case of one peripherally located districts (Green Romanów), Łódź is supplied under a agreement with Aleksandrów Łódzki commune.

Relatively strong inter-municipal relations within the agglomeration include corporate sewage management. Due to the fact that

the biggest sewage treatment was constructed in Łódź, and Pabianice, located nearby, does not have such an installation, the main axis of this kind of linkage has developed between those two biggest cities. Łódź receives also direct sewage load from three other surrounding communes (Nowosolna, Rzgów, Konstantynów Łódzki) and indirectly – via city of Pabianice – from Ksawerów and Pabianice rural municipality. On the other hand, there is a small export from the northern peripheries of the agglomeration core to the sewage treatment plant in neighboring Zgierz.

To sum up, taking the aggregate measure of transport infrastructure linkages (including roads, railways, energy distribution, water and waste management) into consideration (figure 6.6), the strongest relations link Łódź to the territorial units located in the longitudinal belt which stretches from Ozorków in the North to the rural municipality of Pabianice in the South (Pielesiak 2012b). This pattern, again, clearly reflects the main axis of the settlement system.

Among the main reasons for infrastructural cooperation between local authorities as well as between the authorities and entrepreneurs is the question of solid waste management. Not all Polish communes have direct access to installations designed for waste utilization (dumping grounds, waste sorting units, composting plants or municipal incineration plants) and that stimulates cooperation with other communities which are willing to give access to their objects. Although Łódź has its own waste sorting units and composting plants, as well as closed dumping grounds, it exports waste to the dumping grounds located both, in the region (in Radomsko, Bełchatów, Kamieńsk, Kąsie), and outside the voivodship (in Konin).

The outflow of waste used to depend on a variety of municipal and private firms, which operated under contracts with particular institutions, inhabitants and other entities. Łódź was mainly serviced by the firms located in the city, which were also involved in waste collecting in the surrounding area. On the other hand, several entrepreneurs from Zgierz, Aleksandrów Łódzki and further located areas (Bełchatów, Piotrków Trybunalski, Radzionków etc.) were operating in the agglomeration core (Pielesiak 2012b).

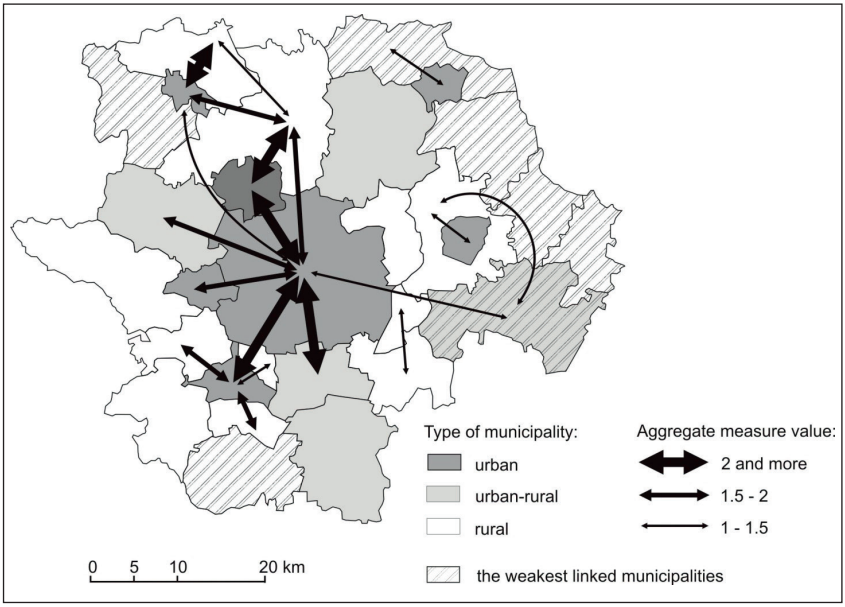

Figure 6.6. The strongest and the weakest infrastructural linkages in Łódź urban region in 2009

Source: Pielesiak (2012b), changed

In the middle of 2013, the whole Polish system of waste collection and disposal began to be adjusted to the requirements of the new legal act on waste management. Due to the fact that transition from the previous system to the new one is still in process, the possibilities for exploring the problem of waste management linkages are limited at the moment.

6.4. Migrations and other social linkages

Like many other big cities in Poland, Łódź has been experiencing a depopulation process for many years. On the one hand emigrants choose dynamically developing metropolises (such as Warsaw and other big cities), but on the other, they move to the surrounding

administrative units. Dynamic suburbanization concerns particularly the municipalities of Konstantynów and Aleksandrów Łódzki, Nowosolna, Andrespol, Brójce and Rzgów. During 1989–2007, people leaving Łódź constituted over 75% of all in-migration to those areas. Only a little smaller supply from the central city (between 50% and 75%) was observed in Zgierz rural municipality, Stryków and Ksawerów, as well as in more distantly located, but offering attractive environment Tuszyn and Lutomiersk (Śmiłowska 2008). The visible results of those migration patterns include development of housing estates within the urban fringe and along roads leading out of the city (Milewska-Osiecka 2012).

Łódź, due to its considerable economic potential, has become the most important workforce market in the region. Precise number of people arriving to and departing from the city to work is, however, very difficult to be measured. In 2006, the Central Statistical Office made an estimation of the daily workforce movements on the basis of tax declarations. Although there is no better source for this kind of information, it must be acknowledged that literally taking some information for granted would lead to incorrect findings, such as the fact that people commute to Łódź even from municipalities lying outside the voivodship. Those mistakes could be to some extent limited if only part of the communes was subjected to analysis. It seems that choosing territorial units located within e.g. a 50-kilometre diameter, which slightly exceeds one-hour drive, could somehow improve the estimation. Including only this area into analysis reflects the determining role of physical proximity and transport accessibility (figure 6.7).

The biggest inflow to Łódź came from the municipalities which directly surround the agglomeration core, as well as from more distant, but very populated and highly accessible communes (located along the major roads and railways). Over 5% of the total number of commuters within this area arrive from Zgierz, Aleksandrów Łódzki and Pabianice. Those cities, together with Konstantynów Łódzki, are the communes which attracted the majority of people arriving from Łódź.

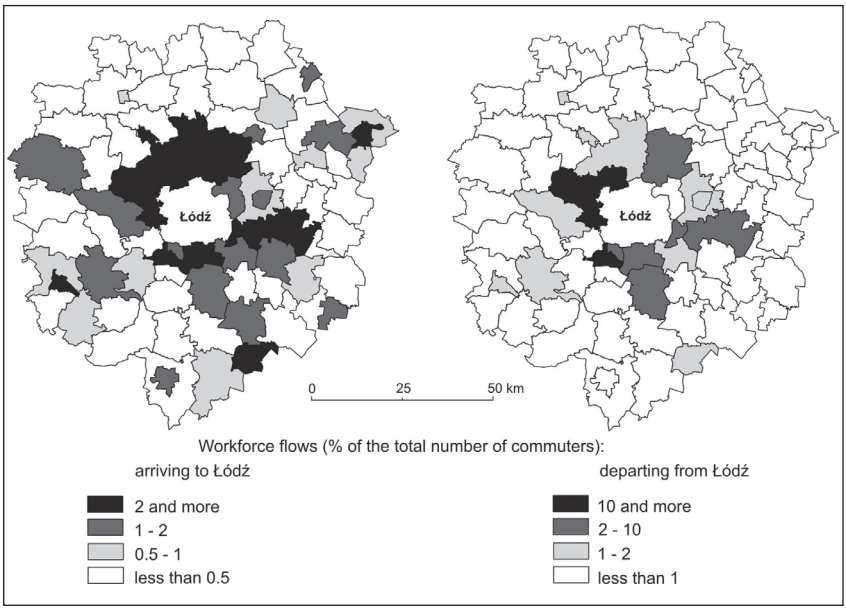

Figure 6.7. Estimated workforce flows between Łódź and the municipalities located within a 50-kilometer radius

Source: elaboration base on Central Statistical Office data for 2006

Another factor that stimulates the development of social linkages between Łódź and other territorial units is education. According to a survey conducted by A. Mądry (2012), despite the zoning obligatory for primary schools and gymnasiums, such institutions located in the agglomeration core attracted over 1400 commuting students (about 3% of all the students in Łódź). The majority of them arrive from the municipalities that surround the city, especially from those located to the North-West and South-East of Łódź (figure 6.8).

As for secondary schools, in 2011/2012 there were over 4400 students from outside Łódź. Generally, they chose high schools and technical colleges rather than vocational schools. Although the spatial influence of secondary education is much wider than in the case of primary schools, only 64 students came from other voivodships (mostly from mazowieckie and wielkopolskie voivod-

ship). The rest of this group arrived usually from the districts that surround Łódź (especially from zgierski district), and the municipalities located to the North-West of the agglomeration.

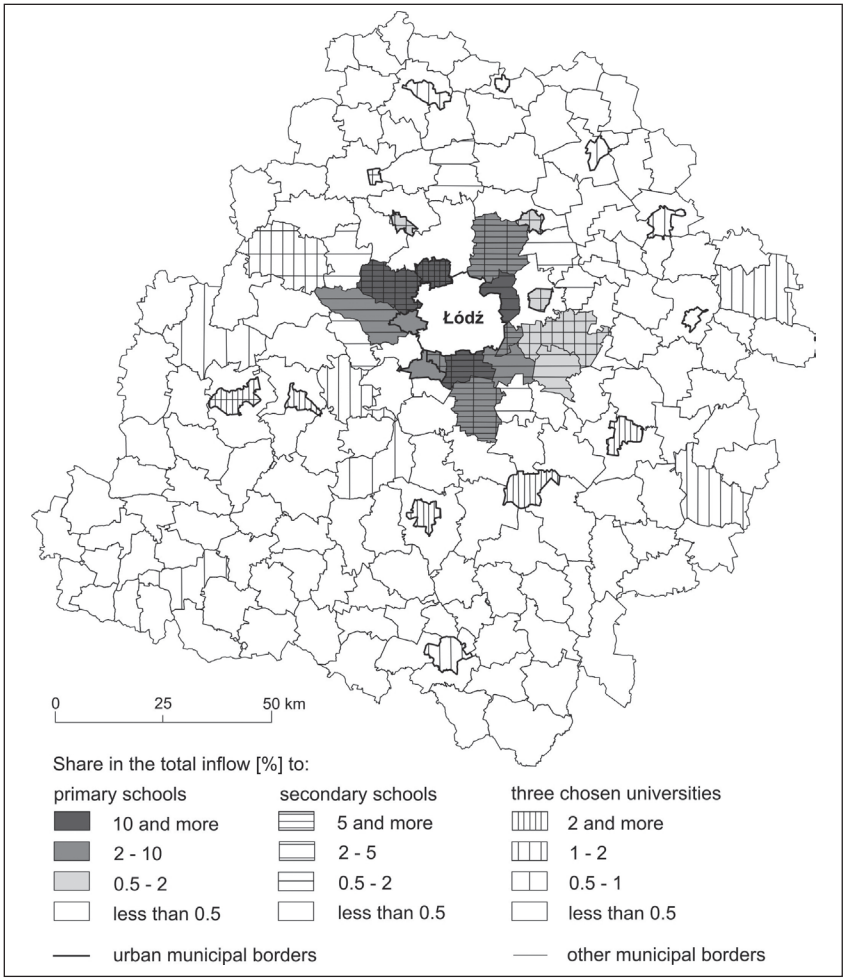

Figure 6.8. Flows to educational institutions in Łódź from municipalities of Łódź voivodship in 2012

Source: elaboration based on Mądry (2012)

The role of higher education in Łódź could be estimated on the basis of available data regarding territorial origin of students admitted to the University of Łódź, Technical University of Łódź and one private school (University of Humanities and Economics). In the group of over 60 400 students, about 81% came from the region. As for the further located areas, the educational offer of the city generally attracted people from Mazovia, Greater Poland, as well as kujawsko-pomorskie and świętokrzyskie voivodships. Again, the majority of students living in the region arrived from the territorial units that encircle Łódź (pabianicki and zgierski districts). Also further located cities were well represented in the analyzed group. The commuting students and those who decided to move to Łódź to study at those three universities, constituted over 66% of all their students (Mądry 2012).

Unfortunately, analysis of commuting to educational institutions in reverse directions (from the central city) is difficult because of the lack of representative and comparable data.

Spatial relations generated by Łódź could also be measured by inflows to other service facilities, but this would mean great difficulties in obtaining reliable data. However, taking a recently conducted survey into consideration (Bartosiewicz 2012), it is possible to analyze the attracting role of major cultural institutions located in the central city. The project included four theatres, four museums, the philharmonic hall and one art gallery. During two months the customers of those institutions were asked where they came from, which allowed for obtaining about 35 000 records for analysis. 60% of the customers lived in Łódź, the majority of the remaining group arrived from the districts that directly surround the city (figure 6.9). Generally speaking, the strongest relations bound Łódź with municipalities located to the South and North-West of the city, which corresponds with the main settlement and transportation axes. The importance of cultural institutions in the agglomeration core was confirmed by the fact that during two months over 4000 people came from outside the voivodship. They constituted about one third of all visitors arriving in Łódź. They mostly came from Mazovia (especially from the districts encircling Warsaw) and Greater Poland (districts neighboring with łódzkie voivodship).

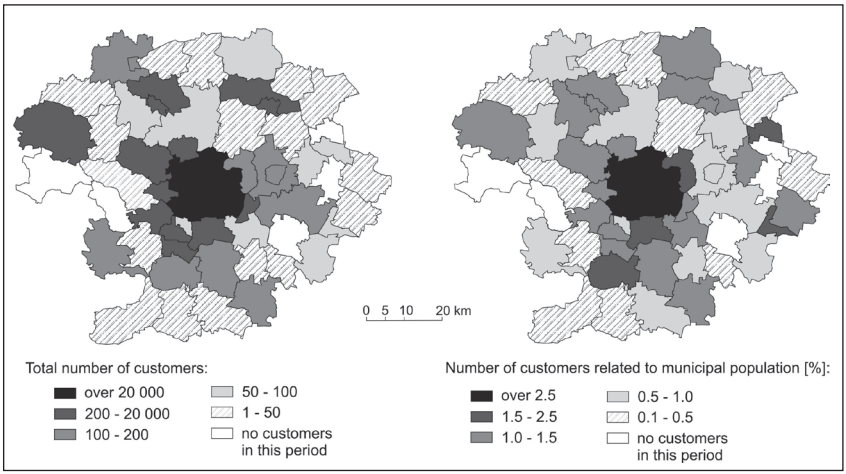

Figure 6.9. Inflow from municipalities of Łódź urban region to main cultural institutions located in Łódź in 2012

Source: elaboration based on a survey conducted in 2012

6.5. Institutional cooperation

Crucial social linkages are the result of the institutional cooperation. The municipality of Łódź is a member of numerous associations and other organizations which gather self-government units. In 2012 formal relations between the city and its direct surrounding included participation in three municipal organizations (figure 6.10). Those were the Union of Municipalities and Counties of Łódź Region (established for securing the joint interests of the administrative units), Bzura Intermunicipal Association (solving the problems of waste management) as well as the Association of Self-Government Units for Building S8 (by Sieradz and Łódź) and S14 (lobbying for the relocation of the S8 expressway in the proximity of the city and for hastening the construction of S14).

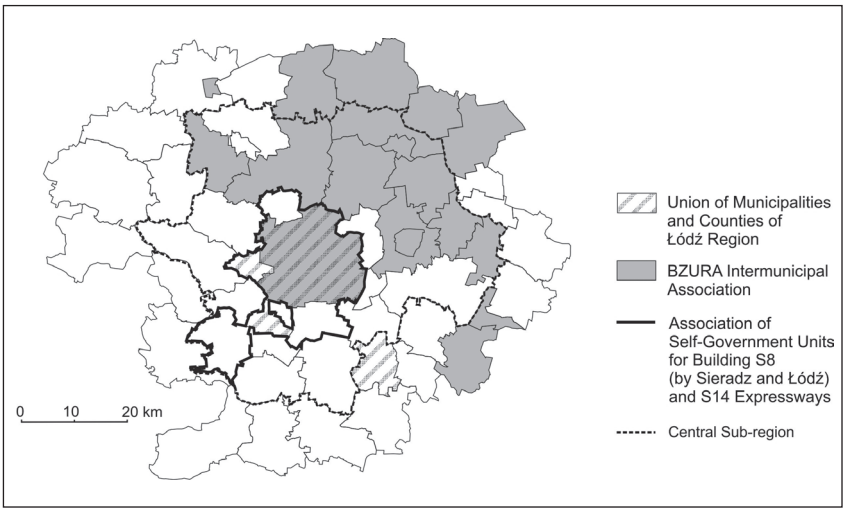

Figure 6.10. Institutional relations between Łódź and the surrounding municipalities in 2012

Source: elaboration based on the information published by the Ministry of Interior and municipal offices

Institutional relations also bind the city with 27 surrounding municipalities, within so called Central Sub-region. This is one of four such units established in the voivodship in order to increase the absorption of EU structural funds. Other fields of cooperation in this organization are: road infrastructure, environment protection, stimulating rural areas, and the maintenance of Łódź Hills Landscape Park (Pielesiak 2012b).

Institutional cooperation between territorial units in Poland is usually based on municipal agreements. Taking the number and the spatial extent of such agreements into consideration, Łódź does not seem to be strongly related to its hinterland. According to the *Official Journal of Łódzkie Voivodship*, during 1991–2012 its municipal authorities made only 16 agreements, most of which were of bilateral character and involved the surrounding territorial units (Andrespol, Nowosolna, Rzgów, Stryków and rural municipality of

Pabianice). Being the representatives of a much bigger and more developed unit, authorities of Łódź allowed their partners for using some objects of technical and social infrastructure. In those cases, cooperation involved commuting to schools, water distribution, sewage disposal and transportation.

The increasing flows of people, goods and information within Polish agglomerations contribute to many serious problems that particular municipalities have to deal with (e.g. uncontrolled suburbanization, growing congestion, technical infrastructure overloads etc.). This situation inclines local authorities to create associations which, basing on the joint socio-economic potential and the economies of scale, could solve the existing problems more effectively. This process is supposed to be legally regulated within so called metropolitan areas, whose authorities could take over part of municipal tasks, such as public transport organization, land management or territorial marketing. If such units are established, Łódź will considerably strengthen its relations with the communities of the neighbouring districts (Pielesiak 2012a). This year an official agreement between the interested local authorities was signed on this matter and the strategy for Łódź Metropolitan Area is being prepared. Municipal authorities of Łódź have also joint the Union of Polish Metropolises, which is an organization supposed to secure the future existence of functional areas of the biggest Polish cities.

Apart from collaboration at different levels of national administrative division, legal frames of self-government in Poland allow municipalities to cooperate with foreign territorial units. In this regard, Łódź has very wide institutional relations. Among its partners are cities located in Russia (Ivanovo, Kaliningrad), Ukraine (Lviv, Odessa), Lithuania (Vilnius), Belarus (Minsk), Georgia (Rustavi), Germany (Stuttgart, Chemnitz), Sweden (Orebro) and Finland (Tampere), Hungary (Szeged), France (Lyon), Spain (Murcia), Portugal (Barreiro), Israel (Tel Aviv), and even in Mexico (Puebla) and China (Tian Jin). This kind of cooperation, however, usually means only visits of representatives, joint with participation in cultural events, tourism promotion etc.

6.6. Conclusions

Contemporary social and economic linkages of Łódź are the result of various processes and phenomena, some of which originate from 19th century industrialization, the period of the centrally planned economy as well as in the transition period. Despite the long and difficult process of strengthening its role, the city finally managed to become one of major settlement and administrative centres of the country and the most important node for socio-economic relations of the region. Unfortunately, unfavourable economic conditions, together with the growing depopulation of the city, may significantly hamper this process. It seems that in such circumstances, only wise and continuous implementation of the concept of Łódź as a centre of higher education and culture might prove a solution to those problems.

It is important for the city to develop relations with other territorial units, especially those which could help Łódź strengthen the metropolitan functions. This, however, should not happen at the expense of weakening its relations with its direct surrounding. Łódź and the municipalities of its hinterland ought to develop in symbiosis, supporting one another, which requires making much more effort than it is being made today. Although so far many political declarations have been announced in this matter, local authorities of the central city must take on the role of the leader who is truly interested in supporting the advancement of all communities, not only of its own. It seems that this change of political mentality will not occur soon. Hopefully, in the new EU financial perspective, considerable funds are supposed to be assigned for developing the functional areas of big cities. If the authorities of Łódź initiate effective collaboration to obtain those funds, this may result in establishing solid and effective relations in future.

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