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INDUSTRIAL DEVELOPMENT IN THE SUBURBAN ZONE OF WARSAW

1. Introductory remarks.

The suburban zone of Warsaw as a homogeneous municipal organism started to develop in the second half of the 18th century, or to be more precise after 1770. Prior to that Warsaw had been composed of numerous independent municipal organisms, separated predominantly by agricultural land. In the 1760s there were in Warsaw 28 distinct organisms, including two royal towns: Old and New Warsaw, founded in the 13th and 15th centuries, and 26 so-called "jurisdictions", i.e. independent, private, small boroughs, usually owned by magnate families. Each of those boroughs and towns had their own administration, and was an independent centre of handicraft industrial production. In Old and New Warsaw this production was organized in guilds, whereas in the jurisdictions it was in the hand of non-organized artisans, called "tinkers" and "servitors".

In 1770, Marshall Lubomirski erected the city walls on an area of approximately 20sq. km. The walls integrated the territory of this loose agglomeration of towns and boroughs and for the next 20 years they also precipitated their administrative integration.

The second half of the 18th century was a period of a very rapid expansion of Warsaw. In 1764-1795 the population rose from 30 thousands to 150 thousands, i.e. five times, which put Warsaw among the biggest cities in Europe. One of the main factors which induced this growth was the development of industry, represented then by handicraft and the just emergent manufactories which sometimes employed several hundreds of workers. In 1792 17,451 people were employed in manufactories and handicraft workshops. At the end of the 18th century Warsaw became the biggest industrial centre in Poland. In the second half of the 18th century manufactories started to develop also in the suburban zone.

In the 200-year history of the development of industry in the suburban zone two secular periods, can be differentiated, namely: 1764/70-1864/70, and 1870-1978, which can, in turn, be subdivided into a few development stages.

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Their caesuras coincide, as a rule, with political events/national insurrections and wars), during which industry in sub-Warsaw areas was usually devastated.

In the first period /1764/70 - 1864/70/ the manufactories which developed in the suburban zone were to serve the local needs of Warsaw. The boundaries of the zone, established in 1770, were not to any, greater degree changed then.

The second period, however, was characterized by the development of factory production. With the lapse of years suburban industry started to produce big quantities of products for the national market and exports as well. In that period its boundaries were shifted every several years, or little over. Its area increased from 26 sq. km in 1870 to 478 sq. km in 1977, i.e. 19-times, and the number of population rose from 266 thousands in 1870 to 1532 thousands in 1977, i.e. 6-times. The territorial range of the zone also increased.

2. The development of manufactories /1770-1870/

Though within the 1770 boundaries there were numerous sites in Warsaw on which industrial objects could be built, certain manufacturers preferred suburban locations. Conditions there were more advantageous than in the city for certain industries, especially as regards energy sources /small rivers, western winds in suburban heights/. Moreover, raw materials /minerals for building materials industry: Pliocene and verve clays/, agricultural raw materials / both of vegetable and animal origin) from the agricultural and forested hinterland, and gratuitous servile labour were available there.

In contradiction to the multi-branchial industry of Warsaw, which was a reflection of numerous needs of the capital, in the suburban area small plants specialized in only a few branches: building materials /brick-kilns/, wood, paper, textile, leather /tanneries/, and food processing /breweries and mills, windmills in particular/ industries. Production of all those factories was supplied to the Warsaw market.

Because of high transport costs, breweries, mills and brickkilns were located near the boundaries of Warsaw, mainly on the left bank of the Vistula. In the 1780s the network of industrial plants around Warsaw was already quite dense. It consisted mainly of brickkilns textile plants, breweries and mills /mainly windmills/. Plants in the suburban zone were mostly concentrated in the suburbs incorporated into Warsaw in the early 20th century, namely in:1/Wola, 2/Mokotów, 3/Czyste, 4/Sielce, 5/Żoliborz, 6/Marymont and in the right-bank suburb of Gołędzinów.

In more distant areas only a few light-industry works, owned by magnates and townspeople, operated in the 2nd half of the 18th century. Namely: textile manufactories at Kobyłka /two/, Ząbki and Nowy Dwór; a carpenter's manu-

factory at Karczew; and a paper manufactory at Jeziorna. The latter, started in 1760, as a corn and paper mill, should be paid special attention, because irrespective of several destruction, it always has been rebuilt and redeveloped, and is still working, as the oldest industrial plant in the metropolitan voivodship. It is also one of the biggest in this branch.

The 18th-century industry in the zone was almost totally destroyed, first, in the period of the Kościuszko Insurrection /1794/ and Poland's last partition /1795/, subsequently during the Napoleonic Wars /1806-1813/. It was rebuilt only in the period of the Kingdom of Poland /1815-1831/.

Because of very advantageous conditions, created by the protective customs policies, manufactories started after 1815 to flourish not only in Warsaw but also in the zone. In 1827 22,328 industrial workers/i.e. appr. 30 % more than in 1792, though the number of inhabitants remained almost the same/ were employed in Warsaw; 3,5 thousands of them worked in the multi-branchial manufacturing and factory industries. First typical industrial plants were started in Warsaw in that period; they were equipped with steam machines and practised a partly mechanized production. A large part of their products was sold on Russian markets.

In 1827, manufactories in the zone employed some 1,5 thousand workers. Similarly as in 1770-1794, also then, only production to meet the needs of Warsaw was developed in the zone, i.e. mineral, paper, leather textile and food industries.

Marymont became the most important suburban industrial centre, employing almost 1,000 of workers. Energy was supplied by the small rivers, Rudawka and Polkówka, which later on disappeared, and canals connecting numerous ponds. Water mills, small paper works, soap workshops, textile manufactories a big glove plant and a foundry were operating there. An "experimental" mechanized flay spinning mill, started by K. Scholz and Co in 1829, is worth special mention. In 1833 this mill was moved to new premises at Ruda Guzowska, some 40 km from Warsaw, to the estate owned by the co-partner of this company, H. Żubiński. Subsequently, it was developed to such an extent that, in the 1880s, it was the biggest factory of flax products in Europe. At first, the factory produced goods only for the Warsaw market. The locality was renamed "Żyrardów" to pay homage to the French constructor of flax spinning machines and the first director of this factory F. Gerard.

Other suburbs attracted mainly mills /mostly windmills/ and brick-kilns, and to a lesser extent breweries and distilleries. Wola remained the main agglomeration of windmills: as many as 62 windmills were situated there. This part of the contemporary suburban zone was characterized by a specific industrial landscape, nowhere in Poland could such a concentration of windmills be found.

A much smaller agglomeration of 10 windmills was situated at Żoliborz, where also three brick-kilns were in operation. More numerous brick-kilns could be found in other suburbs, where the supplies of raw materials were abundant, e. g. Czyste /6 brick-kilns/, Mokotów /5/, Sielce and Ochota.

Only a few suburban textile manufactories were located in the near suburbs /Marymont and Grochów/, a majority having been founded in more distant localities: Lipków, Jadów, Grondy, Franciszków, Szymanów, Newy Dwór, Wisłoki and Grzegorzewice.

Industry of the zone, rebuilt from scratch in 1815-1830, was again largely destroyed during the November Insurrection in 1831, or fell into a decline after the Insurrection, following restriction introduced by Russian authorities. A customs barrier, set at the frontier between the Kingdom of Poland and Russia, as a repressive measure penalizing for the outbreak of the Insurrection, caused that for 20 years industry stopped to develop and its most important branch /woollen textiles/ almost completely broke down. The stagnation in the city's development was also an unfavorable factor for the reconstruction of industry in the zone. Only when this barrier was abolished in 1850 could a certain boom in the industrial development be detected both in Warsaw as in the zone. At the end of the 1860s manufactories and factories of Warsaw employed over 6 thousand people, i.e. 50 % more than in 1827.

This boom was caused predominantly by an expansion of the local market, following a growth of the city's population from 127 thous. in 1831 to 164 thous. in 1849 and 269 thous. in 1870. Industrial employment in the suburban area within the present-day boundaries of the voivodship exceeded 2 thous. people in 1870, and in the 50 km -radius area /with Warsaw as the central point/ -about 6 thousand people, i.e. the same number as in Warsaw. Employment was mostly concentrated in factories. Food production and buildings materials industry continued to dominate, the next place being occupied by textile industry. In food industry 5 steam mills started production besides watermills and windmills. Cultivation of sugar-beet was started on fertile soils, in the western part of the zone and five sugar-refineries began production. At the end of the period under discussion metal works /Wola, Myza near Pomiechówek/, and a chemical plant /Tarchomin/ were started also in the zone.

3. The development of factories in 1870-1978.

A very rapid development of industry in the zone fell on the period of unparallel flourishing of capitalist industrialization, which occurred between 1870 and 1914. It was closely associated with equally rapid development of industry in Warsaw and a rapid expansion of the city.

The abolishment of servile labour in 1864 caused that cheap labor started to flow into Warsaw. Railway lines, connecting Warsaw with Upper Silesia and extremely absorptive Russian markets were constructed in the 1850s 1860s and 1870s. Protective tariffs were introduced to defend industrial goods pro-

duced within the Russian Empire against foreign competition. All those factors created very advantageous conditions for industrial development. As a result, the number of industrial workers rose from 6 thousands in 1870 to 66 thousands in 1913, i.e. 11 times. The city's population increased from 266 thous. to 845 thous. i.e. three times, though, in 1869, Warsaw was deprived by Russian authorities of the relics of metropolitan functions as a repression from the January Insurrection of 1864.

The absorptive power of the Warsaw local market, risen several times, increased also in the zone the industrial production, which was sold in Warsaw /building materials, glass, wood, paper and food industries/. At the same time, following the expansion of construction activity, building sites became scarce and very expensive. Factories, producing mainly for Russian markets, needed a more extensive space for their expansion, and new branches were built in the zone; sometimes, all the factory was moved there. These were predominantly factories producing machines, metal goods, chemicals and textiles. A spontaneous process of active deglomeration of Warsaw industry was thus started.

In 1870-1913 industrial employment in the zone within the present-day boundaries of the metropolitan voivodship increased from 2 thousand to 23 thousand workers, and in the zone, demarcated by a 50 km radius from Warsaw, from 6 thousand to 34 thousand workers. This means that the zone within its wider range gathered then as much as a half of Warsaw's total industrial employment.

The process of technological revolution, which brought about a wideuse of steam engines, was completed in the 1880s. It induced great changes in the size structure of industrial works in the zone. In 1913, almost 50 % of industrial workers in the zone within the present-day boundaries of the metropolitan voivodship were working in big establishments, employing over 500 workers each, and in the 50 km radius zone this percentage exceeded 60. The Zyrardów Works producing now mainly for Russian markets were the biggest - over 9 thous. workers were employed there. It should be emphasized that the degree of technical concentration of industry was then higher in the zone than in Warsaw.

This rapid expansion of industry in the zone caused that the Warsaw Industrial District developed already before World War I. It embraced Warsaw and over 40 suburban industrial centres, associated with the city mainly by the market, cooperation in production, or supplies of raw materials. Altogether, over 100 thous. workers were employed in the factories of the District and the same number was engaged in handicraft. The suburban industrial centres developed mainly along the normal and broad-gauge railway lines, diverging from Warsaw. To connect Warsaw with the centres situated far away from the railway line, a whole system of suburban, narrow-gauge lines was built at the turn of the 19th century.

The difference in the track gauge of railway lines in the areas situated on the left bank and on the right bank of the Vistula and the fact that the first railway bridge was built on the river in 1875 caused that the industrialization of the zone was characterized by great disproportions from the very beginning of the development of the factories. Industry developed much more rapidly in the leftbank area than along the right bank. The greatest number of industrial centres which, at the same time, were the biggest ones, was built along the normal-gauge railway line, called Warsaw-Vienna /put in service in 1848/. This line was used to transport raw materials and fuel from Upper Silesia and the Dabrowa Coal Basin. Besides Żyrardów mention should be made of Wola, gathering about 9 thous. industrial workers in 1913. Of importance were also the following centres, with more than 1,000 workers each, lying in the left-bank area: Pruszków, Jeziorna, Mokotów, Sielce, and in the right-bank area: Marki, Kamionek, Szmulowizna and Nowa Praga. The latter three were incorporated into Warsaw in 1889, and a large part of Wola throughout 1875-1903.

During World War I industry in the zone was greatly damaged because the Russians removed production equipment and demolished the factory buildings in 1915 before the invasion of the German troops. It should be emphasized that the losses of suburban industry were much bigger than those incurred by Warsaw industry. In 1916 the area of Warsaw rose from 33 sq. km to 115 sq. km. Ten adjacent industrial centres were then incorporated, i. e. entire Wola, Mokotów and Sielce.

Irrespective of big losses, incurred during World War I, the loss of Russian markets, and stagnation tendencies prevailing in the economy of interwar Poland, industry was quite quickly rebuilt and largely redeveloped both in Warsaw as in the zone. At the end of 1938 industrial employment in Warsaw amounted to 1,15 thous. workers, and all the increment was obtained in the suburbs, incorporated between 1875 and 1916/mainly in Kamionek and Wola/. Moreover, ca 100 thous. people were engaged in Warsaw handicrafts. In the area of the zone /within the present-day boundaries of the metropolitan voivodship/ the number of industrial workers was 28 thous. and in the 50 km radius zone it amounted to 40 thousands.

It is worth while emphasizing that in the interwar period Warsaw and its zone were one of a few regions in Poland where a rapid growth of industrialization could be observed. Warsaw regained, its metropolitan functions in 1918 and in consequence a spontaneous migration to the capital and its zone from all parts of the country took place. In 1918-38 the number of Warsaw's inhabitants rose from 758 thousands to 1,295 thousands; i. e. by over half a million people.

A great expansion of the local market induced the development of the industry of building materials and food production in the zone. The increased needs of the Polish Army, called into being in 1918, for armaments and transport promoted the development on a large scale of machine-building and metal industry in the zone. In the interwar period this industry became an absolute dominant

in the sub-Warsaw area within the present-day boundaries of the metropolitan voivodship, and accounted for about 55 % of the total industrial employment. Big factories were located in the zone in the interwar period because they required large building sites. As a result, the standard of technical concentration of industrial production went largely up. In 1938, almost 60 % of workers in sub-Warsaw industry were employed in large factories /over 500 workers/.

The processes of the integration of the centres of the Warsaw Industrial District accompanied the redevelopment of industry in the zone to a high degree because of increased cooperation and construction of a district power generating station at Pruszków, supplying energy to a majority of those centres.

However, at the same time, disproportions became bigger in the industrialization of the sub-Warsaw areas, even though the gauge of the railway lines was standardized on both banks of the Vistula. The location of the power generating station, mentioned above, which worked on a licence to supply power to the left-bank area only, was an additional factor for new industrial establishments to seek sites in that area. As a result, employment in the left-bank area amounted to 24,5 thous. industrial workers, while in the right-bank part the figure was 3,5 thous., that is 7 times less.

The reconstruction and redevelopment of the centres destroyed during the hostilities /Jeziorna, Włochy, Pruszków, Ożarów, etc./ was accompanied in the interwar period by a construction of a few establishments, again in the left-bank area, employing over 1,000 workers each: Okęcie, Paluch, Czechowice /Ursus/, Piastów. The principal factor causing locations in the first two places was the neighbourhood of an airfield, started in 1934 /Production of aircraft appliances/. However, only one centre was built in the right-bank area, namely at Remertów, which employed over 1,000 industrial workers.

In the sub-Warsaw area, situated outside the present-day metropolitan voivodship, employment in certain industrial centres, destroyed during the hostilities /Żyrardów, Mińsk Mazowiecki/, was in 1938 less than in 1913. However, two new centres /Sochaczew and Chodaków/ were established, which cooperated with Warsaw very closely.

During the last stage of World War II industry both in Warsaw and the zone was almost totally destroyed. Equipment was dismantled and taken by the occupants to Germany, the buildings were evaluated at 90 %, a little less in the zone, as the occupants did not manage to blow up certain buildings. Post-war reconstruction was planned and carried out by the State authorities; its rate was much quicker than after World War I. The 1938 rate of industrial employment was achieved in the zone in 1950, and in Warsaw, where about 85 % of the infrastructure had been destroyed in 1953.

Because the area of Warsaw became three-times larger following changes introduced in 1950 and 1957, i.e. from 141 sq. km to 446 sq. km, certain more distant suburban industrial centres found themselves within the city's bound-

daries /Dąbrowka, Okęcie, Paluch, Włochy, Jelonki, Szczęśliwice, Tarchomin, Winnica, Henryków, Kawęczyn, Rembertów, Miedzylesie and Falenica/. Employment in those centres amounted together to over 10 thous. industrial workers in 1938. During the last change of Warsaw's boundaries /1 August 1977/ Ursus was joined with the capital. It was the biggest, since 1960, industrial centre of the zone, employing 15 thousand industrial workers. The infrastructure of the zone, relatively less damaged than Warsaw's made i.e. its further industrial development possible and at a more rapid rate than in the capital. In 1946-75 industrial employment in Warsaw /within 1975 boundaries/ increased from 30,085 to 267,247 people, and of the zone /within the present boundaries of the metropolitan voivodship/ from 12,680 to 85,646. Together with the remaining territories of the 50 km-radius area the zone employed about 125 thous. industrial workers, i.e. only two times less than the capital /in 1938 it had been four times less/.

A rapid industrialization of the zone was also caused, to a high degree, by the policy of the State pursued since the 1960s to curb industrial development in the capital /passive deglomeration/, mainly because of sharp deficits of labour owing to housing difficulties. In 1975 170 thous. people commuted to work in Warsaw mainly from the zone, 62 thousands out of which were employed in industry. Therefore, not only establishments producing for the metropolitan market but also numerous factories needing highly-skilled labour and cooperation with the capital's factories, research institutes and design offices, obtained locations in the zone. Their development was much more rapid there than the development of the Warsaw market oriented factories.

In consequence, new industries and branches have been playing a very important role in the zone for many years, and in particular production of: 1/tractors, 2/electronic goods, 3/precision instruments, 4/fats and household chemicals, 5/plastic goods. Branchial diversification of suburban industry was higher then before both World Wars. At the same time, the degree of technical concentration rose considerably, as the industrial production was dominated by large establishments. Most of new or reconstructed establishments in the zone have continued their association with Warsaw industry by production cooperation. Therefore, the degree of integration of the Warsaw Industrial District is now much higher then over before.

In spite of the planned steering of the process of reconstruction and redevelopment of industry in the zone by State organs, disproportions in the industrialization of the area along both banks of the Vistula have not yet been entirely eliminated. It seems that because the infrastructure on the left bank is well developed and because reconstruction and redevelopment of the buildings are cheaper then the construction of new ones, the biggest investments were allotted there in the postwar period, irrespective of counterindications associated with the natural conditions /water deficit, exemption from agricultural utilization of very fertile arable land/. In 1975, only one-fourth of people employed in the industry of the zone, were those working in the right-bank area.

4. A general evaluation of industry in the suburban zone in 1975.

The potential of industry practised in the zone in the broader meaning of the term /a 50 km-radius area/, reconstructed from scratch and redeveloped after 1945 was, already in 1975, much bigger than the potential of Warsaw in 1938. Its branchial structure was very diversified /of. the table/, and only little less varied than industry in the capital. In 1975 the index of industrial specialization amounted to 32,2 in Warsaw and 32,4 in the zone /within the boundaries of the metropolitan voivodship/; of diversification was 1,864 and 1,870 respectively.

However, certain disproportions still exist in the branchial structure of industry in the zone. Industries producing mainly for the country as a whole and for exports were developed excessively, while those producing for the local needs of the metropolitan agglomeration are still underdeveloped. This is particularly true of the building materials and food industries. As a result a shortage of building materials has handicapped the development of construction activity in the Warsaw agglomeration for years, and made a radical improvement of the living conditions of the population impossible. Similarly, because of underdevelopment of certain branches of food industry /meat processing, baking, refreshing drinks, deep freeze storage/ supplies have been inadequate.

The degree of technical concentration of production is high in the zone /higher than in Warsaw/. Almost two-thirds of the total industrial employment is engaged in establishments with over 500 workers. The biggest factory /tractors at Ursus/ employed about 15 thousand workers in 1975. When in 1980 the redevelopment of the factory is completed, production will amount to 110 thousand tractors /mainly on a British licence/ and employ 24 thousand people, which will place the factory among the biggest producers of tractors in the world. Moreover, certain disadvantageous phenomena of what is referred to as "an error of giant-mania" can be observed in certain industries in the zone. Certain new establishments are unable to make full use of their excessive production capacity /e.g.a. brick-kiln at Zielonka/.

Certain disproportions can also be detected in the spatial structure of industry in the zone. Almost three-fourth of all industrial employment work in the left-bank area, and a half is concentrated in the centres lying within the triangle with most fertile soils: Ursus-Grodzisk Mazowiecki-Błonie. Profits earned from the redevelopment of the factories are actually less, because of losses incurred because very fertile land with a high rent, is excluded from land use.

Branchial advantages associated with the redevelopment of established industries have caused that after World War II industry developed above all in the old centres, situated along the Warsaw-Vienna railway line. The biggest centres are as follows, Ursus with its almost 16 thous. industrial workers /incorporated into Warsaw from 1 August 1977/ and Pruszków/ machine production, transport means industry and other branches/, and Żyrardów, still lying out-

side the present-day metropolitan voivodship, with its textile industry; employment in the latter two localities averages 11 thousand industrial workers. Worth mentioning are also the following localities, developed along the same line, with 1-5 thousand industrial employment each: Grodzisk Maz. /various industries/, Milanówek /precision and textile goods/, Piastów /chemicals/. The centres along the railway line Warsaw-Poznań are of the same size: Ożarów /electrotechnical and glass industries/, Błonie /precision/, Szymanów-Teresin /electronic and food industries/, as well as Sochaczew, lying in the periphery, together with Chodaków, recently incorporated within the former /chemicals/. A big electronic centre was built along the railway line Warsaw-Radom at Piaszczno, which employs over 6 thous. workers. Moreover in the left-bank area there are the following centres, which employ from 1 to 5 thousand people: Konstancin-Jeziorna /paper/, Góra Kalwaria /chemical and food industries/, Łomianki /electric goods/ and Tarczyn /food industry/. In the peripheries of the zone outside the boundary of the metropolitan voivodship are situated: Grójec /transport means/, Warka /machines and food/, and Mszczonów /clothing/.

In the right-bank area, within the boundary of the metropolitan voivodship, the biggest centre is Wołomin, employing ca 5 thous. workers, mainly in glass and wood industries. Next come establishments employing 1-4 thousand industrial workers: Marki /chemicals/, Legionowo /building materials and clothing/, Otwock /precision and various goods/, Zielonka /electric goods and building materials/, Nowy Dwór /chemical/ and Kobyłka /electric goods/. In the right-bank area of the zone outside the metropolitan voivodship boundaries mention should be made of Mińsk Maz. 5,5 thous. workers, production of machines and transport means/ and a several times lesser centre at Stojadła /metal industry/. The Wyszaków /transport means, glass and wood industries/, Pultusk /electric goods/, Płońsk/ food and various goods/, Łochów /machines/ and Garwolin /clothing and various goods/ though lying in the far peripheries of the zone should also be quoted as their cooperation with Warsaw is very close; they employ from 1 thousand to 5 thousand workers.

Altogether, 90 industrial centres employing over 100 workers each were situated in the zone in its broad range in 1975 /45 in the metropolitan voivodship/. Thirty centres employed over one thousand industrial workers each /19 in the metropolitan voivodship/, and three - over 10 thousands /2 in the metropolitan voivodship/. As it follows from the above statistics these are mostly rather small centres.

The industrial centres of the Warsaw suburban zone can be divided into the main three types:

- 1/ one -factory /monofactory/ in which over 50 % of workers are employed by one establishment;
- 2/ two-factories /bifactory/ in which over 66 % work in two, almost equal, establishments;

3/ poly-factory, in which there are several plants almost equal in size.

Profits brought by large-scale production caused that besides the redevelopment of the old factories new establishments were located in small localities; they were predominantly large and medium sized. The prevalent type in a majority of suburban industrial centres is, therefore, a one-factory system. Two and poly-factory types are rares. A small percentage of polyfactory centres causes that the specialization index in separate establishments is as a rule, very high, and the degree of branchial deversification very low. It is a characteristic feature that in many sub-Warsaw centres a large numbers of workers commute to work there from more distant localities while local inhabitants commute to Warsaw where working conditions are better.

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As it appears from the general historical outline and the present state of industry in the zone many various factors have influenced industrial locations. Initially, the most important factors were: the vicinity of a large market /market factor/, local raw materials of agricultural and forest origin /raw materials factor/, and the source of energy /energy factor/. With the lapse of time other factors have grown in importance, like advantages of land prices and wages, lower than in Warsaw /factors of deglomeration and labour/. Since the early 20th century the factor of production cooperation with Warsaw industry has become equally important /factor of cooperation/ in the same way as the cooperation with the metropolitan centres of science and technology, best in Poland /factor of science and technology/. Moreover, in the past 30 years advantages associated with the redevelopment of the establishments /advantages of mass production or the so-called "internal advantages"/, as well as advantages associated with the developed suburban technical and socio-economic infrastructure /"external advantages"/, referred to by a joint name of the factor agglomeration, have played a great role.

Both in the branchial as well as spatial structures of the industry in the zone there still are certain disproportions which should be eliminated or alleviated by the authorities responsible for steering the development of the metropolitan-urban-industrial agglomeration.

Branchial structure of industry in the Warsaw suburban zone in 1946 and 1975^{x/}

Industry:	1946			1975		
	Establ.	Employ.	% of employ.	Establ.	Employ.	% of employ.
Total	127	12 680	100.6	925	85 646	100.0
Fuel	-	-	-	3	182	0.2
Electricity	11	948	7.5	10	1 124	1.3
Ferrous metalurgy	-	-	-	1	79	0.1
Metal	7	230	1.8	167	3 268	3.8
Machine-building	3	552	4.4	28	4 346	5.1
Precision instruments	2	92	0.7	49	6 683	7.8
Transport means	4	3 562	28.1	53	17 902	20.9
Electronical and electro-technical	12	987	7.8	35	9 804	11.4
Building materials	6	570	4.5	56	3 295	3.8
Glass	3	668	5.3	21	3 201	3.7
Porcelain-earthenware	1	69	0.5	1	694	0.8
Wood	14	535	4.2	59	3 573	4.2
Paper	4	542	4.3	13	2 378	2.8
Textile	4	615	4.9	29	2 338	2.7
Clothing	2	47	0.4	37	2 247	2.6
Leather	5	222	1.7	49	1 091	1.3
Food	40	1 701	13.4	160	7 106	8.3
Fodder and utilization	-	-	-	4	66	0.1
Printing	4	27	0.2	7	167	0.2
Other	3	598	4.7	25	3 131	3.7

^{x/} territories within the boundary of the Warsaw metropolitan voivodship without Warsaw within its 1975 boundary.

TYPES OF MANUFACTURING CENTRES IN THE SUBURBAN ZONE OF WARSAW 1975

Prepared by S. Misztal



Manufacturing centres:

⦶ one-factory

⦿ two-factory

⊕ poly-factory

—+— Railway lines

- - - Boundaries of Warsaw

- · - · Boundaries of voivodships



the area of circles proportional to the manufacturing employment

INDUSTRIJSKI RAZVOJ OBMEŠTJA VARŠAVE

V dvestoletni zgodovini razvoja industrije v obmeštju Varšave sta bili značilni dve obdobji: med l. 1764/70 in 1864/70 ter med l. 1870 in 1978. V prvem obdobju je manufakturna proizvodnja zadovoljevala le lokalne potrebe Varšave.

V drugem obdobju se je razvila industrijska proizvodnja. Kmalu je industrija v obmeštju začela proizvajati velike količine blaga, del celo za izvoz. Industrija je doživela posebno hiter razvoj v času razcveta kapitalistične industrializacije med l. 1870 in 1914. Rast industrije je bila neposredno povezana s hitrim širjenjem Varšave. Tehnološka revolucija, ki je prinesla široko uporabo parnega stroja, se je zaključila okoli l. 1880. Povzročila je velike spremembe v velikostni strukturi industrijskih obratov. Razvoj industrije je dosegel tako stopnjo, da se je varšavska industrijska cona razvila že pred l. svet. vojno.

Kljub velikim vojnim izgubam, izgubi ruskega trga in stagnaciji gospodarstva v medvojni Poljski, je bila varšavska industrijska cona kmalu obnovljena. Zanj je bilo značilno, da je bila ena izmed redkih na Poljskem, ki so se hitro razvijale. Med zadnjo vojno je bila industrija v varšavskem obmeštju popolnoma uničena. Po vojni se je mesto močno razširilo, in sicer od 141 na 446 km², tako da se je vrsta industrijskih središč znašla v okviru mesta. Število v varšavski industriji zaposlenih delavcev se je v razdobju 1946-1975 povečalo od 30 085 na 267 247. V istem obdobju je v obmeštju (območje varšavskega vojvodstva iz l. 1975) naraslo število industrijskih delavcev od 12 680 na 85 646. Hitra industrializacija v obmeštju je posledica po l. 1960 uveljavljene politike zaviranja industrijskega razvoja v Varšavi (pasivna deaglomeracija); v mestu namreč ni bilo dovolj delovne sile oziroma stanovanj zanje. L. 1975 je 170 000 ljudi dnevno prihajalo na delo v Varšavo, pretežno iz obmeštja; od tega je bilo v industriji zaposlenih 62 000 delavcev. Od industrijskih panog so razvite predvsem tiste, ki zahtevajo veliko visoko kvalificirane delovne sile. Poleg tega tu nastajajo raziskovalni inštituti, biroji za oblikovanje itd.

V strukturi industrijskih panog so še vedno nesorazmerja. Prekomerno so razvite industrijske panoge, ki proizvajajo za celotno državo in za izvoz, medtem ko je industrija, namenjena zadovoljevanju potreb varšavske aglomeracije, slabo razvita.

Velikostna sestava industrijskih središč varšavskega obmeštja je zelo pestra. Prevladujejo majhna industrijska središča: vsaj 100 industrijskih delovnih mest je l. 1975 imelo 90 središč, od tega jih je bilo v varšavskem vojvodstvu 45. Več kot 1000 zaposlenih je imelo 30 industrijskih središč (19 v varšavskem vojvodstvu), tri industrijska središča pa so imela več kot 10 000 v industriji zaposlenih delavcev.

Kapital, ki ga je ustvarila velikopotezna proizvodnja, je poleg obnove starih industrijskih obratov pospešil izgradnjo novih, največ velikih ali srednje velikih, v majhnih krajih. Zato v varšavskem obmestju prevladujejo kraji z enim industrijskim obratom. Le redki so industrijski kraji, v katerih je zastopanih več vrst industrijskih obratov. To je eden od osnovnih vzrokov za intenzivno dnevno migracijo industrijske delovne sile. Običajno je, da se v manjše industrijske kraje v varšavskem obmestju vozijo na delo delavci iz oddaljenih krajev, medtem ko so številni domači delavci zaposleni v Varšavi.

Na lokacijo industrije v varšavskem obmestju je torej vplivalo veliko dejavnikov. Sprva so bili najpomembnejši bližina velikega trga, lokalne surovine (kmetijskega in gozdarskega porekla) in energetske viri. Kasneje se je povečal pomen drugih dejavnikov, na primer cena zemljiščem, ki je bila zunaj Varšave dosti nižja od tiste v mestu. Od začetka 20. stoletja dalje je postal pomemben dejavnik namestitve industrije proizvodno sodelovanje z varšavsko industrijo in z Varšavo kot najpomembnejšim središčem znanstvenega in tehnološkega razvoja na Poljskem. V zadnjih 30 letih je bila za razvoj sedanje prostorske strukture industrije odločilnega pomena naslonitev na obstoječe industrijske centre ter na obmestno tehnično in socialno-ekonomsko infrastrukturo.