Hungarian Geographical Bulletin 2009. Vol. 58. No 3. pp. 151–161.

Gully- or sheet erosion? A case study at catchment scale

Gergely Jakab[1], Balázs Madarász[1], Zoltán Szalai[1]

Abstract

Soils have become an increasingly important natural resource especially in an agricultural land such as Hungary. In addition to this sedimentation and eutrophycation pose a high risk for the landscape. To protect soil fertility and to maintain the good quality of freshwater resources it is necessary to clarify the connection between sheet and gully erosion. The aim of this paper is to present an analysis on erosion and sedimentation in a hilly watershed, i.e. in the Tetves catchment, Hungary. At the outlet of the basin a sediment reservoir can be found which has been filled up completely. The authors made an attempt to determine the origin of the sediment by investigating it in the reservoir. More topsoil underlines the role of sheet erosion in the catchment, while more subsoil in the reservoir means considerable gully erosion activity. Six sampling sites were appointed along the reservoir. At each point samples were taken as a collection of seven borings. Each profile was divided into horizons and altogether 32 samples were investigated. Humus content and Caesium-137 activity have been used as tracers of the topsoil. Gully erosion activity has been investigated in the whole catchment during three years (1968, 1984, and 2004) using maps, air photos and field survey.

Approximately half of the deposited sediments came from the subsoil layer. This fact proves the key role of gully erosion in the catchment. In addition the results show that the activity of gully erosion has a yearly fluctuation on one hand and a 5–10 years periodicity on the other. In general early springtime caused low volume topsoil to have been deposited in the reservoir and during the periods of thunderstorms (late summer) a high volume of subsoil was eroded and delivered beyond the limits of the basin. This periodicity can be seen in the stripped profile of the reservoir. According to both gully development and sedimentation, the most active period of subsoil sediment transportation occurred in the catchment between 1984 and 1995. Based on the investigations it can be estimated that roughly 10% of the soil eroded by gullies leaves the catchment while the rest is sedimented inside.

Keywords: Gully erosion, sheet erosion, sediment delivery, sediment reservoir, Caesium-137.

Introduction

Sediment deposition is part of the soil erosion process, although most of the investigations focus on soil loss. Sedimentation can be as dangerous as soil erosion from the point of view of agronomy and ecology. Investigating soil erosion on catchment scale it is very

[1] Geographical Research Institute Hungarian Academy of Sciences, H-1112 Budaörsi út 45. Budapest Hungary. E-mail: jakabg@mtafki.hu

important to know the quantity of the eroded soil and its part that sedimented nearby. In general the largest portion of soil loss is deposited at the bottom of the slopes and only a few percent leaves the catchment. According to Fitzpatrick, E.A. (1986) soil loss delivered by sheet erosion can take small distances, while the sediment delivered by gully erosion often reaches the streams. In many cases gullies are not the sources of soil loss but as channels they can transport the sediment out of the catchment (Wischmeier, W.H. 1977). The ratio between gully and sheet erosion in a catchment can vary within wide ranges. The USLE (Wischmeier, W. H.–Smith, D.D., 1978) absolutely neglects linear erosion. According to De Vente, J.–Poesen, J. (2005) sediment sinks are of less importance in basins dominated by bank erosion. In other words gullies can increase the volume of sediment yield remarkably (Kertész, Á. 1984, 2004a,b). During heavy rainstorms the majority of the sediment leaving the catchment originates from linear erosion features, but the ratio can vary with time (Chaplot, V. *et al*., 2005). Generally speaking climatic conditions can determine the ratio between gully and sheet erosion Kertész, Á. 2006). Moreover considerable transformation in land use can cause changes in gully development as well (Gábris, Gy. *et al*. 2003).

The aim of this paper is to identify the 30 years sediment yield at the outlet of the catchment, to determine the volume of soil erosion in the basin and to distinguish between sediment from the surface (the uppermost 20 cm) and sediments from lower horizons. Temporal regime of erosion processes can be fixed with continuous investigations of both the development of gullies in the basin and the filling up of the reservoir. .

Materials and methods

The catchment area of the Tetves stream is about 120 km^2 and it belongs to the southern subcatchment of Lake Balaton, Hungary. Several soil erosion (Kertész, Á. *et al*., 2001, 2003; Jakab, G. *et al*., 2005, 2006) and landscape (Tóth, A.–Szalai, Z. 2007) studies have been made in the Tetves valley. The detailed description of the study site can be found elsewhere (Madarász, B. *et al*. 2003; Jakab, G. 2008a), in this paragraph only the related information is shown. To retain the eroded sediment a reservoir was constructed in 1970 with an area of 13 ha and capacity of 95,300 m^3. Although by 2000 the reservoir was completely filled up the stream is still flowing through. Beside the reservoir some fishponds can be found, which gain water also from the stream just above the reservoir. The fill of the ponds is possible only at high or mean water levels of the stream. In general the early springtime is the period of filling the ponds, because this is the time of the yearly flood. The sediment reservoir as well as the fishpond contains the deposited soil loss of the catchment.

Eroding and delivering of the subsurface parts of the profile are related to linear (gully) erosion, while the surface can be destroyed due to both linear and sheet erosion (Fitzpatrick, E.A. 1986). To reach the primary aim of the research an adequate method was needed that helps to make a difference between sediments of surface (topsoil) and subsurface (subsoil) origin. The first possibility is to distinguish according to the organic matter content.

This method can give additional information from the sedimented profile but because of the undefined borders between the groups it is not suitable for calculation. Another way is to use the particle size distribution of the sediments to find out the origin of the horizons. This method is based on the relatively homogeneous particle size distribution of the parent material (sandy loess) of the catchment. The expected results of this method are also only informative. The third method uses the Caesium-137 isotope as a tracer of the surface soil. Panin, A.V. *et al*. (2001) have used this method to investigate the soil loss related to linear and sheet erosion.

The method based on the measurement of Cs-137 isotope gives rapid results and well demonstrates the dimension and spatial distribution of the erosion and sedimentation processes (Bouhlassa S. *et al*., 1995), although it is less accurate than the conventional methods (Wicherek, S.P.–Bernard, C. 1995). This isotope is artificial and its presence in the environment is the result of nuclear weapon tests and accidents. The direct source of soil contamination is fallout. As the Cs-137 isotope reaches the surface it makes very strong complexes with clay minerals and with organic matter (Mabit, L.–Bernard, C. 1998). Since Cs-137 is an alkali metal cation, its behaviour is quite similar as phosphorus, although phosphorus has remarkably shorter radius (Killham, K. 2001).

That is why this isotope cannot be leached as a solved material. The contamination under average Hungarian conditions and in undisturbed soil profiles does not exceed the 25–30 cm depth (Szerbin, P. *et al*., 1999). The migration along the profile is possible only with the help of the clay minerals (Chappell, A. *et al*., 1998). In an undisturbed profile the total activity of the isotope decreases exponentially downwards from the surface (Porto, P. *et al*. 2001). If one does not find any activity concentration in the top of the profile it means that this profile is eroded. The presence of Cs-137 activity in deeper horizons means deposition of topsoil on the top of the original profile (Govers, G. *et al*. 1996; Lu, X.X.–Higgitt, D.L. 2000, 2001). Sampling should be done by layers of the profile and requires particular attention (Connor, D.M. *et al*., 1997).

The volume of the fallout was determined by using the reference profiles of Szerbin, P. *et al*. (1999) and Csepinszky, B. (2003). Along the axis of the reservoir six sampling points were established representing the whole deposited mass. At each point samples were taken as a collection of 7 borings. Each profile was divided into horizons and altogether 32 samples were investigated (Jakab, G. 2008c). In addition to this the fishpond was also sampled *(Photo 1).*

Gully erosion activity has been investigated in the whole catchment during three years (1968, 1984, and 2004) using maps, air photos and field survey (Jakab, G. *et al*. 2006).

Photo 1. Sampling points in the reservoir

Results

During the field survey in 2004 altogether 140 gullies were identified and mapped. Within this group of gullies only 85 were present in 1968 and 115 existed in 1984. Changes in total length of these gullies in time can be seen in *Table 1*. Before 1984 the increase in gully length was relatively slow while after 1984 the average gully increased with almost double velocity *(Fig. 2)*. During the research period (34 years) the total length of the gullies increased almost by 60%. Before 1984 the growth of the shortest (<50 m) gullies was typical, while after 1984 gullies longer than 450 m were the most important components of length increase. Probably the most important reason for the difference is the concentration of arable plots in the 1980s. Later another very important cause could be the failure of the abandoned ditches due to the field reprivatisation.

Table 1. Changes in gully length in time

Years	**1970**	1984*	2004
Total gully length (km)	29.9	36.7	47.1
Cummulative length (%)	100	123	158
Average increase (m year^{-1})	–	173	519

* Air photos of 1984 do not cover the whole catchment area, there is a lack of data on 15 gullies. For these gullies data of the year 2004 were applied.

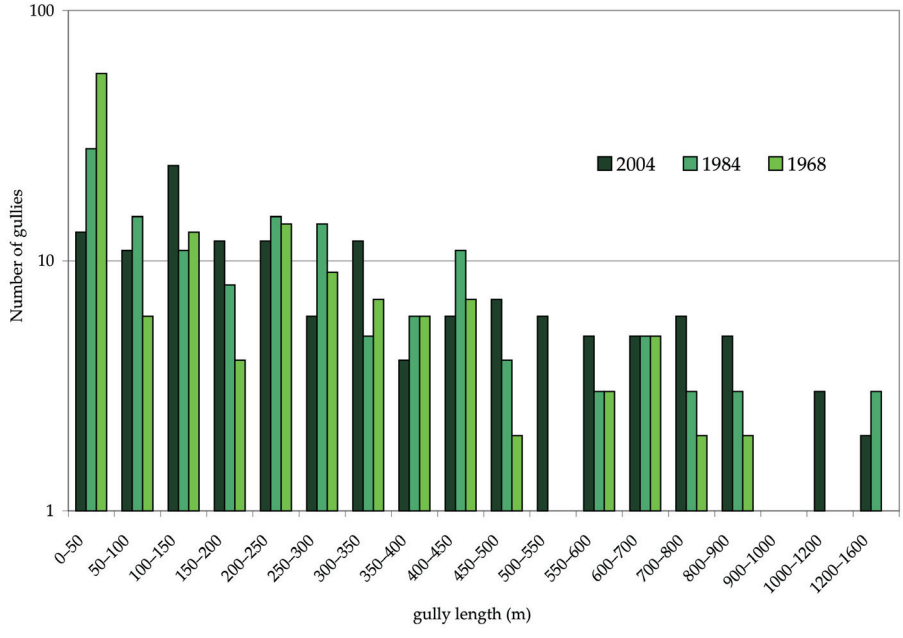

Fig. 2. Gully distribution according to their length in 1968, 1984, and 2004.
Note: vertical scale is logarithmic

Both processes have had a remarkable effect on increase of uncontrolled, concentrated surface runoff. Detailed results on this part of the study can be found in Jakab, G. *et al*. (2005) and Jakab, G. (2008b).

During the lifetime of the reservoir (1970–2000) the volume of the filling-up was 95,300 m^3. The filtering effect was more effective because of the high biomass production. In case of this wetland the annual production is about 2 kg m^{-2} (Begon, M. *et al*., 1996), with a bulk density of 1.0 g cm^{-1}. Such kind of riparian ecosystems highly affects the physical and chemical properties of the sediment (Szalai, Z. 2007; Szalai, Z.–Németh, T. 2008). This means 7,800 m^3 organic matter sedimentation during 30 years. The other 87,500 m^3 were filled up with sediments delivered from the catchment. The average bulk density of the undisturbed sediments in the reservoir is 1.3 g cm^{-1}. This means 113,750 t net soil loss during 30 years. From the point of view of areas of potential soil erosion in the catchment, the specific annual erosion rate is 0.8 t ha^{-1}. This value is based on a very rough estimation, but it may demonstrate the tendency and order of magnitude. It is very important to note that this sediment volume left the catchment. According to Kirkby, M.J.–Morgan, R.P.C (1980) the net soil loss is only a very small part of the total soil movement, there might be much higher erosion activity within the catchment.

In the sampled profiles of the reservoir layers of several cms could be found *(Photo 3)*. This kind of stripped design was typical of the whole reservoir. The sediment reaching the reservoir was classified according to time and not to the distance from the inlet. The different organic matter content and particle size distribution in these layers are not the result of the inside processes in the reservoir, but the result of the different sediment delivery processes in the catchment. Probably below a precipitation amount and/or intensity threshold value gullies only deliver sediments originating from sheet erosion. Above these threshold values gullies become sediment sources as well and transport a large amount of parent material into the sediment reservoir. These precipitations lead to the formation of subsoil layers (loess, without organic matter) in the reservoir profiles.

In the fishpond the thickness of the contaminated sediment layer is less than 20 cm, therefore this is the maximum value of the deposition from the catchment during the last 50 years. Because of the regular distribution *(Table 2)* there is no mixing or redistribution in the sediment layers. The pond is older than 100

Photo 3. Sediment layers in the sediment reservoir

Fig. 2. Gully distribution according to their length in 1968 1984, and 2004

Sampling point	Depth (cm)	Activity (Bq kg^{-1})	St. dev	Activity (Bq m^{-2})
Fish pond	0–5	159.4	2.9	10,361.48
	5–10	152.98	3.4	9,944.25
	10–15	82.49	5.6	5,362.36
	15–20	5.57	7.1	362.07
	20–60	0.2	–	–
	peat	0.2	–	–
	total	–	–	26,030.16
S1	0–20	25.0	0.5	–
	20–40	46.4	0.7	–
	40–60	9.2	0.3	–
	60–80	3.8	0.2	–
	80–100	2.8	0.2	–
	total	–	–	11,674
S2	0–20	23.5	0.5	–
	20–40	30.9	0.5	–
	40–60	34.4	0.5	–
	60–80	12.4	0.3	–
	80–100	7.3	0.3	–
	total	–	–	12,615
S3	0–10	26.6	0.6	–
	10–20	103.0	0.7	–
	20–30	24.7	0.4	–
	30–40	11.1	0.3	–
	40–50	7.7	0.2	–
	50–60	3.8	0.1	–
	total	–	–	15,773
S4	0–20	46.8	2	–
	20–40	14	0.5	–
	40–60	9.2	0.4	–
	total	–	–	16,492
S5	0–25	30.2	1.6	–
	25–50	3.3	0.2	–
	50–80	0.48	0.11	–
	80–110	0.07	0.06	–
	total	–	–	–
		–	–	10,756
S6	0–12	53.2	1.8	–
	12–24	1.35	0.1	–
	24–36	17.9	0.4	–
	tota	–	–	8,412

Note: vertical scale is logarithmic.

years, the contaminated layer is thinner than 20 cm, consequently the pond has a very limited sediment input from the catchment, although the activity of the contaminated layer is more than three times higher than the fallout. The investigated points in the reservoir have more or less the same order of activity as the fishpond has. The important difference in is the thickness of the contaminated layer. In the reservoir activity was detected also in the 110 cm deep layer.

It is assumed that the whole contaminated layer in the fishpond is part of the sediment from the catchment and not the result of the fish breeding. In this case, because of the similar area of the pond and the reservoir, the sediment volume is roughly 130 cm m^{-2} and therefore sediments of the pond and of the reservoir belong together *(Table 3).* The fishpond was constructed before the start of the fallout that is why the volume of the fallout (7,900 Bq kg^{-1}) is not originated from the catchment. Because of the same reason the volumes of the reservoir should be decreased as well.

Originally the contamination did not leach below 20 cm. According to our model calculations, if the whole sediment was of topsoil origin, than the total activity of the 130 cm is 6.5 times higher than that of the fallout (51,350 Bq m^{-2}). Smaller volumes mean that the sediment contains subsoil, without Cs-137 activity, as a consequence of gully erosion *(Table 3).*

Using the Cs-137 technique it can be concluded that minimum 50% of the sediment at the outlet of the catchment originates from layers below 20 cm of the soil profiles of the catchment. The lower parts of an in situ profile are eroded by gully erosion, which refers to an important role of linear erosion in this case.

According to former investigations (Jakab G. *et al*. 2005) 1,198,268 m^3 material has been moved in the Tetves catchment due to gully erosion. This amount was eroded since the formation of the investigated gullies. To suppose the direct link between the increase of gully length and soil loss it can be

Table 3. Measured and modelled activities at the sampling points

Sampling points	Fallout	Activity I.	Activity II.	Activity III.	Model	Topsoil
	Bq m^{-2} 20 cm^{-1}	Bq m^{-2} 110 cm^{-1}		Bq m^{-2} 130 cm^{-1}		%
S1	7,900	11,674	5,674	23,774	51,350	0.46
S2	7,900	12,615	6,615	24,715	51,350	0.48
S3	7,900	15,773	9,773	27,873	51,350	0.54
S4	7,900	16,492	10,492	28,592	51,350	0.56
S5	7,900	10,756	4,756	22,856	51,350	0.45
S6	7,900	8,412	2,412	20,512	15,800	1.30

Activity II = Measured value – fallout on the reservoir (~6,000 Bq);
Activity III = Activity II + value of the fishpond;
Topsoil = the uppermost 20 cm of the profile).

concluded that during the investigated period (34 years) ca. 435,086 m^3 soil was eroded by gully erosion. One part of the sediment was deposited on the gully's fan, and another part was sedimented on the valley bottom and the rest reached the stream and was deposited in the sediment reservoir.

Comparing the sediment volume in the reservoir with soil loss volume coming from the gullies over the 34 year period it can be stated that about 10% of the soil eroded by gullies reached the outlet of the catchment. Presuming uniform soil erosion and sediment transport this means 1,287 $m^3\ year^{-1}$ from a catchment of 120 km^2 which is a potential danger for Lake Balaton. This amount is only the result of gully erosion and the same amount was eroded by sheet erosion.

Conclusions

According to our measurements the majority of soil loss is eroded by sheet erosion in the catchment, but this type of sediment generally does not leave the catchment. The sediments that leave the basin, contain more subsoil, approximately 50% in this case. This fact underlines the role of gully erosion as sediment source and not only as transport channel in the catchment. In addition to this the results show that the activity of gully erosion has a yearly fluctuation on one hand and a 5–10 years periodicity on the other. In general early spring low volume topsoil sediments will be deposited in the reservoir and during the periods of thunderstorms (late summer) a large amount of subsoil is eroded and delivered beyond the limits of the basin. This periodicity can be seen in the stripped profile of the reservoir. According to both gully development and sedimentation, the most active period of "subsoil" sediment transportation occurred between 1984 and 1995 in the catchment.

It is important to decide whether sheet or gully erosion should be controlled to gain the most benefit. Both processes cause damage, control is therefore necessary. The question is efficiency and cost return. Nowadays soil protection has less importance both in policy and in practice in Hungary but in the long run it is necessary to concentrate on soil conservation. For effectivity reasons it is evident that gully erosion control has primary importance. It is not only the source of the sediment but has a key role in transporting soil eroded by sheet erosion.

The best way to stop gully erosion is reforestation of the gully because under forest there is no soil erosion, says the average Hungarian farmer. It could be true in case of sheet erosion, but not in case of gully erosion. It is evident that erosion control (reduction of surface runoff) has to begin in the catchment of the gully first; the neighbouring area of the gully is of secondary importance.

REFERENCES

Begon, M.–Harper, J.L.–Townsend, C.R. 1996. Ecology. Third Edition. Blackwell Science Malden, USA. 715 p.

Bouhlassa, S.–Azenfar, A.–Machrouh, A. 1995. Caesium fallout as a tracer of erosion-sedimentation in big catchment. Appl. Radiat. Isot. *46.* (6–7): pp. 659–660.

Chaplot V.–Coadou le Brozec, E.–Silvera N.–Valentin, C. 2005. Spatial and temporal assessment of linear erosion in catchments under sloping lands of northern Laos. Catena *63.* pp. 167–184.

Chappell, A.–Warren, A.–Oliver, M.A.–Charlton, M. 1998. The utility of 137Cs for measuring soil redistribution rates in southwest Niger. Geoderma *81.* (3–4): pp. 313–337.

Connor, D.M.–Hinton, T.G.–Bell, C.M. 1997. Variance partitioning as a guide for sampling and comparing spatial distributions of Hg and Cs-137 in sediments. The Science of the Total Environment *206.* pp. 167–176.

Csepinszky, B. (szerk) 2003. A légkörből kihullott rádióaktiv anyagok követésén alapuló új erózió-kutatási módszer alkalmazhatóságának vizsgálata a Balaton vízgyűjtő-területén. Jelentés, FVM, KF-289/1.

De Vente, J.–Poesen, J. 2005 Predicting soil erosion and sediment yield at the basin scale: Scale issues and semi-quantitative models. Earth-Science Reviews *71.* pp. 95–125.

Fitzpatrick, E.A. 1986. An introduction to soil science. Second Edition. Longman Scientific & Technical Harlow, UK. 147 p.

Gábris, Gy.–Kertész, Á.–Zámbó, L. 2003. Land use change and gully formation over the last 200 years in a hilly catchment. Catena *50.* pp. 151–164.

Govers, G.–Quine, T.A.–Desmet, P.J.J.–Walling, D.E. 1996. The relative contribution of soil tillage and overland flow erosion to soil redistribution on agricultural land. Earth surface processes and landforms *21.* (10): pp. 929–946.

Jakab G. 2008a. Új vízmosás osztályozási rendszer bemutatása egy mintaterület példáján. Földrajzi Értesítő *57.* (1–2): pp. 169–184.

Jakab G. 2008b. A vonalas erózió folyamatának vizsgálata dombsági vízgyűjtőterületen. In: Kiss T.–Mezősi G. (szerk.) 2008. Recens geomorfológiai folyamatok sebessége Magyarországon. – Szegedi Egyetemi Kiadó, Juhász Gyula Felsőoktatási Kiadó, Szeged. pp. 109–117.

Jakab G. 2008c. On- and offsite effects of soil erosion at catchment scale. Final COST 634 International Conference „on- and offsite environmental impacts of runoff and erosion" 30 June – 4 July Aveiro, Portugal. Abstract book 95 p.

Jakab, G.–Kertész, Á.–Dezső, Z.–Madarász, B.– Szalai, Z. 2006. The role of gully erosion in total soil loss at catchment scale. 14th International Poster Day. Transport of Water, Chemicals and Energy in the Soil-Crop Canopy-Atmosphere System Bratislava, 9.11.2006 Proceedings CD

Jakab G.–Kertész Á.–Papp S. 2005. Az árkos erózió vizsgálata a Tetves-patak vízgyűjtőjén. (Gully erosion in the Tetves catchment, Hungary). Földrajzi Értesítő *54.* (1–2.): pp. 149–165.

Kertész, Á. 1984. The role of deep-cut tracks in linear erosion. – In: Geographical Essays in Hungary. – MTA FKI. Budapest. pp. 47–56.

Kertész, Á. 2004a. Soil erosion and mass movement processes on the loess covered areas of Hungary. – Földrajzi Értesítő. *53.* (1–2.) pp. 13–20.

Kertész, Á. 2004b. Az árkos erózió felszínalakító szerepe Dél-Afrikában. – Földrajzi Értesítő *53.* (3–4.) pp. 213–218.

Kertész, Á. 2006. Az éghajlati tényezők szerepe a lineáris erózióban. – Földrajzi Közlemények *130.* 3–4. pp. 115–122.
Kertész, Á.–Jakab, G.–Tóth, A. 2003. Water erosion in Hungary – a Case Study on Soil Erodibility. In: Nestroy, O.–Jambor, P. (eds.) Aspects of the Erosion by Water in Austria, Hungary and Slovakia. Soil Science and Conservation Research Institute, Bratislava. pp. 85–92.
Kertész, Á.–Tóth, A.–Jakab, G.–Szalai, Z. 2001. Soil erosion measurements in the Tetves Catchment, Hungary. – In: Helming, K. (ed.) Multidisciplinary Approaches to Soil Conservation Strategies. Proceedings, International Symposium, ESSC, DBG, ZALF, May 11–13, 2001. Müncheberg, Germany. ZALF-BERICHT Nr. *47.* pp. 47–52.
Killham, K. 2001. Soil ecology. Cambridge University Press, pp. 175–176.
Kirkby, M.J.–Morgan, R.P.C. 1980. Soil erosion, John Wiley and Sons, Chichester, UK.
Lu, X.X.–Higgitt, D.L. 2000. Estimating erosion rates on sloping agricultural land in the Yangtze Three Gorges, China, from Caesium-137 measurements. Catena *39.* (1): pp. 33–51.
Lu, X.X.–Higgitt, D.L. 2001. Sediment delivery to the Three Gorges 2: Local response Geomorphology *41.* pp. 157–169.
Mabit, L.–Bernard, C. 1998. Relationship between soil 137Cs inventories and chemical properties in a small intensively cropped watershed. Earth & Planetary Sciences *327.* (8): pp. 527–532.
Madarász, B.–Kertész, Á.–Jakab, G.–Tóth, A. 2003. Movement of solutes and their relationship with erosion in a small watershed. – In: Nestroy, O.–Jambor, P. (eds.) Aspects of the Erosion by Water in Austria, Hungary and Slovakia. Soil Science and Conservation Research Institute, Bratislava. pp. 99–110.
Panin, A.V.–Walling, D.E.–Golosov, V.N. 2001. The role of soil erosion and fluvial processes in the post-fallout redistribution of Chernobyl derived Cs^{137}: a case study of the Lapki catchment, Central Russia. Geomorphology *40.* (3–4): pp. 185–204.
Porto, P.–Walling, D.E.–Ferro, V. 2001. Validating the use of caesium-137 measurements to estimate soil erosion rates in a small drainage basin in Calabria, Southern Italy. Journal of Hydrology *248*. (1–4): pp. 93–108.
Szalai, Z. 2008. Spatial and temporal pattern of soil ph and eh and their impact on solute iron content in a wetland (Transdanubia, Hungary) AGD Landscape & Environment *2.* (1.): pp. 34–45.
Szalai, Z.–Németh, T. 2008. Elemi táji mintázatok hatása talajkémiai paraméterekre. Földrajzi Értesítő *57*. (1–2): pp. 135–146.
Szerbin, P.–Koblinger-Bokori, E.–Végvári, I.–Ugron, Á. 1999. Caesium-137 migration in Hungarian soils. The Science of the Total Environment *227.* (2–3): pp. 215–227.
Tóth A.–Szalai Z. 2007. Tájökológiai és tájtipológiai vizsgálatok a Tetves-patak vízgyűjtőjén. Tájökológiai Lapok *5.* (1.): pp. 131–142
Wicherek, S. P.–Bernard, C. 1995. Assessment of soil movements in a watershed from Cs-137 data and conventional measurements (example: the Parisian Basin) Catena *25.* (1–4): pp. 141–151.
Wischmeier W.H. 1977. Soil erodibility by rainfall and runoff. – In: Bergsma, A. 1996. Grafisch Service Centrum, Wageningen. Terminology for soil erosion and conservation. 25 p.
Wischmeier W.H.–Smith, D.D. 1978. Predicting rainfall erosion losses: A guide to conservation planning. – USDA Agricultural Handbook 537, US Government Printing Office, Washington, D.C. 58 p.

Hungarian Geographical Bulletin 2009. Vol. 58. No 3. pp. 163–180.

Major trends in the development of industrial areas of Budapest in the early 21st century

Éva Kiss[1]

Abstract

Budapest bore witness to dramatic changes in its industry following 1989, and these have had a major impact on the location of industry and on the use of former industrial areas. The main purpose of this study serves to illustrate the major developments and shifts that took place within the traditional industrial areas during the last decade and is based upon the results of a survey carried out in 2006, in order to reveal the extent of the functional transformation of areas that were traditionally industrial in nature. Over the last decade the former processes (deindustrialisation, rehabilitation, shrinkage of industrial areas, and change in their functions) have developed, albeit at a different pace spatially. As a consequence, the spatial pattern of the Hungarian capital, as well as its functional divisions have undergone significant transformation.

Keywords: industry, restructuring, deindustrialisation, Budapest.

Introduction

The changes in the industry of developed countries that started in the 1970s have had a significant impact on the structural and functional divisions, landscape and social structure of cities. By way of contrast, similar developments only took place in the post-socialist countries after the change of regime in 1989. During the last two decades, parallel changes have occurred in the industry and industrial areas of Budapest, a city that used to be a pioneer of reform in the eastern part of Europe. Research projects carried out by the author in the 1990s have already summarised some of the transition (Kiss, É. 1999, 2002a,b), thus, in this study the emphasis is placed on changes that have taken place over the last decade. Based on the survey conducted in 2006, the major developments that took place in the industrial areas of Budapest during the beginning of the 21st century will be illustrated, as will their impacts on the spatial pattern of the city and the different ways that old industrial premises are being put to new uses.

The study consists of three main parts. The first section provides a short theoretical background and methodology. The second section discusses the major trends transforming the industrial districts of Budapest, whilst the third describes the different trends in the changing use of traditional industrial areas of the city.

[1] Geographical Research Institute Hungarian Academy of Sciences, H-1112 Budaörsi út 45. Budapest Hungary. E-mail: kisse@helka.iif.hu

Theoretical background and methodology

The development of Budapest (as has already been described by Tibor Mendöl) gave rise to a ring-and-radial urban structure that strongly resembles Burgess' model of concentric zones (Mendöl, T. 1963; Csanádi, G.–Ladányi, J. 1992). The four zones have been shaped by natural, social and economic factors. Their regular pattern is broken by topographical features on the Buda side and by the major arterial roads leading out of the city. Each zone has had (and partly has at present) its own specific function. Apart from the fourth zone, the first three (CBD, first residential belt, and second employment zone) have experienced considerable transformation after the regime change, but from a different aspect (Berényi, I. 1994).

The changes that took place in the industry of the Hungarian capital were induced by several factors, and mainly affected the industrial areas located in the second employment zone, or the 'transitional zone'. These changes can be interpreted as the spatial appearance of, amongst others, the radical organisational and structural changes in the industrial sector, as the consequence of functional restructuring (Coffey, W.–Bailly, A. 1996). They were particularly significant during the 1990s as a part of the developments that had a profound effect on the industrial areas. Later, other factors came to the fore (e.g. market conditions and a purposeful urban policy), which were no longer confined to industry and industrial development. For the time being, these factors are responsible for the transformation of the industrial zones that is under way; over the past two decades or so, the relative importance of the driving forces at any one time has changed.

Among the capitals of central and eastern Europe, it was Budapest that inherited industrial areas of the greatest extension, which could either serve as a grave handicap or a highly favourable endowment. The former is due to the expense involved with the reclamation of contaminated land, in sharp competition with other big cities, and high costs lay a heavy burden upon the urban economy. Moreover, it might discourage potential investors. On the other hand, the former industrial areas are to be considered valuable reserves for the city, owing to the scarcity of non built-up areas in the inner parts of Budapest, compared with other cities like Warsaw (Kiss, É. 2007).

The industrial areas of Budapest are labelled differently (brown zone or rustbelt), reflecting their various characteristics. 'Brown zone' in its strictest sense refers to current industrial land use, but in a wider sense it designates the zone of transition as well, including e.g. transport facilities of considerable spatial extension. Therefore this title denotes a mixed zone with respect to its function, being a mix of industrial and non-industrial functions. Industrial areas are also frequently labelled as the 'rustbelt'. This is a name used for formerly industrial but now abandoned areas or for those operating at reduced

capacity and not yet refurbished. The main features of such zones are the derelict industrial areas and the old industrial building stock (Barta, Gy. 2004; Beluszky, P.–Győri, R. 2004; Kukely, Gy. *et al*. 2006). According to a different approach, industrial areas together form the rustbelt. The difference between various interpretations is that the transitional (brown) zone refers to its position within the urban pattern whereas rustbelt designates the condition and quality of the industrial environment.

The extension of zones in Budapest also depends on how the above is interpreted. The largest is the transitional zone, between the city centre and outer districts (Barta, Gy. 2004; Beluszky, P.–Győri, R. 2004). The share of brown zone that includes traditional industrial establishments and land of other use (such as transport and residential) was estimated at 13% (68 square kilometres) of the capital's total land area (Kukely, Gy. *et al*. 2006). Areas that are exclusively used for industrial purposes are much smaller as their initial extension was less to begin with, and they have shrunk considerably over the past two decades (Kiss, É.1994, 1999).

The present study is based on the survey conducted in 2006 and conceived to identify changes that have taken place in the extension and functions of industrial areas of Budapest. A detailed mapping of these areas by blocks has provided granular information about their use. The survey extended over the whole capital, i.e. it encompassed the industrial areas by district, with the exception of the city centre. The maps of districts (1:7 000 and 1:13 000 produced between 2002 and 2004) served as the base maps. They showed the areas that qualified as industrial zones, and in relation to them, a map showing functional use was drawn in 2006 with an indication of the current activities within these areas. From the base map, the areas that had real industrial purpose were filtered out and inserted into a separate map.

The next phase of the survey involved the resulting map being compared with that of 1998, to analyse the change in industrial areas according to their state in 2006. The result confirmed our hypothesis, which anticipated an ongoing loss of industrial areas over the past ten or so years. This conclusion is valid, even though those objective and subjective factors were also taken into account that might lead to incorrect calculations or estimations.

The process of exact definition and identification of industrial areas of big cities has always given rise to a great deal of methodological issues, in both the distant past (Prinz, Gy. 1964), as well as over the past ten years. Initially these problems emerged due to the multitude of new firms that after 1989, chose to locate on the industrial estates that were earlier occupied by large state-owned companies. As a consequence, the former industrial areas or buildings were frequently divided among dozens of firms and issues as to ownership became highly complicated. Further, some of the firms could not be accurately classified based on their activity, owing to the fact that besides

industry, they also pursued other activities (repair, commerce, logistics, and other services). Moreover, there were several firms in the area with a non-industrial profile. For all these reasons, the size and functional use of industrial areas at best could only be estimated. The representation of very small firms on the map served as a hindrance too. Therefore the following principle was kept in mind when conducting the survey: the primary activity of the firm was taken as its base and the proportion of areas being used for industrial and non-industrial activities was estimated. Naturally, this might lead to subjective judgement, but it is an acceptable method to indicate the dominant trends.

Besides the highly time consuming field work (observations, drawing sketch maps, and taking photographs), data relating to the firms was collected and some interviews undertaken. From the database of CompLex Céghírek information was collected by district on the newly established 6968 industrial firms in Budapest between 2000 and 2005, and on the 4501 firms that ceased to exist during the same period. In the spring of 2006, the author visited the office of the Chief Architect of Budapest and some local government offices of certain districts that possessed large industrial areas, in order to also interview their Chief Architects as to their their thoughts towards industrial areas and the future fate of these.

Major trends in industrial areas

The changes that have taken place in industrial areas have shown spatial and temporal differentiation. The extent of these changes is highly varied across the distinct parts of the city and even within a given industrial estate, due to the latter being in differing stages of transformation and development. This can be attributed to several factors (location of industrial establishments, size of production units, ownership structure, organisational form, and sectoral affiliation). Essentially, these parameters are determinant as to the future prospects of the given industrial area and of the plants therein. There are examples from previous decades of some areas that have survived virtually unchanged (at least in their outward appearance), and some of them are unlikely to change considerably in the future as well. Others have changed to a lesser or greater degree as their manufacturing base has undergone renewal and/or reorganisation and these changes have exerted a positive impact upon the outward appearance of buildings, the use of space, internal layout, etc. Finally, many of the former industrial establishments have completely disappeared, and their locations now provide home to other functions. In addition, new industrial areas have also been established. Similar developments can also be observed in developed cities, but all of them have their individual features (Cohen, P. 1998; Doling, J. *et al*. 1994; Moulaert, F. *et al*. 2003; Takeuchi, A. 1985). Depending

on the historical preliminaries, economic foundations, the quality of the social and cultural environment, etc., these changes have occurred everywhere but in a differentiated and specific manner (Ernst, M. *et al*. 1996).

Industrial areas in Budapest had reached their maximum extension by the early 1970s. At that time they made up more than 9% of its total area; since then there has been a slow shrinkage. As a result of restrictions on industrial activities in the capital city, relocations from there and owing to technology transfer, by the mid-1980s industrial areas had reduced by 250 hectares. The diminishing size of traditional industrial areas continued into the 1990s, but more intensively and to a different extent in various parts of Budapest. In some districts the industrial areas were reduced by 30–50% (Kiss É. 1999, 2002a,b). Lately there has been a general slowdown in this process, yet in certain places it is overwhelming. Surveys dating from 1998 and 2006 testify to these trends over the past ten years or so. At present the traditional industrial areas of the transition zone extend to no more than a couple of percent of the capital's territory *(Fig. 1).*

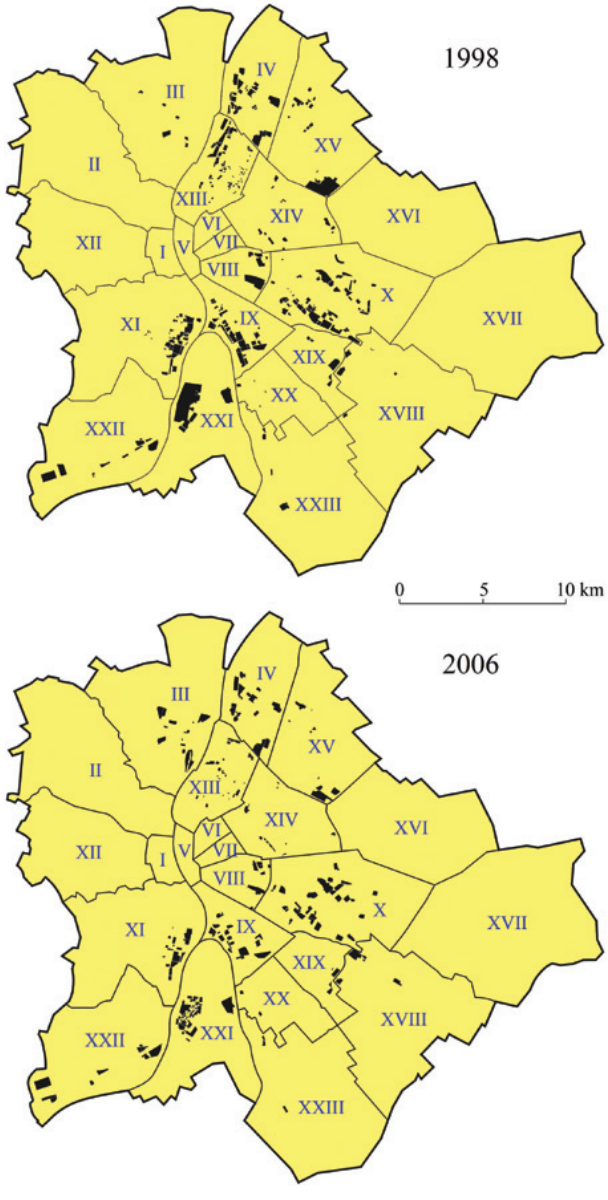

Fig. 1. Traditional industrial areas of Budapest. *Source:* Surveys carried out in 1998 and 2006.

In relation to this intense shrinkage of traditional industrial areas,

the question has arisen whether industrial districts exist anymore at all? The answer should be that they definitely do not, because by now most of them have been dissected and have 'disintegrated'. These days, only some dispersed patches of the old industrial areas still possess the contours of their former appearance. Naturally it should be remembered that these old industrial areas are not the same, as post-1989 the majority of the surviving enterprises experienced huge internal restructuring and changes in their outward appearance.

In the 1990s, the extension of industrial areas was determined by two processes that went on parallel to each other but with changing intensity. One of them was deindustrialisation resulting in the disappearance and functional transformation of industry, whereas the other was rehabilitation aimed at the survival of the old industrial establishments through a total or partial renewal. The former was typical of the northern and north-eastern parts of Budapest and the latter mainly characterised the southern and south-eastern parts. In some cases the two processes took place in neighbouring areas or within one contiguous area. Besides the two main trends, a third one – reindustrialisation – also occurred. The three proceeded to differing degrees in various industrial spaces, however the main development witnessed has been deindustrialisation.

As reflected by the survey results of 2006, the same and partly contrasting trends experienced by industry in the Hungarian capital until 1998, continued for the following ten or so years. Deindustrialisation had proved to be the dominant factor and it expanded spatially. This is obviously the consequence of a reduction in the number of 'vacant' industrial estates located relatively close to the city centre, so as a result of high demand for similar plots, even those to be found further away and/or in less accessible locations became sought after. For this reason deindustrialisation has come to the fore in those northern and especially southern industrial areas, where it was less typical during the 1990s. It seems these areas are trying to catch up with the successful functional restructuring that has taken place far in the north of the capital. The expansion of the City also contributes to this. The so called 'centre functions' expand along the sectors from the CBD to outlying neighbourhoods.

In the 1990s, deindustrialisation proceeded most rapidly in the northern half of Budapest (13th district) and after the turn of the millennium the process shifted even further northward and has become a characteristic feature of those industrial areas. As a result of this, a formerly industrial district has vanished in this part of the capital. A rapid shrinkage in the 13th district is primarily due to the closure of firms (between 1990 and 1995 only 65 firms were closed down, but ten years later already 345 suffered the same fate), and those still operating occupy small plots *(Fig. 2).*

In the beginning of the 21st century, with a view to the long term, manufacturing is viable only in the eastern part of Budapest with a remote location from the city centre, unfavourable accessibility and a specific sectoral pattern

Fig. 2. Functional transformation of industrial areas in the 13th district of Budapest. *Source:* Surveys carried out in 1998 and 2006.

of industry. Perhaps this is the explanation for the high share of industrial areas in the 10th district during the 2006 survey, an area that has shown only moderate deindustrialisation. Investments aimed at rehabilitation were purposed for modernisation of the industrial estates which is not so spectacular from the outside spectator *(Fig. 3).*

Parallel with deindustrialisation, a reindustrialisation process is also under way. One of the visible identifiers of this trend is the considerable growth in the number of industrial firms. However, a restricted expansion in industrial areas seemingly contradicts this trend. The reason may be caused by a minimal share of the new establishments partnered with the ongoing decrease in the traditional ones. One might have the impression that most of the new firms do not add to a real enlargement of the industrial areas, seemingly as if their activities did not need much physical space. As a result, these new enterprises barely have any impact upon the extension of industrial areas and spatial pattern of manufacturing. Another factor affecting this outcome is that among the new firms there are many small enterprises based in the old industrial establishments, frequently occupying only some of their rooms or a single premises. Consequently, there are a growing number of firms located within a defined space, i.e. the density of firms is increasing. At the same time, as indicated by the survey of 2006, there is an as yet slow shift in the main area of industrial production from the central districts towards the outer districts.

In summary: as a result of several trends, traditional industrial areas have recently tended to shrink, so that many of them have become redundant and available for alternative use and further development.

Types of reutilisation

The way derelict industrial buildings and areas can be redeveloped depends on several factors: their size, location, accessibility, extent of contamination, quality of their environment, urban policy considerations, the wishes of their proprietors, etc. Even though these areas are very important from the perspective of urban planning and development (as restructuring has a strong impact upon the future urban pattern and functional structure) local government and planners have a rather limited ability to interfere in their utilisation (e.g. through the regulation of the height of buildings). The municipality of the City of Budapest and district governments do not always agree upon the development of former industrial estates. Another handicap has been the lack of a master plan for Budapest for around ten years. As a result, development frequently took place in a spontaneous and sometimes unsuccessful manner, because many of the investments failed to be carried out at all, or were not executed in such a way as they should have been. As industrial areas are, as a

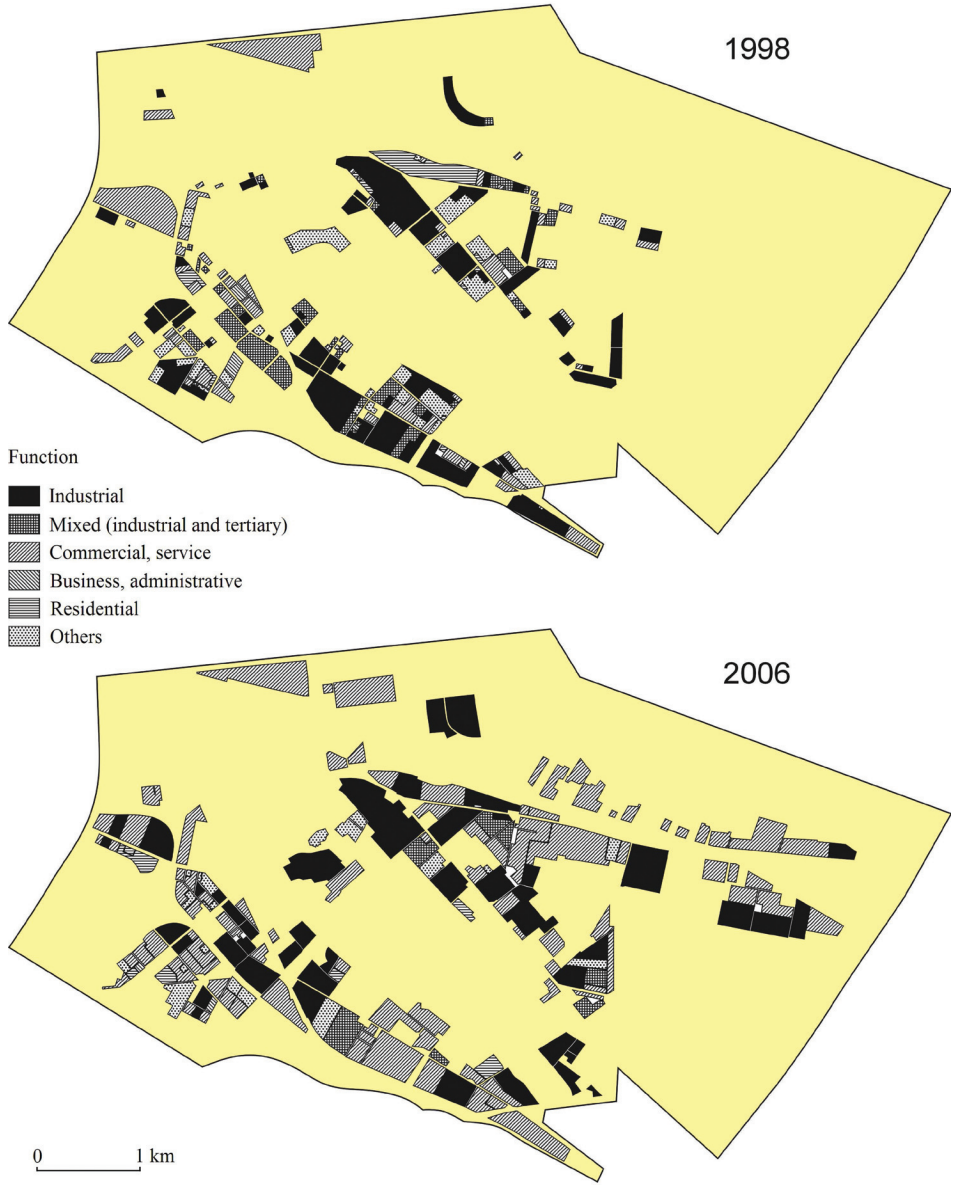

Fig. 3. Functional transformation of industrial areas in the 10th district of Budapest. *Source:* Surveys carried out in 1998 and 2006.

rule, in private ownership and this is of prime consideration, urban planners in reality have very little influence. The decisive factors are market forces and the intentions of owners and investors.

In an environment of general confusion following the regime change, abandoned industrial plots and buildings could be easily bought for a relatively low price. This fact can be explained by the almost concurrent appearance of similar plots on the property markets of central and eastern European capitals, and this sudden oversupply was used by foreign investors to buy-up industrial establishments cheaply, these areas now being at their disposal. In the phase of passive urban development it was governed by the investors and owners who felt free to decide about the use of their land (Szirmai, V. *et al*. 2003). Similar to the practice in western cities, active urban development has been a more recent development in Budapest. In essence, local governments take decisions about the location of future facilities and they seek investors for its implementation, not vice-versa.

Usually, the redevelopment or reutilisation of those redundant industrial areas that have a favourable geographical setting, good transport connections and less contaminated land have taken place at a faster rate. These relatively clean places were preferred by investors, because reclamation is an expensive and time consuming intervention.

There are two basic ways to reutilise former industrial establishments. In the event the new function is intended to be carried on within the old facilities (that may have previously undergone some rehabilitation and transformation), this internal change is less spectacular, and was labelled by Cohen as 'adaptive reuse', as the old buildings are being adapted to the new function(s) (Cohen, P. 1998). The second possibility, after removal of the structures that previously stood on the plot, a brand new complex (in internal architecture, design and outward appearance) is erected, typically being used for non-industrial activities. These constructions can leave a spectacular imprint on the urban landscape, so this type can be labelled urban renewal *(Fig. 4).*

The two paths to reuse have much in common with one another. No expressed differences can be detected even if some of the former are feasible with one of the cases (e.g. loft apartments can only be built inside of industrial buildings). A general trend is that the reuse and functional change of smaller industrial establishments takes place more rapidly than larger ones.

Formerly industrial areas and buildings are most frequently reused by (in no order of importance) commercial, service, office, residential, storage and logistics functions. Research points out a temporal shift between the above functions, in relation to investor preference. In the 1990s commercial, service, and office usage dominated, and functional change took place along these lines (Kiss, É. 2002a,b). This was associated with a rapid privatisation of trade, a sore deficit in shopping centres and a lack of modern office blocks; at that time there was a high demand for similar facilities. By the turn of the millennium the national economy was taking flight following a deep crisis after the regime change, and with this came stabilisation, growing incomes

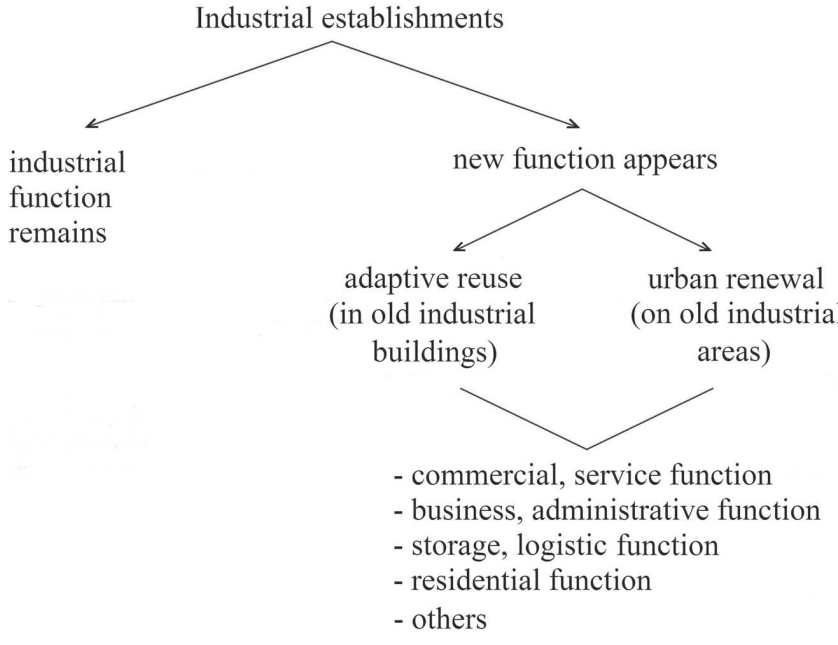

Fig. 4. Major types of reutilisation of traditional industrial establishments
Source: Edited by author.

and rising demand for quality housing that stimulated residential construction. Storage and logistics functions gained importance more recently, perhaps as a result of major developments becoming localised (along the main thoroughfares), only after the adoption of the new mid-term concept for the urban development of Budapest. Naturally enough, the weight of the individual functions might change within a short period of time, depending on market forces and conditions. These days residential and logistics functions are the most popular, and attractive for investors who seem to be willing to support these developments.

The various functions are visible to a differing spatial degree in the traditional industrial areas. Commercial and service functions have dominated in places with favourable transport accessibility. The size of individual developments might be very different, but these 'high-tech' buildings have a floor space of just under ten thousand square metres on average and a different outward appearance. They are dissimilar to commercial developments beyond the capital's borders which have little architectural merit and are mostly 'market halls' with a simple structure.

Commercial and service functions may appear in both old industrial buildings and in newly built shopping centres in place of former industrial es-

tates. An example of the first are the workshops of the former screw factory along Váci út, where after its reconstruction and renovation a number of units of different size in retailing, repair and service have moved in. A typical representative of the second is Duna Plaza, the first western-style shopping centre in Hungary, which was built on a traditional industrial estate (dockyard), i.e. as a brown field investment. It was opened in 1996, and since then has been followed by a couple of similar shopping centres. The stores accommodated in these centres sell high quality commodities and provide sophisticated services *(Photo 1).*

Offices and buildings for administrative activities were mainly developed in the 1990s, due to the sudden increase in demand after the change of regime. At that time it was a frequent phenomenon to use the old industrial buildings for office and administrative purposes without renovation or modernisation. Leasing out the premises of old factories that were suitable for offices was a source of revenue and supported the survival strategy of companies in the state sector. Later with changes in economic circumstances and a more abundant supply of offices, this practice became less widespread, and the development was accompanied by the emergence of a high demand in modern, well equipped offices with extra services. Following the initial boom, the demand in office space had decreased by the early 21st century. In 2002 there were 15 office blocks under construction in the brown zone, partly on factory sites; only a fraction of similar developments were registered in the following year (Ongjert, R. 2003). This could be explained by the saturation of the market and the consequent drop in demand, though offices of a high standard are still sought after. Among the stock of office space there are utterly modern, administrative offices built upon traditional industrial sites as brown field investments, through the rehabilitation of the old workshops.

The new office blocks are mainly to be found in the city centre whereas the offices on rehabilitated industrial estates are away from the central areas. These circumstances are somewhat compensated by good transport accessibility and infrastructure. As the rents are lower in the latter, many fledgling businesses choose them as headquarters. Dorottya Yard is a good example of a complete renewal and reconstruction of spacious internal expanses of an old factory in the early 2000s. This is the best example of a loft-office building *(Photo 2).*

A boom in residential construction started with the advent of the new millennium. The former industrial areas, especially the non-contaminated plots with favourable accessibility became the scene of these massive projects. The survey of 1998 reported that residential investment was an infrequent way to redevelop. There were housing projects in the 13th district – formerly part of the northern industrial zone of the capital – as early as the 1990s, but most of them were doomed to failure (Kiss, É. 1999). By the early 21st century, however, due to deindustrialisation and a functional restructuring of the district, the

Photo 1. Duna Plaza built on the site of a former shipyard was the first shopping and entertainment centre in Budapest in 1996 (Photo by Kıss, É.).

Photo 2. This building, called Dorottya Yard, was originally established as a textile factory in the beginning of the 20th century. In the last decade it was reconstructed and has become a modern office block (Photo by Kıss, É.).

townscape and its image had changed completely. This might explain why by 2005 it had become the leader in residential construction (with 3250 flats) among all the districts of the capital city. An annual average of 80 apartments were being built here in the second half of the 1990s, whilst 1349 apartments were constructed between 2000 and 2005. The rate of residential construction also accelerated in the southern and eastern industrial areas of Budapest, e.g. in the 9th district 88 apartments were built in 1995, whilst 1008 were built ten years later. The new developments are financed both by Hungarian and foreign capital. Besides the German, British, Dutch, and Austrian investors, there has been a growing participation of Spanish, Irish and Israeli capital. The newly built apartments as a rule are well equipped, with several rooms, and are frequently found in the 'residential park' format.

Loft apartments appeared in western Europe and North America much earlier than in the eastern half of Europe (Cohen, P. 1998). These days, examples are already to be found in Budapest. These renovated buildings with large floor areas and interior space are highly suitable to meet specific requirements (e.g. matching residential and workplace functions). In many places, mainly confined to the southern and south-eastern industrial areas they are occupied by artists, musicians and painters (Sütő, A.B. *et al*. 2004). Loft apartments frequently wedge in residential areas, and more of them were in planning in several quarters of Budapest (in the 3rd, 9th and 13th districts) in the summer of 2006. One of the largest investments will be the redevelopment of the former Gizella flour mill, where around 100 apartments are to be constructed. Nevertheless, the residential function is by no means likely to be found in polluted or contaminated traditional industrial areas and/or in unattractive and deteriorated environments.

The storage and logistics functions within traditional industrial establishments date from recent years and the number of buildings used in this way is growing steadily. They are functions with a large requirement for space and have expanded over industrial areas further away from the city centre, mainly in those areas with favourable transport connections, especially along the main arterial roads. Lately there has been strong activity in speculative developments in the storage and logistics spheres in Budapest which is a trend that is widely found in the developed cities. In the case of Budapest, this appeared only a couple of years ago and is partly connected with old industrial areas (Szirmai, V. *et al*. 2003).

Storage and logistics frequently occur in obsolete old premises of factories. An example is the former Csepel Works, featuring buildings with the inscriptions 'warehouse' or 'warehouse to let'. These premises are of differing sizes and owing to their deteriorated and obsolete state, can be leased much cheaper than the newly built warehouses or those located along the major transport corridors *(Fig. 5, Photo 3).*

Fig. 5. Industrial areas by function in the 21st district of Budapest
Source: Survey carried out in 2006.

Photo 3. During the socialist era Csepel Works was the largest company in Budapest. Nowadays its area and buildings are reutilised in different ways. The storage function is very common (Photo by Kiss, É.).

Developments of a different nature are not too frequent and make up a very small portion of traditional industrial areas and/or buildings. In this category belong car parks, recreational areas including parks and playgrounds and cultural establishments. They occur in patches and are not likely to considerably expand in the future.

However, the category of 'miscellaneous' requires two additional remarks. Firstly, the storage-logistics function was put into this category for the sake of clarity on the map, thus avoiding additional categories. At the same time it means, however, that most of the areas classed into this bracket perform these two functions and other areas are negligible. During the mapping of the 2006 survey, for this same reason the vacant industrial areas (prior to redevelopment) were classed here because their designation was unknown at that time. The same is true of areas of factories that have closed down and are facing ambiguous futures. Their extension was also very limited in 2006.

The surveys evidenced a direct restructuring, i.e. most of the industrial areas subsequently acquired either a commercial or administrative function immediately after their industrial use. In other cases, functional change was indirect in the sense that the ultimate function was preceded by some other activity. For instance, industry was followed by commerce or storage, changing afterwards into a residential function. So it seems that most of the industrial areas followed a specific path of development.

Photo 4. MOM Park was built on the site of a former optical factory at the beginning of the 21st century. This is a good example for the complex reutilisation. On the left, modern office buildings, whilst on the right, residential buildings can be seen (Photo by Kiss, É.).

Today former industrial areas often acquire several functions, and it means that their complex use is generally accepted by the proprietors and planners. MOM Park (located in the 12th district) is a good example, where residential space, commercial and service units coexist with administrative and office space, all built on the site of a former industrial company *(Photo 4).*

As a result of the functional change, a considerable portion of the traditional industrial areas of Budapest have been put to use again by commercial and service functions, but residential, storage and logistics also occupies significant and rapidly growing expanses. A most spectacular example of restructuring is the 13th district, turning from an industrial quarter into a business district over the past 20 or so years. This is the most dynamic district of the capital and is still the scene of huge development projects (e.g. the revitalisation of the Danube bank). Due to the functional change the formerly relatively homogeneous industrial areas have also become more heterogeneous in the other industrial districts of Budapest, but of its three main industrial districts, this process was the least intensive in the eastern one.

Conclusions

The developments that were anticipated to take place from the end of the 1990s have made considerable progress up until now. Notably, traditional industrial areas continued to shrink, functional change acquired new dimensions, new functions have come to the fore and structural and functional renewal of the city became even more apparent. The employment arena has also changed profoundly. In many places, the industrial function has been replaced by a multi-functional pattern of workplaces. Moreover, functional change cannot be considered to be a finished process. In fact we are witnesses to a new city in the making, with manufacturing continuing but without traditional industrial areas. This will have a deep impact on the physical environment, the urban living space and local societies.

Acknowledgement: The present study was supported by the Hungarian Scientific Research Fund (OTKA), project number T 046014.

REFERENCES

Barta, Gy. (ed.) 2004. A budapesti barnaövezet megújulási esélyei. – MTA Társadalomkutató Központ, Budapest. 348 p.

Barta, Gy. 2002. *A* magyar ipar területi folyamatai két gazdasági rendszerben, 1945-től 2000-ig. – Dialóg Campus Kiadó, Pécs. 272 p.

Beluszky, P.–Győri, R. 2004. A budapesti barnaövezet határai. – Barta, Gy. (ed.) A budapesti barnaövezet megújulási esélyei. MTA Társadalomkutató Központ, Budapest. pp. 71–79.

Berényi, I. 1994. Budapest városszerkezetének átalakulási tendenciái. – Földrajzi Értesítő. *43.* 3–4. pp. 221–233.

Coffey, W.–Bailly, A. 1996. Economic Restructuring: A conceptual framework. – Lever, W.–Bailly, A. (eds.) The spatial impact of economic changes in Europe. Ashgate Publishing Ltd., Hants. pp. 13–40.

Cohen, P. 1998. A transforming San Francisco industrial landscape. – Pacifica. Fall. pp. 7–12.

Csanádi, G.–Ladányi, J. 1992. Budapest térbeni-társadalmi szerkezetének változásai. – Akadémiai Kiadó, Budapest.

Doling, J.–Koskiaho, B.–Virkkala, S. (eds.) 1994. Restructuring in old industrial towns in Finland. – University of Tampere, Tampere. 295 p.

Ernst, M.–Alexeev, M.–Marere, P. 1996. Transforming the core. Restructuring industrial enterprises in Russia and Central Europe. – Westview Press, Boulder-Oxford. 313 p.

Kiss, É. 2002b. Restructuring in the industrial areas of Budapest in the period of transition. – Urban Studies. *39.* 1. pp. 69–85.

Kiss, É. 1994. Az ipari struktúra átalakulásának városszerkezeti konzekvenciái. – Földrajzi Értesítő. *43.* 3–4. pp. 251–257.

Kiss, É. 1999. Térszerkezeti és funkcionális változások Budapest ipari területein 1989 után. – Tér és Társadalom. *13.* 4. pp. 119–135.

Kiss, É. 2002a. A magyar ipar térszerkezeti változásai. – Földrajzi Értesítő. *51.* 3–4. pp. 347–365.

Kiss, É. 2007. Traditional industrial areas of large cities in the post-socialist era, the case of Budapest and Warsaw. – Kovács, A. (ed.) Regionality and/or Locality. CRS HAS, Pécs. pp. 143–156.

Kukely, Gy.–Barta, Gy.–Beluszky, P.–Győri, R. 2006. Barnamezős területek rehabilitációja Budapesten. *Tér és Társadalom.* 20. 1. pp. 57–71.

Mendöl, T. 1963. Általános településföldrajz. – Akadémiai Kiadó, Budapest. 568 p.

Moulaert, F.–Rodriguez, A.–Swyngedouw, E. (eds.) 2003. The globalized city. Economic restructuring and social polarization in European cities. – Oxford University Press, Oxford. 279 p.

Ongjert, R. 2003. Javaslat Budapest rozsdaövezeteinek rehabilitációs koncepciójára. Döntéselőkészítő tanulmány, vitaanyag. – Studio Metropolitana, Budapest. 55 p.

Prinz, Gy. 1964. A Budapesti Régió problémái. – Preisich G. (ed.) Budapest városrendezési problémái. – Kézirat. Budapest. pp. 26–74.

Sütő, A.B.–Soóki-Tóth, G.–Valkó, D. 2004. „Loftprogram" – a budapesti barnazóna reurbanizálásának esélyei. – Barta Gy. (ed.) A budapesti barnaövezet megújulási esélyei. MTA Társadalomkutató Központ, Budapest. pp. 245–257.

Szirmai, V.–Baráth, G.–Bognár, J. 2003. Gloablizáció és városfejlődés Budapesten. – Társadalomkutatás. *21.* 3. pp. 249–274.

Takeuchi, A. 1985. Change of land use and industrial community in Tokyo. – Sinchini New Geography. *3.* 4. pp. 33–45.

Hungarian Geographical Bulletin 2009. Vol. 58. No 3. pp. 181–200.

Key to the success of the outlet shopping centers located in optimal site

Tamás Sikos T.[1]

Abstract

Outlet centers embody a unique type of shopping centers; their emergence can be traced back to the existence of factory outlets. In the beginning they were established to offer the company's products to employees and factory workers at a reasonable price as a kind of fringe benefit[2]. Obviously, producers offered products which could not be sold through traditional distribution channels. Another distinguishing feature of outlet centers is that a remarkable part of the goods comes from commercial channels so in many cases some of them have no articles in all sizes. This study provides a comparative analysis between an Austrian and a Hungarian outlet center to demonstrate their good market position and to explain the main reasons of their success.

Keywords: retail trade, shopping centers, outlets

Introduction

The emergence of factory outlets might be traced back to more than one hundred years ago. During the first days of industrialization, clothes and shoe factories opened so-called „mill stores" to sell their surpluses and faulty products. First in these stores only employees and workers could shop, however, later they were opened for the general public as well. In 1936 it was Anderson-Little, a manufacturer of men's clothing which opened the very first „factory direct (to you)" store, giving way for another outlet centers to be established (Bühler, T. 1990; Sikos, T.T.–Hoffmann, M. 2004).

The first multi-tenant outlet center – the Reading Outlet Center – was opened in 1974 in Reading, Pennsylvania, USA *(Photo 1)* The center was established on the former site of the world's largest hosiery mill, the Berkshire Knitting Mills that operated between 1908 and 1975. The original VF Outlet[3] opened its gates in 1970 in the east end of Big Red building, providing possibility to dispose of the surplus of hosiery, lingerie, sleepwear and robes. (Momberger, C. 2001, 2002).

---

[1] Full Professor at Szent István University, Gödöllő (Hungary) and J. Selye University Komárno, (Slovakia). DSc, Hungarian Academy of Sciences. E-mail: sikos.t.tamas@gtk.szie.hu, The research was supported by OTKA, ID number: 68541.

[2] Makó, A. 2007.

[3] Vanity Fair Outlet.

Photo 1. The first outlet center in the USA (Reading, Pennsylvania)

The retail space of the store was 5,000 ft^2 (square foot)[4], separated from the actual manufacturing site. Today VF Outlet Center is a rapidly growing outlet complex owned and operated by VF Outlet Inc. (VFO). The building, totaling more than 450,000 ft^2 retail space, provides customers with a selection of several well-known brands. Tenant stores offer the shoppers a wide range of carefully chosen brand name products. Today VFO is market leader in the US outlet retail industry[5].

Centers of this type embody a unique type of shopping centers; their emergence can be led back to the existence of factory outlets. In the beginning they were established to offer the company's products to employees and factory workers at a reasonable price as a kind of fringe benefit[6]. Obviously, producers offered products which could not be sold through traditional distribution channels. Another distinguishing feature of outlet centers is that a remarkable part of the goods comes from commercial channels so in many cases some of them have no articles in all sizes. (Sikos, T.T. 2009).

[4] 1 square foot = 0.0929 m^2

[5] http://www.vfoutletcenter.com/vf-outlet-reading-pa-our-history.html, retreived on July 25, 2009.

[6] Makó, A. 2007.

The location of factory outlets was connected to industrial sites, while in the process of choosing a location for an outlet center was primarily determined by commercial aspects and aimed to attract the potential buyers. An important factor was that these centers should appear as competitors neither for the brick and mortar stores located in the traditional shopping areas and shopping centers; nor for the downtown shopping centers. This can be reached by placing them to the agglomeration zone of the towns. These commercial centers rely on customers coming by car.

To be able to define outlet stores, first the definition of „outlet retail units" should be clarified. Those stores can be considered outlet retail units which are owned and operated by manufacturers of branded products or which enjoy exclusive rights to sell that certain brand and finally those sellers that operate primarily in outlet centers. *Outlet centers are shopping centers where at least 50% of the tenants sell the manufacturer's own brands.* (Sikos, T.T. 2009).

In appearance, outlet centers can vary: one type is the so-called strip mall, forming a U or an L shape. Another type is the closed mall-type, whose shape developed from the strip malls. This is a transition between the shape of the first and the third type. The most successful shape is based on the village concept that merges the advantages of the two previous types. This shape unifies the benefits of the strip malls; still, it forms a closed independent unit. Nowadays 98% of the newly built outlet centers are built in this shape. The aim of the architects when building this „Center in Village-Style" was to create a „village" or „small town" atmosphere that reflects the heartbeat of the center of a settlement (Becker, T.–Motzka, C. 2004). The importance of this shape is also underlined by the fact that this shape encourages impulse buying, thus shops can attract and keep buyers and realize larger profits. The success of outlet centers can further increased by adding food courts, allowing restaurant chains to join. This way the time buyers spend at the outlet centers can be increased even by 50%.

Outlet centers in the USA

By now, outlet centers have become incredibly popular; presently some 217 centers operate throughout the United States. Their total GLA[7] is 17.8 million $m^{2.}$ The size of an average American outlet center is about 81,411 m^2. The average area of the 20 largest centers cover 190,000 m^2 . The centers operating at present are owned by 74 corporations, the three largest of them are Chellsee, Prime and Tanger and they together own 93 centers. Today 44 retail outlet centers are being developed throughout the USA. The number of shops located in

[7] Gross Leasable Area.

Photo 2. Woodbury Common: one of the most popular outlet centers in the USA

the centers is 11,544, and most of them belong to 305 retail chains. The size of an average network is 38 units. This was enlarged by 302 stores which belong to 48 chains. The return from sales is about 17 billion USD which accounts for 2% of the total turnover of the USA (Vogels, P.H.–Will, J. 1999).

As surveys show, the outlet market flourishes despite the economic crisis, but in many times quality and price are reciprocally proportional. According to Forbes magazine, the buyers in outlet centers do not undertake only the lengthy hunt for sales, but they often make overseas trips as well. One of the most popular destinations among the American centers is „Woodbury Common" in Central Valley with its 850,000 ft^2 area. The 225 stores of the center are stretched over 572,000 m^2 (*Photo 2).*

In 2008 the outlet center was visited by 10 million buyers. Many of them arrived from Europe, the Middle-East and Asia. „Some tourists from Asia visit the famed Woodbury Commons in Central Valley, N.Y., they get off the plane at JFK or LaGuardia international airports, hop in a cab with three or four empty suitcases and simply say "Woodbury." And the cab driver knows where to go".[8]

[8] http://www.forbes.com/2008/07/03/style-shopping-outlets-forbeslife-cx_ls_0703style.html, retrieved on July 25, 2009.

The American Forbes magazine tried to depict the key of the success of these outlet centers. According to them, this can be attributed to the amazing discounts, high quality, and the selection of the most popular national and international brands offered to the customers.[9]

Outlets Break into the European Market

The vivid „grey market" trading of the goods, and the effects spoiling brand reputation were combined with the success of the US outlet and these all resulted in European expansion. In Europe McArthurGlen was the first to open an „American style" outlet center in Chesire Oaks (UK) in 1995. The settlement of the outlet centers in England was supported by the British authorities, because they were located outside the towns, and consequently, their effect on the retail units in traditional commercial zones was less than that of inner-city shopping centers. Thus city-planners were more lenient with this new form of shopping centers. This view helped their rapid expansion in England. Today almost 40 outlet centers can be found in the United Kingdom. By 2008 the number of outlet centers in the European market reached 123, their area covers 7.5 million m^2 in 21 countries (*Fig. 1).* In 2008 in the outlet retail market about 5% increase could be observed compared to the previous year. The existing 123

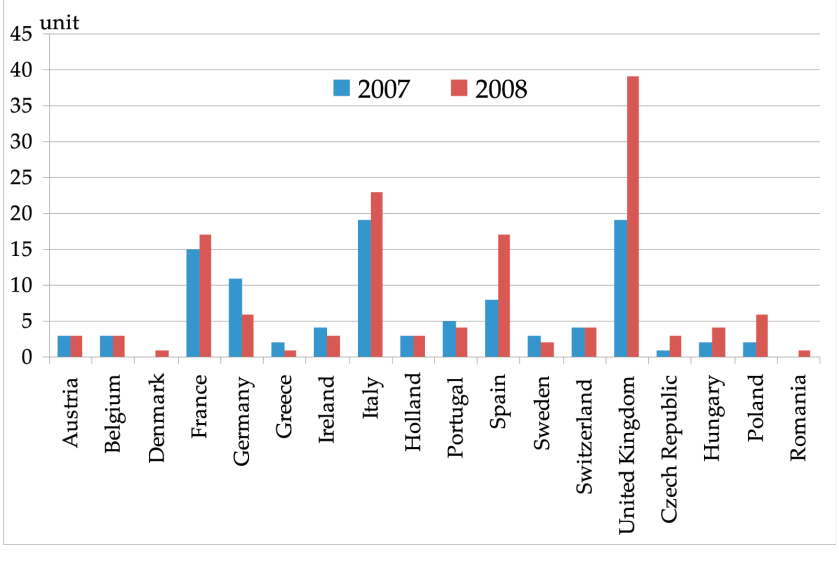

Fig. 1. The number of outlet centers in Europe in 2007 and 2008

[9] Delux Életmód Magazin. A világ legjobb dizájner outlet üzletei. 2008. július 09. (Deluxe Lifestyle Magazine. The world's best designer outlet centers).

centers are owned by 59 corporations. The 20 largest centers are located on 33% of the total GLA of the centers, belong to 14 owners and are located in 11 countries. In 2008 in Italy 23, in France and Spain 17–17, in Switzerland 4 and in Germany 6 outlet centers operated and these numbers are expected to grow. The majority of today's outlet centers has their own entrepreneur background and established their own links with manufacturers or sellers (Vogels, P.H.–Will, J. 1999; Maier, H. 2001).

At the moment, the largest outlet centers and most feverish building activities can be found in Great-Britain, Spain and Italy. The number of outlet centers is increasing year by year, states the survey conducted by Ecostra Research Institute[10]. 11 new centers were opened in different European countries and only three were closed due to lack of interest. Considering the last 12 months, the number of retail outlets increased by 6.4% only in Europe, while the size of the retail space showed 11.4% increase. According to the opinion of market researchers, in the case of factory outlets, investment funds might reach even an outstanding 17% profit, while this number for conventional shopping centers is about 10% even at their best[11]. The success of the outlet centers can be explained partly by the lower price of goods, and – as Harvard professor Rem Koolhaas claims – partly by the unique experience of shopping as a popular pastime activity (similarly to the case of shopping centers).

The strong market competition in the West European countries encouraged the investors to turn their attention to Eastern Europe. It is not surprising that in Poland already 6 outlet centers operate and another 4 ones are to be opened. In the Czech Republic three outlet centers, and in Hungary five outlet centers can be found. In these countries there is a fierce competition to get the best locations and to enter the market as soon as possible. A good example of this is Budapest where Premier Outlet Center and GL Outlet Center put up a great fight until they were opened. A similar case could be observed in Prague as well, where after the opening of the first outlet center (Fashion Arena Outlet Center) two more centers were being built, making the market in the Prague gravity zone saturated. The case of Bucharest was rather alike, with the parallel construction of three centers.

Competition makes several factory outlet centers unable to operate and they often get closed down. In Great Britain numerous outlet centers were forced to withdraw due to market saturation, and the case is very similar in Sweden and Switzerland. Leoville Premium Outlet near Vienna had to face the same fate in June 2008. The center had to be closed down due to lack of steady buyers and tenants that were lured away by the nearby outlet center in Parndorf.

[10] Marktübersicht. Factory Outlet Center in Europa. Ecostra, Wiesbaden, 2008.

[11] Jó befektetés a factory outlet. (Factory outlets are good investments). Menedzsment Fórum. 2006. május 26.

Outlets in Hungary

Premier Outlets Center

Premier Outlets Center, the very first outlet center in Hungary opened its gates for the general public in November 2004 in Biatorbágy, near Budapest (*Photo 3).* The center introduced a completely new way of shopping in Hungary by offering world famous brands at 30–70% discount (Sikos, T.T. eds. 2007). The outlet center can be reached easily on highways M1, M7 and M7. Considering its shape, Premier Outlets Center is a village-type, closed center, where shops are connected by a roofed sidewalk while the court operates as a parking lot. This shape makes it easier for the buyers to browse and choose the shops. Because of the arrangement, any shop can be accessed from the car park easily.[12]

Photo 3. Premier Outlets Center (Biatorbágy, Hungary)

The investment of the second phase of the center – during 2005 – was enlarged with 4,800 m^2 and another 30 stores. Following the total utilization of the buildings erected in Phase Two, leasing in Phase Three started in

[12] http://www.eletforma.hu/?r=862

November 2007. As a result of this additional 9,000 m^2 selling area is provided. With this new phase the Biatorbágy complex awaits visitors on 23,420 m^2 with 119 units. The average area of the shops in this complex is 180 m^2, but several stores cover even 400–500 m^2. There is no need for storage in the traditional sense of the word, products are placed in the selling area, and this defines the size of the shops.[13]

GL Outlet

GL Outlet opened in November 2004 on almost the same size of trading area in Törökbálint, near the local commercial park. In the center operate more than 120 shops. Due to its previous unfavourable business strategy, GL lagged behind in the competition. After Ségécé Corporation bought the center in 2007, it can revive. The French company operates 17 centers in Hungary, and another 345 institutions in 10 countries. Its successes give hope to change the picture of GL outlet center with a lot of marketing and repositioning activities.

M1 Outlet

In spring 2008, the gravity zone of Budapest was enlarged with another outlet center. Near Premier Outlets Center, M1 Outlet was opened, merging the outlet form with the features of an inner-city shopping center. The appearance of the building does not even resemble an outlet center, since it is a two-storey, completely closed building with a glass roof, elevators and escalators. On 16,500 m^2 the center provides 10,500 m^2 leasable retail space for its tenants. The immediate gravity area comprises 230,000 people, while in the wider attraction zone live 2.4 million. „The selection in an outlet center is based on a different concept than in a shopping center" – says Ágnes Varga. While the aim of the visitors in a shopping center is entertainment, people come to the outlets to shop. While only 10% of the visitors buy something in a shopping center, this rate is 50–60% in the case of outlet centers." – she adds.[14]

The real competition of the three Budapest outlet centers is an establishment operating on the Austrian side of the border, in Parndorf, which is the fifth largest outlet center in Europe. In the Austrian center almost 200 stores operate, almost twice as much as in Premier Outlets Center, and represent brands that cannot be found either in Hungarian highstreet shops or in outlet centers.

[13] http://www.infovilag.com/hir-9971-bejott-az-outlet-ma-folavattak.html
[14] Istvánko, V. 2007.

M3 Outlet

In May 2008, M3 Outlet the first outlet center in East Hungary was opened in Polgár. Because of its locational decision, it does not pose a competition for the other three centers. Polgár was the ideal location being 50 km far from all the three regional centers, Miskolc, Debrecen and Nyíregyháza and can be accessed easily on a highway. The study surveying five eastern and north-eastern counties in Hungary by AC Nielsen shows that 90% of the respondents shop in outlet centers, 58% of them would buy mainly sportswear, 52% would shop for shoes.[15]

Comparative Analysis of Premier Outlets Center and Designer Outlet

About the Designer Outlet in Parndorf

McArthurGlen multinational group was founded by an American businessman, J.W. Kaempfer, and his partners, and arrived to Europe in 1993, establishing a formerly almost unknown form of retail trade. Even at those times its main tenants included large American clothes manufacturer companies. Liz Claiborne, Polo Ralph Lauren, Nike, Gap and Levi's saw the opportunity in the European market, and even today they form the backbone of the McArthurGlen outlet stores.[16]

The Parndorf outlet center was established in 1998 by the McArthurGlen group. The group is Europe's leading outlet-chain, which was the first to introduce the new concept in the continent. The outlet center in Parndorf was the first outlet center in the former Eastern Europe and in the German-speaking area, and its pioneer role brought huge success. Apart from Austria, the American investor today operates 15 shopping centers in Great Britain, France, Netherlands and Italy. The investment in Parndorf cost 80 million EUR, and reached its present size throughout several phases of enlargement. In 2002, 15 stores, while in 2005 another 50 shops were added to Designer Outlet under the name of BIGG Outlet Shopping. Completing the phase in 2005 cost 21 million € to the owner. BIGG Outlet Center is fully covered and air-conditioned, making shopping more comfortable even in bad weather. Right next to Designer Outlet Center a hypermarket-like establishment was opened in 2005, offering 30% discount too (*Photo 4).*

During the time passed since its opening, the center attracted 20 million buyers. In financial year 2007–2008 profits increased by 13%. The largest

[15] Based on the article in Heti Világgazdaság, April 8. 2008.
[16] http://ingatlanhirek.hu/index.php?channel_id=3&cmd=hir_profile&news_id=708

Photo 4. Designer Outlet Parndorf (Parndorf, Austria)

increase in the previous year was 55%, in the field of children's apparel. The income deriving from shoe sales grew with 23%, and that of underwear with 19%, sportswear with 13%, fashion articles with 11%. Buyers visit the center four times a year on average and generally spend two hours there. Most of them come from Vienna and Lower Austria, since Parndorf can be reached in 30–40 minutes from the capital on the highway. About one third of the shoppers come from Slovakia and Hungary. Bratislava is located about the same distance from the outlet center as Vienna and Slovakia does not have a shopping center of this kind. As the research of Designer Outlet show, many of their clients visit Parndorf while on business trip. People travelling from Budapest to Vienna or Germany pass by the center anyway. Besides, for people living in West Hungary Parndorf is much closer than Törökbálint or Biatorbágy, so they will probably prefer Designer Outlet Center in the future too.

According to the communication specialist of Designer Outlet, the Hungarian competition does not mean any threat; their revenue keeps increasing in spite of the fact that besides GL and Premier outlet centers in the Budapest agglomeration zone, in 2006 a new store was opened in Leonsberg as well. Freeport Designer Factory Outlet, which is located only from one hour drive from Vienna, at the Czech-Austrian border should also be calculated with.

The head of Premier Outlets Center shares this opinion. Designer Outlets center cannot be considered a dangerous competitor, because the Hungarian

outlet center's business strategy is to rely on mainly Hungarian buyers from a 100 km radius attraction zone, so the target groups of the two establishments are different. Obviously, despite the large distance, many customers travel 400 kms from Budapest to Parndorf, because the selection of world brands is much wider there than in Premier. The advantage is on the Austrian side of the border and it can be depicted in the choice of goods offered to the potential buyers. The strategy of Premier is reflected in the findings of a questionnaire survey, namely that only 5% of the buyers come from abroad. The bigger Slovakian cities are relatively far, so Slovakian customers are not regular visitors to the center.

In case of the two outlet centers surveyed the two determining features of the shop mix are ladies' and man's wear (*Fig. 2*). Sportswear stores and shoe shops are also of great importance. In Parndorf, stores selling fashion articles make up 41% of the total number of stores, in case of Premier Outlets this rate is almost the same: 38%. The rate of stores engaged in underwear and children's apparel is similar too, about 10% in both centers. Gifts, jewellery, and watches are easier to find in the Parndorf center, their rate in Premier is rather low. This might be a direction for future development of the Hungarian center.

The findings of the survey

In a questionnaire survey 180–180 people were asked. In Premier the research was conducted at the end of November 2008, in Parndorf in mid-December.[17]

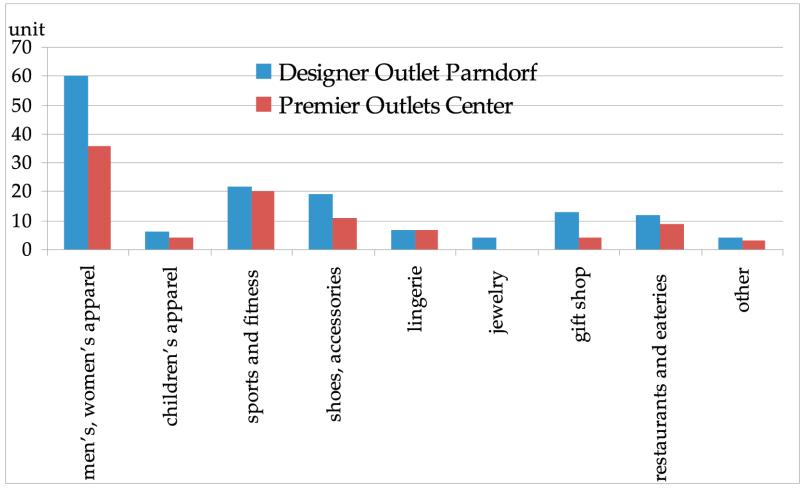

Fig. 2. Shop mix of Premier Outlets Center and Designer Outlet Parndorf, 2008

[17] The research was carried out by E. Huszárik and A. Marton, graduates at J. Selye University.

According to the managing director of GVA Robertson Hungary, the average Hungarian outlet shopper is 30–50 years old, belongs to a high-end, „upmarket" category, and wishes to buy high quality goods. The frequency of their visit to the outlet center is 3–6 times a year, spend minimum two hours there at a time, and seeks goods in the price range of 5,000–10,000 HUF. They are likely to live within 60 km radius of the center, but some visitors are willing to travel even 1.5–2 hours.[18] The above description was partly justified by the results of the survey.

Who make up the clientele of the outlet centers according to ICSC?[19]

- Sex: mainly women
- Average age: 40 years
- Occupation: employees
- Qualification: college or university degree
- Household income: 50,000 USD/year
- Social status: middle class or above
- Family: with children
- Strongly shopping-oriented
- Fashion conscious
- Brand loyal

As the data of the survey show, the majority of the customers at Premier are Hungarian, only 4% of the shoppers are foreign citizens (Slovak, German, Romanian). Opposed to this, 50% of the visitors in Parndorf said that they came from Slovakia, 29% from Austria, 13% from Hungary and 8% came from other countries (the Czech Republic, Romania, Germany).

In Parndorf most of the visitors are white collar workers, closely followed by intellectual workers and entrepreneurs. So typically people with higher income visit the center. Meanwhile in the Budapest outlet center vocational workers also appear among the customers, probably because of the lower prices. The rate of retired people among the customers is rather low in both centers, since they do not belong to the target group in this type of retail trade. The number of people belonging to „other" occupation is also low, since this is where the unemployed and housekeepers (dependents) also belong to and they probably cannot afford the price level in the centers.

The distribution of the customers by age group is almost the same at the two centers, with an outstanding rate of young and middle-aged buyers. This supports the hypothesis about the centers.

Shoppers visit the centers primarily with the aim to buy clothes, which is not surprising considering the fact that these centers mainly focus on selling clothes. Their most popular articles to sell include fashion articles, shoes and

[18] Based on the article in Világgazdaság, April 8, 2008.
[19] International Council of Shopping Centers.

sportswear. As it can be seen, visitors to the centers have a designated aim, they intend to buy something specific, only 1–2% of them arrive without any plans. Apart from the categories appearing in the questionnaire, people look for children's apparel, eyeglasses, electrical appliances, toys and perfumes in the centers.

In the survey the average amount spent by visits in the centers was also asked. As the responds show, in Designer Outlet center the majority of the customers (34%) spends between 50–100 EUR and 100–300 EUR. None of the respondents spend more than 1,000 EUR. If only Austrian buyers are considered, due to their higher living standards, they leave larger amounts in the shops than their counterparts from the neighbouring countries. This explains the roughly similar spending rate in the case of the Hungarian and Austrian centers. At Premier Outlets the average spending (for 43% of the respondents) is between 10,000–20,000 HUF.

During the analysis special attention was paid to the effect of other shopping centers and outlet centers on the two examined centers. In the questionnaire it was also asked which shopping centers and outlet centers the respondents visit regularly.

Based on the results of the survey, it can be assumed that by purposeful marketing strategy and well-advertised sales most people could be lured over to other centers.

From the 180 respondents in Parndorf, 12% happily visits Donaucentrum (Austria), which was built in 1975 in North Vienna on 22,800 m^2. During the years the center was enlarged several times, and in 1998 a movie theater was also added to the selection. Today the total site extends over 25,000 m^2.

Because of the high rate of respondents from Slovakia, many of them (11%) mentioned Polus City Center in Bratislava and Aupark, and 10% visits Avion Shopping Park regularly. Polus City Center is the very first shopping center in Slovakia. It opened its gates for the general public in 2000 on the selling area of 40,100 m^2. The location of the center is ideal: it is only 3 km from the city center. Aupark in Bratislava with its 100,600 m^2 area is the largest shopping center in Slovakia, which was opened on 15 November, 2001. The commercial center is located near Icheba exhibition area where 35 expositions are organized yearly with 600,000 visitors.

To Auparks' outstanding turnover its favorable location also contributes: it is located near the motorway connecting Prague and Budapest. Aupark was extended in 2002, when a movie theater and an 18-lane bowling center were added. These establishments of entertainment reached 15% increase in revenue. The area of the shopping center was extended again in 2007.

Avion Shopping Park is another outlet facility of the Slovak capital. Its superstructure differs from the others, as its name suggests, this shopping park is a set of buildings, where the stores are not connected by a covered walkway.

It is located 2 km from the airport, near highway D1. In 2008 the complex attracted 7.65 million visitors. Future plans of the park include enlargement for one billion SK, and the new wing will provide home for the country's largest toy shop. With this investment, the complex will become the largest shopping center in Slovakia.[20]

Among the inner-city shopping centers, the main competitors for Premier Outlets Center are Árkád and Westend City Center, among the outlet centers Designer Outlet Parndorf pose.

It can be assumed that 40% of customers in Designer Outlet Parndorf are eager to visit Sale City Süd near Vienna while on their shopping trip. This is also a surprising result, since this is Austria's oldest shopping outlet. The Parndorf center is popular with Hungarian shoppers. 14% of the respondents indicated Leoville outlet center, even though it was closed down in June 2008 because of business failure. 24% of the respondents in Parndorf have already visited Premier Outlet. This can be explained by the large rate of Hungarian and Slovakian customers.

40% of the visitors to the Biatorbágy center – which attracts mainly Hungarian buyers – often visits Austria's most popular outlet center. Probably the wider product range, and in some cases the lower prices make it attractive. The results of the survey show that M1 outlet lives up to the hopes, because 32% of the shoppers to Premier Outlets Center like going to the nearby center. However, the popularity of GL Outlet lags well behind the other two centers in the neighbourhood of Budapest.

Out of the services offered in outlet centers, 50–50% of customers use cafés and restaurants. Other services were not mentioned. The answers indicate that shoppers generally spend several hours in the centers, so offering different additional services have a positive effect on the revenue.

In the research the most appealing fashion brands were also surveyed. The results moved on a wide scale, so they were divided into four groups: women's and men's apparel, sportswear, shoes and jeans brands.

In case of both centers from the shops selling the most popular fashion brands stand out the American brand Gant; Mango (which is very popular with young ladies) and the Dutch Mexx should also be mentioned. From the high-end of the scale Armani, Estee Lauder, Gucci and Prada were mentioned, but only by customers at Designer Outlet center. While by visitors to the Biatorbágy center lower price-range brands like Kenvelo, Reserved, 4You were pointed at.

Not surprisingly, from sportswear and sports equipment brands the most popular ones were Nike, Adidas, and Puma. As the experiences show, a great number of visitors go to the outlet centers to get these particular brands.

[20] http://www.avionshoppingpark.sk/noweonas/faktyidane.html

In the market of shoe brands in Parndorf the Swiss origin Marc, while in Hungary the German Salamander enjoy the largest popularity. Visitors in the Hungarian center mention three times as many shoe brands as visitors in Parndorf. The explanation might be that in the merchandise mix of Premier Outlets shoes have a bigger emphasis than in that of Designer Outlet.

As for jeans brands, the two centers show a fairly similar picture: in both outlets Mustang proved to be the most popular brand. Levi's and with the Hungarian shoppers RetroJeans were also mentioned. 18.9% of the respondents are not brand loyal. However, Hungarian shoppers seemed to show more loyalty, 87.2 of them stick to their favorite manufacturer, while in case of Parndorf, only 75% of the people surveyed claimed the same.

Most of the buyers visit the centers by car. In the case of Premier, about 25% of the shoppers use public transport. This rate in Parndorf is insignificant. The center can be reached from Vienna by means of public transport on Fridays and Saturdays. Premier Outlets Center has its own bus stop, and can be reached by a 20 minute bus trip from the Hungarian capital.

The gravity zone of Premier Outlets Center can be seen in *figs 3* and *4*. Most buyers arrive from Budapest and the attraction zone of the center basically covers Budapest (73 people), Budaörs (11 people) and other 34 settlements in Hungary. Previous surveys suggest that the gravity zone stretches as far as a circle bordered by Győr, Siófok and Szolnok. In some cases buyers arrive from a large distance, sometimes from 150–200 km from Sopron and Eger, hoping for favourable prices.

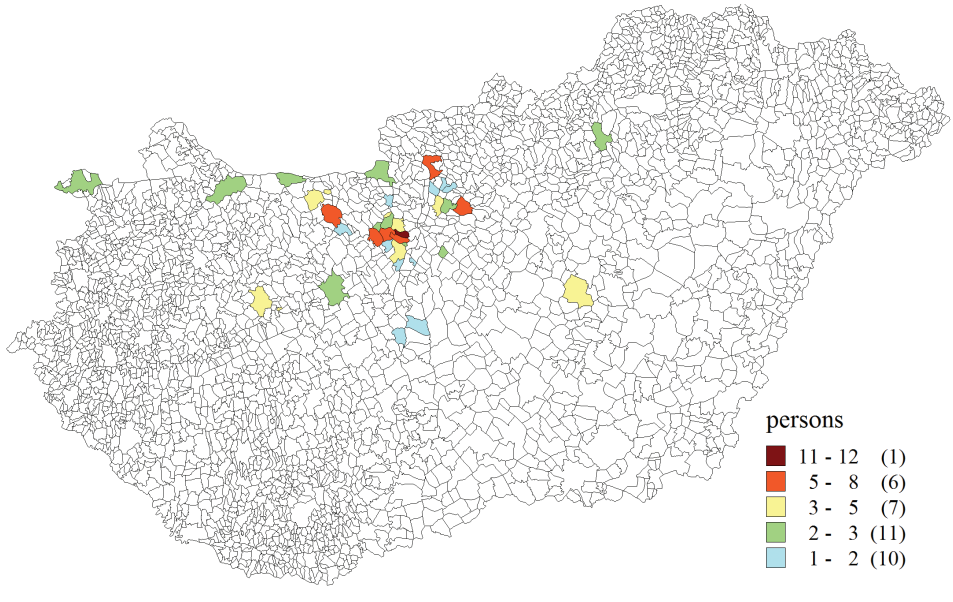

Fig. 3. The Hungarian gravity zone of Premier Outlets, 2008 (persons)

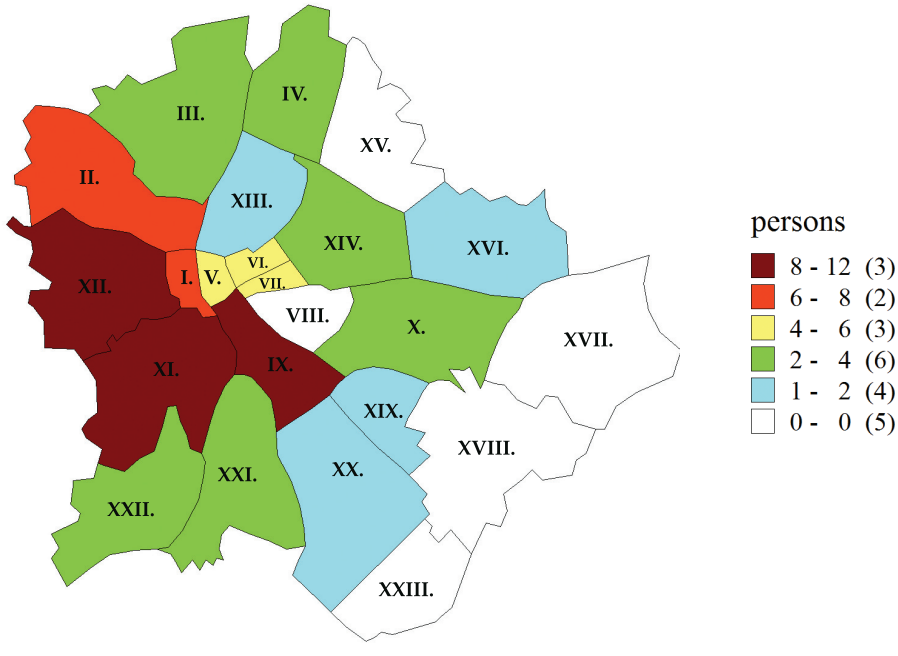

Fig. 4. The Budapest gravity zone of Premier Outlets Center, 2008 (persons)

Analyzing *Fig. 4*, it looks that the major part of the customers from Budapest comes from three districts (9th , 11th, and 12th) as they are located closest to the examined center. Customers arriving from these three districts make up almost 40% of the total number of shoppers from Budapest.

16.4% of the buyers in the sample come from district 11th. This is not unexpected, since this is the district of Budapest with highest population number and the rate of unemployment is the lowest here. The bus station at Etele square, near Kelenföld Railway Station, also makes it easy for the potential buyers to reach the outlet center.

Although there are a great number of shopping and entertainment centers in district 2nd (Budagyöngye, Rózsakert, Rózsadomb Center, Stop.Shop, Széphalom, Új Udvar), from the shopping centers Mammut-1 and Mammut-2 stand out. They are situated near Moscow Square and form one of the biggest shopping centers in Budapest, people often visit the outlet center in Biatorbágy too.

The survey also shows that from some districts of the capital (district 8th, 15th, 17th, 18th and 23rd) no customers visit Premier Outlets at all. This can be explained by the large distance from the center and also by the fact that some other shopping centers are much easier to reach (Aréna Plaza, Árkád, etc.).

In *figs 5* and *6* the gravity zone of the Parndorf center in Hungary, Slovakia and Austria can be seen. The majority of the customers arrive from

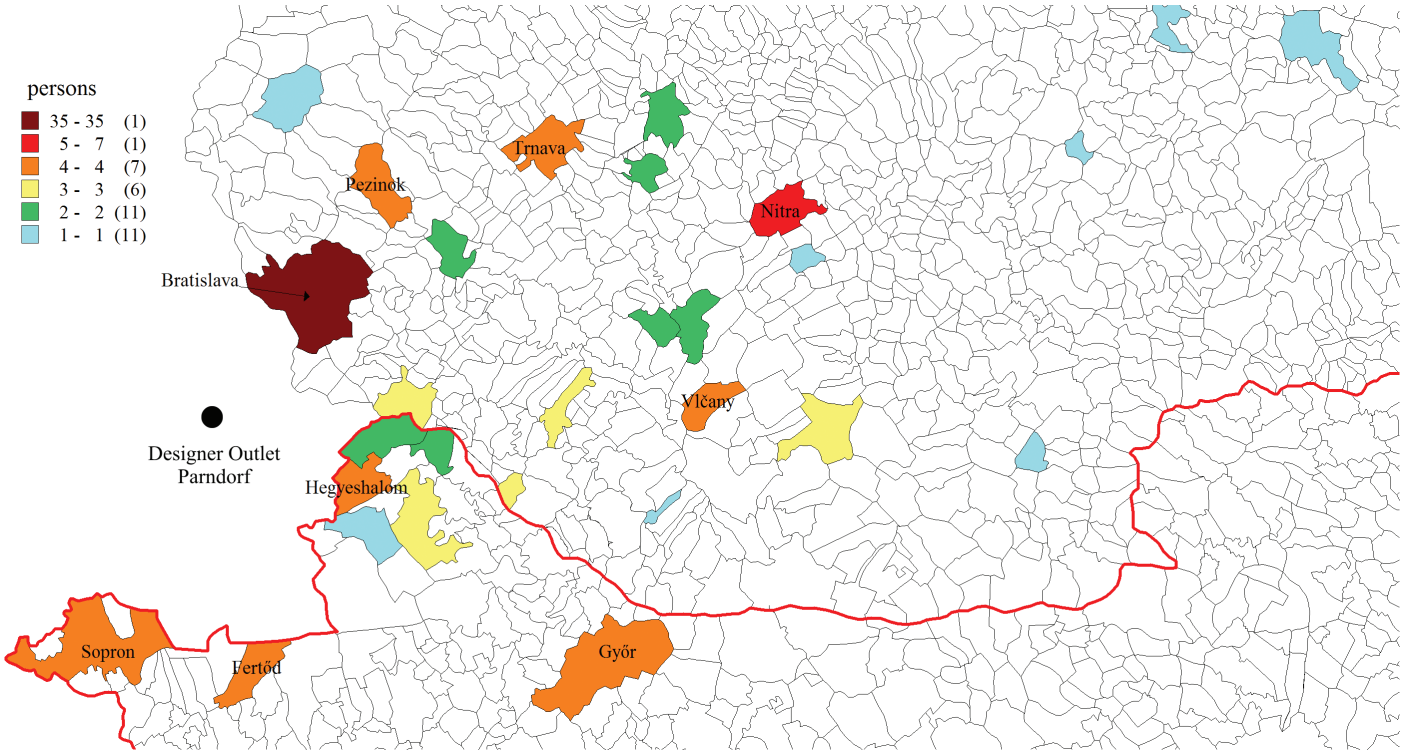

Fig. 5. The gravity zone of Designer Outlet Parndorf in Slovakia and Hungary, 2009 (persons)

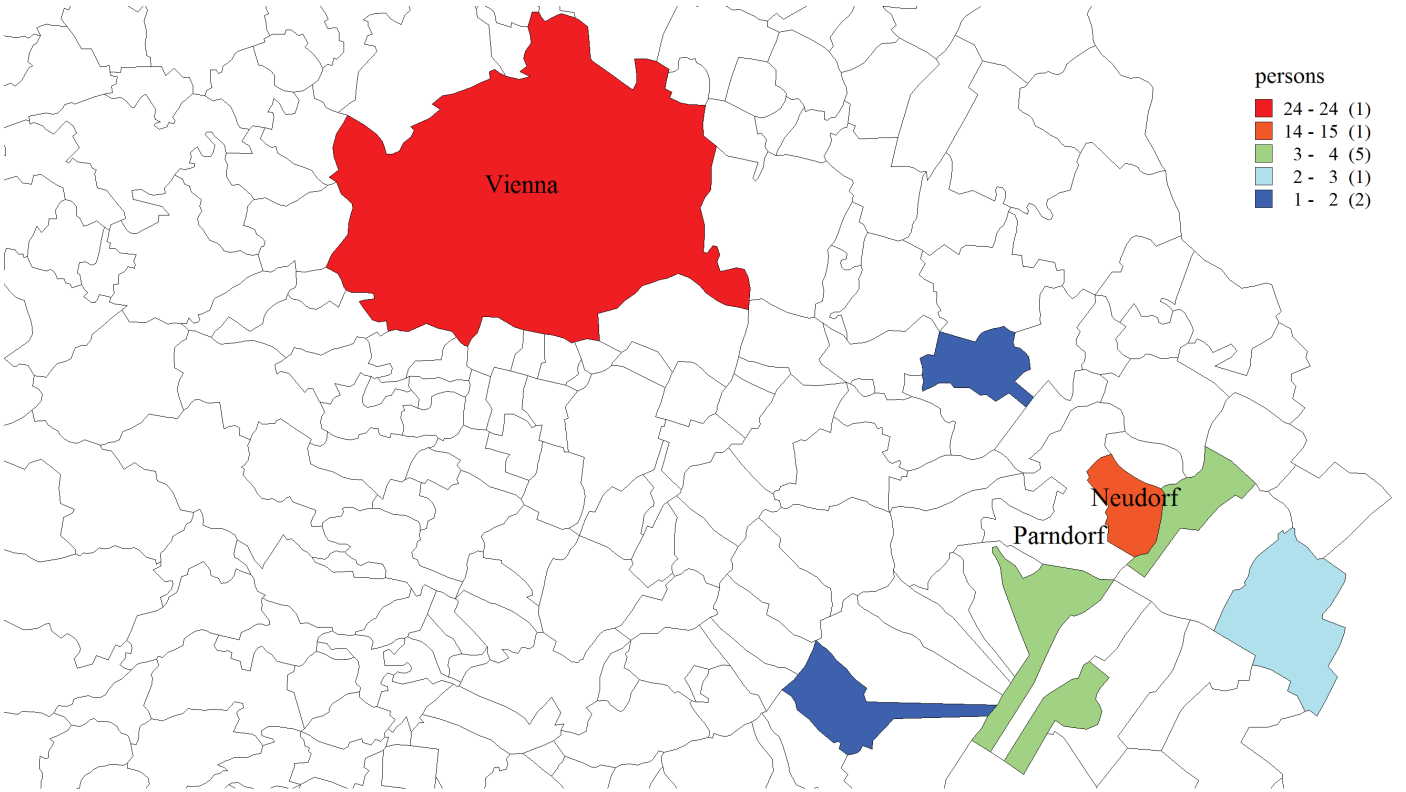

Fig. 6. The gravity zone of Designer Outlet Parndorf in Austria, 2009 (persons)

Vienna and Bratislava, since Vienna is located only 50 kms, while Bratislava only 35 kms from the outlet center. Looking at the maps showing the gravity zones it can be clearly stated that the greatest impact on the gravity zone is made by the population of the two capitals. The significant number of buyers coming from Slovakia suggests that time has come to build a similar category outlet center in Slovakia. At the moment, there is no retail unit of this kind in Slovakia. That is why it is not surprising that people are willing to travel even 230 kms to take advantage of the outlet prices. On contrary to this, Győr is the farthest city where people arrive to the center from, because customers are lured away by the centers near and around Budapest (mainly Premier Outlets).

Online Outlets

In the last few years – as it was inevitable and unavoidable from the popularity of the outlet centers, – the concept has spread to the World Wide Web as well. Online shopping is more cost effective for the buyers due to the extra discounts offered. These discounts can be explained by the lack of maintenance costs for the stores and by savings on travel fares. Goods can be ordered comfortably from the armchair via e-mails or telephone. And if the goods received do not meet the expectations, they can be returned. Considerable amounts of costs can be saved on the wages, since there is no need for shop assistants. In case of online buying, customers can save up to 50% on the prices due to the discounts, in spite of the shipping costs[21].

REFERENCES

A világ legjobb dizájner outlet üzletei. (The world's best designer outlet centers). – Deluxe Életmód Magazin, July 9. 2008.

Becker, T.–Motzka, C. 2004. Strukturwandel im Einzelhandel in der 90er Jahren. – E-Book, Marburg.

Bühler, T. 1990. City-Center – Erfolgsfaktoren innerstädtischer Einkaufszentren. – E-Book, Erlangen–Nürnberg.

Istvánko, V. 2007. Kelet-Magyarországon is támadnak az outletek. (Outlets attack in Eastern Hungary too.) – Menedzsment Fórum, November 8.

Jó befektetés a factory outlet. (Factory outlets are good investments). – Menedzsment Fórum, May 26. 2006.

Maier, H. 2001. Factory Outlet Center – eine für Deutschland neue Vertriebsform. – Verlag von Dr. Kovac.

[21] http://www.misterinfo.de/publish/auskunft-und-infos/preise-und-schnaeppchen/online/ein-online-outlet-sorgt-fuer-niedrige-preise.

Makó, A. 2007. Az első Designer Outlet Center Magyarországon. (The First Designer Outlet Center in Hungary) – In: Sikos, T.T. (eds.): Bevásárlóközpontok jelene és jövője. (Present and Future of Shopping Malls.) Research Institute of J. Selye University, Komárno, Slovakia

Marktübersicht. Factory Outlet Center in Europa. A Market Survey from 2008. – Ecostra Research Institute, Wiesbaden.

Momberger, C. 2001. Factory-Outlet-Center: Chance für den Einzelhandel oder eine Bedrohung bestehender Einzelhandelsstrukturen. – E-Book. Giessen.

Momberger, C. 2002. Die wachsende Bedeutung des Online-Shopping und die Auswirkungen auf den stationären Eizelhandel. – E-Book, Giessen.

Sikos T.T. 2009. A marketingföldrajz kialakulásáról és feladatairól. (On the Development and Tasks of Marketing Geography). – Magyar Tudomány, *6*.

Sikos, T.T. (eds.) 2007. Bevásárlóközpontok jelene és jövője. (Present and Future of Shopping Malls.) – Research Institute of J. Selye University, Komárno, Slovakia

Sikos, T.T.–Hoffmann, M. 2004. A fogyasztás új katedrálisai. (New Cathedrals of Consumption). – Centre for Social Sudies of HAS, Budapest.

Vogels, P.H.–Will, J. 1999. Raumordnerische und städtebauliche Auswirkungen von Factory-Outlet-Center. – Vs-Verlag.

Hungarian Geographical Bulletin 2009. Vol. 58. No 3. pp. 201–214.

Housing preferences and the image of inner city neighbourhoods in Budapest

Eszter Berényi B.[1]–Balázs Szabó[2]

Abstract

The study presents an analysis of inner-city neighbourhoods of Budapest. The major findings are as follows: (1) The real estate prices increased in all parts of the inner-city in the last decade but the rate of change was varied. The most deteriorated quarters rapidly developed because of the reconstructions and the new constructions, however the highest prices are still recorded in the traditionally most prestigious neighbourhoods. (2) The social structure of the inner city significantly changed. The new inhabitants – who moved to the inner city after 2000 – are younger, more educated than the traditional inhabitants who did not leave the inner-city after 1990. The reasons for moving into the inner-city are different in the two groups. The location became the most important factor, and some special quarter related reasons emerged (good reputation). (3) The inhabitant's views about the inner-city also transformed, mainly because the housing preferences of the old and new inhabitants are different. The older inhabitants have a more critical attitude toward the inner-city than the new ones. The family house in the suburban greenbelt is their most preferred housing type. The satisfaction with the neighbourhoods depends on mostly the condition of buildings and the new functions of the quarters. The emergence of different social groups in the neighbourhood is already perceived by the local population.

Keywords: Budapest, inner-city, image of the city, housing preference, urban regeneration.

Introduction

The aim of this paper is to examine how the transformation of the inner city is seen by members of local society. Our hypothesis is that population change has strengthened in all areas though only a small part of the inner city has experienced renewed during the last years. There have appeared certain social groups which obviously prefer to live downtown, namely students (about 100,000 students are enrolled in the universities and colleges of the capital) and foreigners who study or work in Budapest for a few years.

The preferences of the newcomers are different from those of the traditional local population. The central location is supposedly favoured by both. The traditional dwellers

[1] Development Council of Budapest Agglomeration. H-1184 Budapest, Üllői út 400. E-mail: berenyibeszter@gmail.com

[2] Geographical Research Institute, Hungarian Academy of Sciences. H-1112 Budapest, Budaörsi út 45. E-mail: szbazs@gmail.com

(mainly the older ones) emotionally connect to the quarter where they know their neighbours and the local shops, while the newcomers move in to be close to the universities or work places and bars, cafes, restaurants, and cultural institutions.

Though the transformation of the inner city is a visible process, its mental perception might be quite varied. There could be significant differences between the opinion of the traditional and the new inhabitants. This latter group may claim the inner city more preferable than the traditional dwellers.

The analysis of inner city transformation is based on two different sets of information. One is a series of official statistical data[3], the other is a sample survey[4] carried out in 2007. The first part of our paper gives a short overview of the changes in inner city neighbourhoods (and especially in our case study areas) as reflected in the statistical data. The second part of the paper will focus on the inhabitants' opinion and preferences revealed by the results of the sample survey.

Inner city transformation in the capital of a transition country

Briefly, Budapest can be divided into the following principal zones. In the centre of the town can be found the city (central business district) where offices and administrative and cultural institutions are concentrated. The inner residential area – surrounded the city – where 25% of the population of the capital live is the eldest part of Budapest. It was rebuilt after the flood of Danube in 1838, but the recent building stock originates from the period between the unification of Pest, Buda and Óbuda in 1873 and World War II. This densely built historical city center is surrounded by public parks, stations and industrial areas in Pest side, and by villa quarters in the Buda side. The industrial zone is mixed with old deteriorated residential areas and some socialist housing estates. The outer districts – the settlements which attached to the capital in 1950 – contain large housing estates and continuously built family houses.

The inner city of Budapest has been greatly transformed during the last twenty years. The most spectacular changes have been the emerging urban functions. The number and variability of shops, services, and offices increased while the building stock more or less remained the same. In the early nineties, the housing market was mainly driven by functional conversion of the flats in the inner parts of the city (Kovács, Z.–Wiessner, R. 1996). Some new houses were already built in the nineties but the majority of construction projects started after 2000, partly as a result of the new housing policy (Hegedüs, J.–Teller, N. 2006). At the end of the 1990s, the housing market

[3] These data are produced by the Central Statistical Office. Their major sources are regular surveys (housing statistics, population census) and officially registered price information in the real estate business.

[4] The survey is a part of a DFG project: Between Gentrification and Downward Spiral: Socio-spatial change and persistence in residential neighbourhoods of selected CEE urban regions. Our analysis is based on 536 questionnaires (125–150 in each case study areas).

intensified mostly because of favourable mortgage loans which attracted investors. The inauguration of new rehabilitation programmes (Corvin–Szigony) and the continuing SEM-IX project also contributed to the boom in the housing market (Kovács, Z. 2006). The demolition of old deteriorated buildings and the construction of new ones generated changes in the local population. After the fall of the state-socialist regime in 1989, the decrease of the inner city population strengthened not only because of the general demographical decline but also as a consequence of the migration trends. During the housing privatisation the majority of the flats were sold to tenants, thus the new owners could decide whether to stay in their old flats or to sell them. Those who could afford moved to the suburbs while the older and poorer population remained (Csanádi, G.–Csizmady, A.–Kőszeghy, L.–Tomay, K. 2007).

Comparing the housing prices in the different quarters of Budapest in 1997 – before the real estate boom – and in 2006, we can conclude that the most expensive areas have remained the same *(Fig. 1).* The highest prices are registered in the traditionally high class districts of Buda and in the 5th district because of its good central location (near to the most important institutions) and its valuable building stock (Székely, J. 2006).

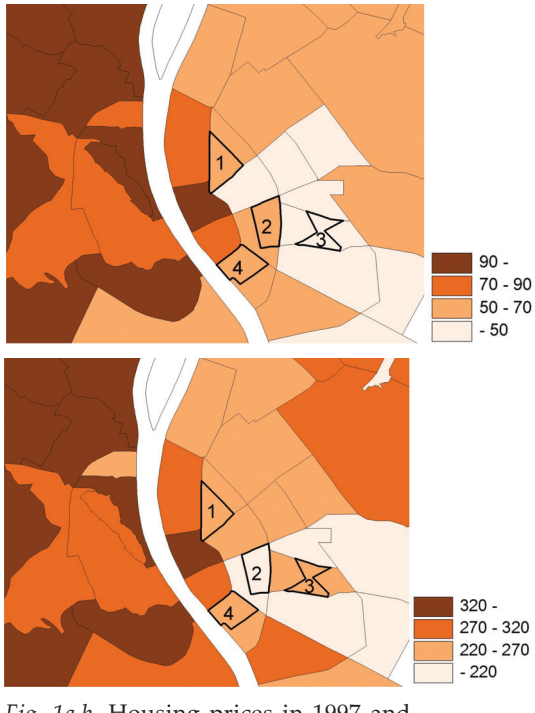

Fig. 1a,b. Housing prices in 1997 and 2006 (1,000 HUF/sqm. *Source*: KSH Ingatlanadattár 1997, 2006

While in 1997 the cheapest quarters were the entire 7th and the central part of the 8th districts, ten years later this situation had changed entirely. The cheapest quarters can no be found in parts of Central-Józsefváros. The increasing prices of Central-Ferencváros are the result of rehabilitation programmes (Egedy, T.–Kovács, Z.–Székely, J.–Szemző, H. 2005). The strongest rise of prices was recorded in the 8th and 7th districts where the cheapest quarters are located *(Fig. 2).* This dynamism is explained by the high number of new constructions. A research project carried out in 2005 revealed that the share of renovated buildings is much higher in the inner part of 8th and 9th districts than in central part of the 8th district, and the whole 7th district *(Fig. 3).*

Fig. 2. Change of housing prices

Fig. 3. Proportion of renovated buildings (%), 2006/1997/2005. Source: KSH Ingatlanadattár 1997, 2006. *Source*: own survey.

Renovation of housing blocks in the most cases meant repainting of the buildings (except of rehabilitation programmes) and didn't result sufficient change in the structure of flats nor the dwellers. The growth of housing prices is the highest in those quarters where the buildings are deteriorated, but there are lots of new constructions.

We have selected four case study areas in the Pest side *(Fig. 4)*. All of them are in different phase of the renewal. Their housing stock is relatively old: 80–90% of the buildings were built before 1945, most of them are 3–5 stories buildings, but there are differences in their condition. Taking a good look at the data on the size of dwellings *(Table 1)* and the maps of housing prices and renovation, we can notice that the biggest flats and renovated building stock can be found in Inner-Ferencváros. Inner-Józsefváros also has large flats and renovated building stock, but its flat prices are still much lower. This probably has to do with the fact that the density of restaurants, pubs is smaller in Inner-Józsefváros than in Inner-Ferencváros. By contrast, the

Table 1. Some features of case study areas in 2001

Case study areas	Ratio of children below 14 (%)	Ratio of population over 60 (%)	Ratio of population with diploma (%)	Ratio of dwellings over 80 m^2 (%)
1. Inner-Terézváros	8.8	29.9	30.4	27.1
2. Inner-Józsefváros	10.0	25.2	29.6	27.1
3. Magdolna- quarter	16.0	19.3	14.1	13.6
4. Inner-Ferencváros	11.2	23.8	30.5	32.3

Source: Census 2001.

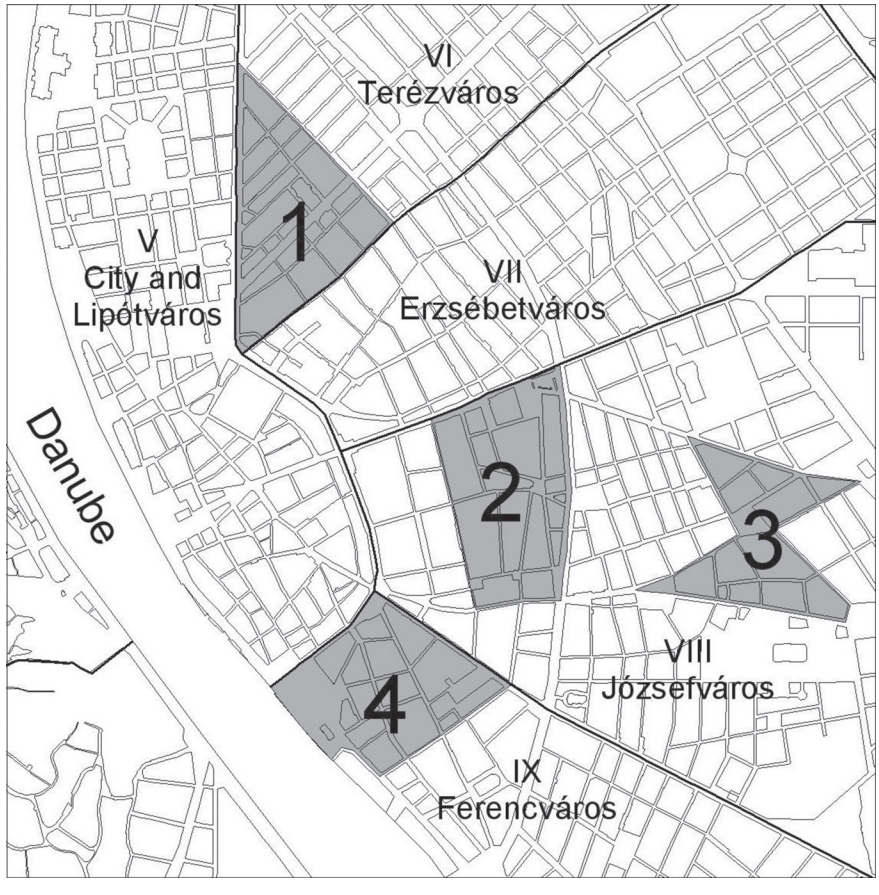

Fig. 4. Location of case study areas

concentration of cultural institutions and cafés is higher in Inner-Terézváros (Földi, Zs. 2006), however, its building stock is in worse condition for lack of renovation.

Magdolna-quarter is characterised by small flats, not yet renovated building stock, lack of shops and services and its inhabitants are traditionally poorer than those living in the inner parts of the city. The rehabilitation programme of the quarter started in 2005 (Kondor, A.Cs.–Horváth, D. 2008).

The number of inhabitants was about 3,000–4,000 in all of the case study areas in 2001, but the composition of local society and the structure of housing stock are quite different *(Table 1).* Our sample survey has also detected many and various opinions of local people about their local environment, local society and mobility.

Socio-demographic differences between the old dwellers and the newcomers

In our survey we examine the two major groups which are: the old dwellers, who lived in their flat before 1989 and the newcomers who moved to their flat after 2000 (the boom of the housing market started at the very end of the nineties). Each of the groups covers the 40% of the total sample.

Table 2. Socio-demographic characteristics of the old inhabitants (moved in before 1990) and the newcomers (moved in since 2000)

Percentage of the	Inner-Terézváros		Inner-Józsefváros		Magdolna-quarter		Inner-Ferencváros	
	–1989	2000–	–1989	2000–	–1989	2000–	–1989	2000–
Single person households	40.3	21.7	30.9	21.3	30.2	15.5	34.4	21.6
Families with children	14.9	23.9	14.6	34.1	15.1	38.0	21.3	21.6
More-generation households	17.9	0.0	16.4	6.4	24.5	8.5	16.4	2.7
Flat sharing communities	1.5	23.9	3.6	12.8	0.0	1.4	1.6	16.2
Young people (below 35 years)	7.5	73.9	16.4	61.7	9.4	47.8	8.2	60.4
Elderly (above 60 years)	67.2	6.5	54.5	8.5	50.9	11.6	59.0	2.9
Primary education or less	6.0	6.5	18.1	6.4	29.3	31.0	26.2	2.7
Higher education diploma	53.7	56.5	30.9	46.8	9.4	23.9	41.0	56.8

The proportion of newcomers is the highest in the Magdolna-quarter (47.7%, while 30–37% in the others) but the share of young people (below 29 years) among these newcomers is much lower than in other districts.

The newcomers are significantly younger and better educated (*Table 2)* in every sample district. The proportion of the elderly (who are generally less mobile) is below 20% even in the Magdolna-quarter where the share of young is lower than in the other districts. This shows that the reasons of moving to Magdolna-quarter are different: in this area proportion of the less educated newcomers is the highest of the young people are the lowest. The more generation households are also numerous in Magdolna-quarter (18.8% while only 10% in the other areas) not only among the traditional dwellers, but also among the newcomers. The high proportion of this household type in the inner city is the result of poverty: several young couples with children move to their parents home because they are not able to buy or rent a flat of their own.

Less of the newcomers than the old inhabitants live in single person households, more of them in flat-sharing communities. This latter type's presence is strikingly strong in Inner-Terézváros. The flat sharing community – which is a typical solution for students and young employees who need cheap flats – is very rare in Magdolna-quar-

ter despite the fact that the rent must be lower here than in the other areas. This quarter does not seem to attract students, which is not only explained by its deteriorated building stock but also by the composition of its local society.

Reasons for moving into the inner city

The decision about moving to a flat primarily depends on the apartment's characteristics and on the building's location. Except Magdolna-quarter, there are not crucial differences between our sample areas in the importance of flat parameters. The dwellers choice is mainly influenced by the area and price *(Table 3).*

A separate analysis of newcomers and older inhabitants motivations allow us to compare the reasons of moving to new areas during two very different periods: before the change of regime and during the last decade. The most frequent explanation of those who moved in before 1990 was that they did not have other options. The housing market didn't function; the inner city flats were owned by the district council in most cases. Because of neglect and lack of care and renovation (and for lack of comfort in some cases) these flats were not among the most favoured.

The central location became the most important factor in all of the examined quarters after 2000. In Inner-Ferencváros, the reputation of the area also had an important impact, thanks to the revitalisation of Ráday street (it was mentioned by almost 20% of the newcomers). The survey results do not confirm our hypothesis: the concentration of restaurants and cultural institutions wasn't a major factor of the newcomers' choice. Nevertheless, its impact is clearly visible in inner-Terézváros where this concentration is significantly stronger than in the other quarters (especially in Magdolna-quarter).

Table 3. Reasons of moving into the quarter (% of movers who mentioned the given reason)

Reasons of moving into the quarter	Inner-Terézváros		Inner-Józsefváros		Magdolna-quarter		Inner-Ferencváros	
	–1989	2000–	–1989	2000–	–1989	2000–	–1989	2000–
Working place is nearby	15.8	37.8	9.3	27.7	20.0	27.1	21.6	19.4
Family/friends are living here	17.5	17.8	11.6	12.8	10.0	25.7	33.3	8.3
Restaurants, bars, cultural venues are nearby	1.8	8.9	0.0	4.3	0.0	1.4	0.0	5.6
The area is well served by public transport	8.8	26.7	11.6	29.8	20.0	25.7	7.8	38.9
The good reputation of the residential area	0.0	2.2	2.3	4.3	0.0	0.0	5.9	19.4
Family reasons, assignation, didn't find any dwelling elsewhere	40.4	11.1	51.2	27.7	50.0	40.0	27.5	16.7

The reasons of moving in show the imagination or the expectation of the newcomers (near 80% of newcomers lived in another part of the city or outside before). The satisfaction based on the experiences of the dwellers (and their expectation).

Satisfaction with the neighbourhood

Table 4. Share of the most important sources of satisfactions/dissatisfaction as a percentage of those respondents who reported to be satisfied/dissatisfied with their residential area (open question)

Indicators	Inner-Terézváros	Inner-Józsefváros	Magdolna-quarter	Inner-Ferencváros
Share of satisfied	55.9	71.4	40.3	78.4
Sources of satisfaction (% of satisfied)				
City center	73.7	67.8	43.3	60.2
Condition of buildings, calm, clean environment	13.2	20.0	11.7	22.4
Cultural and night life	18.4	6.7	0.0	9.2
Reconstruction/new construction	2.6	7.8	10.0	7.1
Share of dissatisfied	**25.7**	**19.8**	**48.3**	**15.4**
Sources of dissatisfaction (% of dissatisfied)				

The level of satisfaction is shown by the answers to the question "Would you recommend a good friend to move to your residential area? And why?" There isn't significant difference between the newcomers and the traditional dwellers in this respect, their preferences are similar. In Magdolna-quarter half of the inhabitants would not recommend their own neighbourhood to their friends. The dwellers of the other three areas are less critical (mostly in Inner-Ferencváros where 78.4% would recommend it), probably because of the revitalisation of the quarter which improved its reputation *(Table 4)*.

The most important source of satisfaction is the central location and the easy availability which is evident in the case of inner city quarters. In Inner-Ferencváros and Józsefváros the condition of buildings and streets was a more positive factor than in the other two areas. However, it is a more important factor contributing to the dissatisfaction in every case, mostly in Inner-Terézváros, because of the lack of renovation. In Inner-Terézváros one-sixth of the respondents mentioned cultural amenities and night life as a reason for moving in. Interestingly enough, this share was only 9% in Inner-Ferencváros where the concentration of cafés and restaurants is higher than in the other inner city neighbourhoods. Though it is a well known fact that the revitalized Ráday street (transformed into a pedestrian area full of open air restaurants

and cafés) improved the reputation of its environment, the local people do not regard it as a completely positive factor (there are permanent conflicts between the inhabitants of Ráday street and the owners of the restaurants).

In Magdolna-quarter the major source of dissatisfaction is the composition of local society. Half of the dissatisfied respondents mentioned the local people in general (9.7% named the gypsies) and other 9.7% the public security. Though the condition of buildings is much worse here than in the other inner city districts, "only" 23,6% mentioned it as a factor of their dissatisfaction.

Potential moving plans of inhabitants

The local population's attitude toward the residential area can also be examined through an analysis of the migration potential, the moving plans of the present inhabitants. A significant part of population (32.8%) want to leave the inner city districts. This rate is about 30% in the Magdolna-quarter and almost 40% in Inner-Terézváros *(Fig. 5).* However, the share of potential movers is higher in the areas where rehabilitation projects were not carried out, their lack isn't the only reason to move. There are differences between the potential movers: in Inner-Terézváros three quarters of the families with children want to move, while in Magdolna the household types do not seem to influence the moving intentions. The age-impact is similarly varied: while in Magdolna-quarter half of the young (under 40) want to move, in Inner-Terézváros 80% of them have similar intentions.

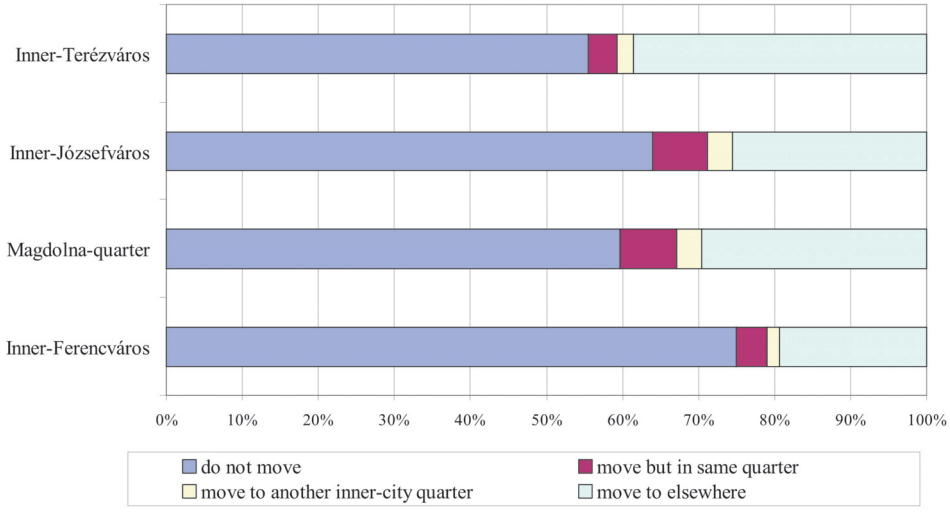

Fig. 5. Moving plans of the inner city inhabitants

The main reasons for moving are connected to the insufficient size of flats, and to lifestyle and family changes in all case study areas. Beyond these motivations, the characteristics of the neighbourhoods also have some impact on the moving plans. The lack of green areas, the noise and environmental pollution seem to be an important factor mostly in Inner-Terézváros where more than 40% of those who are willing to move mentioned these problems (Berényi, E.–Kondor, A.Cs.–Szabó, B. 2008). In Magdolna-quarter the strongest push factor is the unpleasant social surrounding, almost 40% mentioned it as a factor of moving out. The bad status of buildings was also important: 22% mentioned it in Magdolna-quarter, 13% in Inner-Terézváros, while in the other areas it did not have a significant impact on the moving plans. The problems in Inner-Terézváros are connected to the physical condition of the quarter, its deteriorated state explains that so many inhabitants want to move to the agglomeration or to the countryside.

Despite of the above mentioned problems, the overwhelming majority of inner city population (67.2 %) wants to stay. Not only the elderly but also the inhabitants between 40 and 60 years are 'faithful' to their district. Those who live in more-generation households are especially willing to stay. The reasons of staying are similar in every quarter: half of the inhabitants are satisfied with their flat, 20–30% is satisfied with the location of the quarter. The answer "I can not afford another dwelling" was also frequent. Numerous people (35–38%) of the respondents explained their intention to stay in this way. This share was below the average (only 17%) in Inner-Terézváros. In this quarter only the old dwellers referred to financial difficulties, while in the others the new inhabitants also gave us an explanation of that kind.

Opinions about local society

The opinion of inhabitants about the change of local society suggests that moving into the inner city has intensified for the last years. In the Magdolna-quarter one third, but in the other districts about half of the respondents claim that certain social groups (which are different from the traditional residents) have emerged recently.

In the Magdolna-quarter the share of gypsies has increased according to almost half of all respondents *(Table 5).* Another newly emerging group is a segment of foreigners (Arab, Chinese and Vietnamese). About 11% of the respondent mentioned their arrival, but none of them used the term "foreigner", they named their racial group. Both the language and the actual composition of foreigners are different in Inner-Terézváros where half of the respondents claim that foreigners (not differentiated by their country origin) have moved to the quarter. They are supposedly students and young employees of inter-

Table 5. Is there an increased moving in of certain household types during the last years? Share of the respondents who mentioned the specific household types (%) open question

Household types	Magdolna-quarter	Inner-Terézváros	Inner-Józsefváros	Inner-Ferencváros
Families with children	3,6	3,2	5,6	1,5
Young	20,0	33,9	59,7	69,7
Foreigner	5,5	51,6	20,8	19,7
Chinese, Vietnamese, Arab	10,9	–	2,8	–
Gypsies	45,5	–	2,8	–
Poor	3,6	1,6	2,8	–
People with high income	1,8	9,7	–	6,1

national companies. Their emergence is also reported by about one fifth of the inhabitants in the other two inner quarters, where the young people were regarded as the dominant group of movers. A growing number of families with children was not reported either in the upgrading areas or in the low status Magdolna-quarter. Increased in migration of people with high income was only mentioned in Inner-Terézváros.

Views about the city

The mental map of Budapest seems to be equally conservative and stable in the most and less favoured areas (STUDIO METROPOLITANA 2006). Our sample survey results confirm this statement in general, but we can also detect some significant differences. A comparison of the views of traditional residents and newcomers reveals that the latter ones have a more positive opinion about the inner city districts in Inner-Ferencváros and Inner-Terézváros *(Table 6)*. By contrast, in the Magdolna-quarter the newcomers' opinion is less favourable. This can be explained by their lower social status. The share of young and students is smaller among the new inhabitants in Magdolna-quarter than in the other inner city districts; and primarily these groups find the inner city preferable. In those quarters where new functions emerged the opinion of the new inhabitants was much better than the traditional dwellers.

Table 6. Share of the inhabitants who named the districts as the most valuable areas of the city (%) open question

Most valued area	Inner-Terézváros		Inner-Józsefváros		Magdolna-quarter		Inner-Ferencváros	
	–1989	2000–	–1989	2000–	–1989	2000–	–1989	2000–
Inner city (5th – 9th)	25.9	36.6	25.0	24.2	32.7	17.2	22.0	39.4
Buda (1st, 2nd,	63.0	58.5	59.1	57.6	55.1	58.6	58.0	54.5
3rd,11th,12th districts)	13.0	26.8	13.6	30.3	20.4	22.4	24.0	30.3
Agglomeration								

The traditionally most appreciated districts of Buda (first of all, the 2nd district where Rózsadomb – the symbol of wealth – is found) reach the higher rank in the mental map of the inner city inhabitants. The suburban settlements around Budapest are more preferred by the younger newcomers; this shows that the demand for suburbanization exists.

In the opinion of another segment of residents, the inner city neighbourhoods belong to the worst parts of the capital. The difference between the mental maps of the old and new population is obvious, mostly in the case of the 9th district which is much less liked by the old dwellers than by the newcomers *(Table 7)*. The image of the 8th district is varied: those who live in the inner part of Józsefváros are less critical towards the district, than who live in the Central part. The new inhabitants of Magdolna-quarter differ again from the other newcomers, their opinion is similar to that of the older inhabitants.

Table 7. Share of the inhabitants who named the districts as the least valuable areas of the city (%) open question

Least valued area	Inner-Terézváros		Inner-Józsefváros		Magdolna-quarter		Inner-Ferencváros	
	–1989	2000–	–1989	2000–	–1989	2000–	–1989	2000–
Inner city (5th–9th)	68.5	62.5	78.6	57.5	93.9	86.4	82.0	76.5
6th district	5.6	2.5	9.5	2.5	6.1	3.0	4.0	2.9
7th district	18.5	5.0	16.7	2.5	18.4	15.2	14.0	26.5
8th district	63.0	62.5	54.8	50.0	89.8	80.3	60.0	73.5
9th district	24.1	12.5	31.0	10.0	14.3	13.6	18.0	5.9

To be summarised: the preferences of the newcomers and old dwellers are different. The members of the latter group are more likely to refuse to live in the inner city than the new inhabitants *(Table 8)*. Only the inhabitants of the Magdolna-quarter do not refuse the inner city, supposedly they could not imagine to live in another type of housing and their dissatisfaction is related to the local society, not to the environmental problems.

Table 8. Regardless of your financial situation where would you like to live?

Rank of inner city	Inner-Terézváros		Inner-Józsefváros		Magdolna-quarter		Inner-Ferencváros	
	–1989	2000–	–1989	2000–	–1989	2000–	–1989	2000–
1 – First choice	32.8	28.9	18.5	41.3	32.7	22.7	27.1	27.0
5 – Last choice	25.0	13.3	51.9	13.0	2.0	6.1	39.0	13.5

Comparing the ranks with other housing types, we can say that the newcomers of the inner city however prefer the family houses in the green (half of them put it to first rank), they less refuse their recent living environment than the housing estates (70–80% except of the Magdolna-quarter where only 44%) and a bit more the suburban family houses.

Conclusion

The inner parts of Budapest have changed significantly both in terms of infrastructure, the physical environment and local society – hence the changes in the image of the city. The newcomers, who moved to after 2000 are younger, higher educated and while the old dwellers who lived in their recent flat before 1990 are elder, mostly live in single households. So the newcomers' and the old inhabitants' attitude towards the inner city is very different. Not only the good location but also the improving prestige (9th district) and the cultural and night life (6th district) seem to become important to the newcomers. Their view of the inner city districts is much more positive than that of the older dwellers though a significant share of them wants to leave for the suburban belt.

Whether or not the inhabitants find it advantageous to live in inner city quarters depends on the condition of the buildings, on the concentration of functions, and also on the composition of local society. The deteriorated building stock seems to be the most important factor of disappointment, except of the Magdolna-quarter where the local society. The lack of green area and the level of noise pollution are also problematic mostly in the Inner-Terézváros where these are strong connection with the moving plan. The traditionally most appreciated districts are in Buda side within the newcomers and the older dwellers, while the suburban settlements around Budapest are more preferred by the younger newcomers. The preferences of the inner city within of the newcomers and old dwellers are different. The members of the latter group are more likely to refuse to live in the inner city than newer inhabitants.

REFERENCES

Berényi, E.–Kondor, A.Cs.–Szabó, B. 2008. The social aspects of green areas in Budapest with special regards to migration questionnaire research in six sample areas. – In: Alföldi, Gy.–Kovács, Z. (eds): Urban Green Book. MTA HAS – Rév8–ÉTK. pp. 104–121.

Csanádi, G.–Csizmady, A.–Kőszeghy, L.–Tomay, K. 2007. A városrehabilitáció társadalmi hatásai Budapesten. – In: Enyedi, Gy. (szerk.): A történelmi városközpontok átalakulásának társadalmi hatásai. MTA Társadalomkutató Központ, Budapest, pp. 93–118.

Egedy, T.–Kovács, Z.–Székely, J.–Szemző, H. 2005. Fővárosi rehabilitációs programok és eredmények. – In Egedy T. (ed.): Városrehabilitáció és társadalom. – MTA FKI, Budapest, pp. 175–188.

Földi, Zs. 2006. Neighbourhood Dynamics in Inner-Budapest: A Realist Approach. - Faculteit Geowetenschappen. Universiteit Utrecht. 345 p.

Hegedüs J.–Teller N. 2006. A lakáspolitika és a lakásmobilitás kapcsolatának elemzése. – Városkutatás Kft.

Kondor, A.Cs.–Horváth, D. 2008. Challenges and experiences of a participative green space development in Budapest-Józsefváros. – Urbani Izziv (Urban Challenge) *19.* 2. pp. 174–182.

Kovács, Z.–Wiessner, R. 1996. A lakáspiac átalakulásának főbb jellemzői és városszerkezeti következményei Budapest belső városrészeiben. – In: Dövényi, Z. szerk.: Tér-Gazdaság-Társadalom. Huszonkét tanulmány Berényi Istvánnak. MTA FKI, Budapest, pp. 29–48.
Kovács, Z. 2006. Social and Economic Transformation of Historical Districts in Budapest. – In: Enyedi, Gy.–Kovács, Z. eds.: Social Changes and Social Sustainability in Historical Urban Centres: The Case of Central Europe. – Centre for Regional Studies HAS, Pécs. pp. 39–64.
KSH 1997. Ingatlanadattár.
KSH 2006. Ingatlanadattár.
STUDIO METROPOLITANA 2006. Hova megyünk lakni? - avagy preferenciák a lakóhely kiválasztásánál Budapesten. –Kutatási jelentés 2006. június.
Székely, J. 2006. Reasons of Local Housing Market Price Differences in Hungary. – Hungarian Statistical Review. Special Number *12*. pp. 174–188.

LITERATURE

Hungarian Geographical Bulletin 2009. Vol. 58. No 3. pp. 215–219.

Kocsis, K. and Schweitzer, F. (eds.): Hungary in Maps. Geographical Research Institute Hungarian Academy of Sciences, Budapest, 2009, 211 pp.

The latest, third volume of a series of atlases published by the Geographical Research Institute presents the geography of Hungary. The first volume presented a region, South Eastern Europe and the Balkans (2005, 2007), and the second Ukraine (2008), one of the largest and most populous countries of the continent. The new member of regional atlases, a comprehensive overview of a comparatively small country, Hungary, is the most voluminous of them. This publication can really be called an atlas as the descriptions and analyses on more than 200 pages are illustrated by 172 full-colour maps and diagrams. In addition, 52 tables accompany the clear and authoritative explanatory notes. On average, each page of the atlas contains at least one colour figure or a statistical set. The volume consistently follows a clear editorial philosophy in content, structure, outward appearance and execution (size, cover, paper quality, letter types, page setting, and illustrations. This is a unique publication combining the best features of a book and atlas. No such work was published in Hungary in the past few decades.

The Hungarian geographers always thought it important to present their country for foreign readers. After World War I, several geography books and lots of maps were published on Hungary and its geographical environment. They were published first of all in French, English and German languages, and they showed the catastrophic effect of the peace treaty (1920) on Hungary and the Carpathian Basin. Later, since the 1960s, after a break of two decades, the studies and two national atlases concentrated on presenting the large scale changes in the socialist society and economy. They were published in Russian, German and English.

Twenty years after the great political changes and the second edition of the National Atlas of Hungary in 1989, it was high time again publishing a concise book or atlas to reflect the current state of the country in English. According to the editors, this project served as a preliminary study for the new, third edition of the National Atlas of Hungary to be co-ordinated by the Geographical Research Institute of the Hungarian Academy of Sciences. The two editors and their excellent staff have tested their capacity of collecting the data from Hungarian and international sources, writing the detailed explanations and organizing a huge scientific project. As an outcome of these efforts, a distinguished team of more than thirty contributors presented the results of their research in almost all the fields of earth sciences. An impressive amount of information in the maps and graphs supported with textual comments make the atlas a comprehensive handbook. Although the emphasis is largely placed on contemporary Hungary, important sections are devoted to the historical development of the natural and human environment as well.

The work is divided into five parts, two shorter introductory and three longer analyzing chapters. The first, short chapter positions Hungary, its geographical location and geopolitical situation in the world. The subsections briefly describe the stability and change in the ethnic and state territory in the past 1100 years, administrative divisions, and give an overview of the changes in the international relations and economic development after 1989. The comparative figures also reveal the dramatic scale of transformation

of some European economies at the turn of the 20th and 21st century. The second, shortest chapter is an outline of the history of the Hungarian state since the very beginning to the past years, when Hungary became a member of the European Union. An excellent map series on the states in the Carpathian Basin between 1000 and 2009 accompanies the story of the Hungarians.

The third chapter follows with the topographical and physical-geographical description of Hungary. This analysis of the natural environment comprises almost a third of the total pages of the volume. Compared to the former atlases in the series, this part is given a major attention. The relatively detailed description demonstrates that the study of the geography of Hungary has been traditionally strongly rooted in understanding the natural conditions of the land. The subchapters begin with addressing the topic of geophysics (tackling the earthquakes in the whole Pannonian Basin) and – relatively shortly – geology. The part on the relief and landscape types is richly accompanied by maps. The subchapter dedicated on climate includes long-term trends, which are of great importance for the agriculture in Hungary. A section on hydrography follows, which convincingly demonstrates that the scientific study of waters, the drainage system and the water management is of crucial importance for the urgent flood control in Hungary, a country set in the middle of a large basin. Another subchapter explains why the fertile soils of Hungary form a major asset of the national wealth, though land degradation has been endangering their quality. The parts on the flora and fauna analyze the question in a broader perspective both in time and space. The state of nature conservation and environmental protection in Hungary is extensively presented in two subchapters not forgetting about the international environmental conflicts.

The chapter on the population and settlements is somewhat underrepresented in the atlas compared to the extent of similar chapters in the former two publications. This is certainly explained by the fact that the population of Hungary is much more homogeneous than that of the Balkans or Ukraine. However, the maps and tables and the explanations on relatively fewer pages give a comprehensive overview of the demographic features of the country: the size and distribution of the population, the population movement in historical perspective, and internal and international migration. Intriguing topics are discussed and presented here: the general population decline, ageing, increase in unemployment, the Roma population at home, the situation of Hungarian minorities abroad, and new trends in urban development. The subchapter on ethnicity and religion is another part of the book that will raise a great interest among foreign readers although the latest data (from 2001) are relatively old. The national census planned for 2011 will surely provide the editors with up-to-date data on the ethnic and lingual patterns as well as on church and religion. The subchapter on settlements is more detailed and gives current data on the settlement system and urbanization of Hungary.

The final, and – just like in the other atlases in this series – by far the most extensive chapter deals with the economy of the country. After an outline of the economic history of Hungary, important passages describe the transition to a market economy (including the privatization and the controversial economic and social consequences as a result of the transition) and the main features of the new economic structure, not leaving the subject of the massive influx of foreign direct investment. A time series of maps illustrates the regional processes of the past three decades. A detailed analysis of economic sectors follows: agriculture, mining with the perspectives on the exploitation of mineral resources, problems in the energy supply and electricity generation, industry and transport. Telecommunications and the banking network with an increasing spatial concentration of services focused on

Budapest as well as the internal trade and capital exports each received a subchapter. The final part deals with tourism in Hungary.

It is a great asset of the atlas that the maps and figures clearly orientate the reader to discover the regional patterns and differences within Hungary. Unfortunately, the dark colours of symbols block the reading of some maps, while in some other cases the colours are too much reduced. Although the use of geographical names is not always consistent, the maps always help identify the objects or places mentioned in the explanations. The graphs and tables of international indicators help the interested to place the economy of Hungary first of all in a European dimension. Most of the data are surprisingly fresh – due to the computers that can wait until the last days to process the latest data either in table or map form and to the scientists who interpreted the data and the trends.

A book like this is surely an important source of information for geographers and other earth scientists. Although writing this volume did not need direct international cooperation, the publication will surely generate an echo outside Hungary. I wish that *Hungary in Maps* become a popular publication with the international readers: this book may also serve as a nice and useful gift for visitors including not only the professionals of the scientific community, but also businessmen, politicians or the sophisticated readers. It also satisfies the interest of those readers who wish to learn about the land and inhabitants of the Hungarian state and want to have a reliable guide to the modern image of the country in a European context and on a global scale. The price of this professional guide is most advantageous!

This atlas makes Hungary even more attractive to visit.

Gábor Gercsák

OECD Environmental Performance Reviews Hungary. Organisation for Economic Co-operation and Development, Paris, 2008, 226 p.

The review of public policies and country performance is a core function of the OECD, whose aim is to help member countries improve their individual and collective performances in environmental management and sustainable development. OECD also reviews environmental performance of key non-Member countries. To date, OECD has completed reviews of Chile, China and of the Russian Federation.

The Environmental Performance Review of Hungary, published in 2008 in English, French and Hungarian examines Hungary's progress since the previous OECD Environmental Performance Review in 2000, and the extent to which the country had met its domestic objectives and international commitments. The OECD report also reviews Hungary's progress in the context of the OECD Environmental Strategy for the First Decade of the 21st Century. Some 46 recommendations were made that should contribute to further environmental progress in Hungary. It addresses the combined efforts of government and civil society (including industry, labour, households and environmental NGOs).

The first environmental review of Hungary assessed the progress made between 1990 and 2000, a period marked by Hungary's accession to the OECD (in 1996). It was very timely to release the second report, covering the period since 2000, after accession of Hungary to the EU and after more than 10 years of co-operation with OECD. Since 2000,

Budapest as well as the internal trade and capital exports each received a subchapter. The final part deals with tourism in Hungary.

It is a great asset of the atlas that the maps and figures clearly orientate the reader to discover the regional patterns and differences within Hungary. Unfortunately, the dark colours of symbols block the reading of some maps, while in some other cases the colours are too much reduced. Although the use of geographical names is not always consistent, the maps always help identify the objects or places mentioned in the explanations. The graphs and tables of international indicators help the interested to place the economy of Hungary first of all in a European dimension. Most of the data are surprisingly fresh – due to the computers that can wait until the last days to process the latest data either in table or map form and to the scientists who interpreted the data and the trends.

A book like this is surely an important source of information for geographers and other earth scientists. Although writing this volume did not need direct international cooperation, the publication will surely generate an echo outside Hungary. I wish that *Hungary in Maps* become a popular publication with the international readers: this book may also serve as a nice and useful gift for visitors including not only the professionals of the scientific community, but also businessmen, politicians or the sophisticated readers. It also satisfies the interest of those readers who wish to learn about the land and inhabitants of the Hungarian state and want to have a reliable guide to the modern image of the country in a European context and on a global scale. The price of this professional guide is most advantageous!

This atlas makes Hungary even more attractive to visit.

Gábor Gercsák

OECD Environmental Performance Reviews Hungary. Organisation for Economic Co-operation and Development, Paris, 2008, 226 p.

The review of public policies and country performance is a core function of the OECD, whose aim is to help member countries improve their individual and collective performances in environmental management and sustainable development. OECD also reviews environmental performance of key non-Member countries. To date, OECD has completed reviews of Chile, China and of the Russian Federation.

The Environmental Performance Review of Hungary, published in 2008 in English, French and Hungarian examines Hungary's progress since the previous OECD Environmental Performance Review in 2000, and the extent to which the country had met its domestic objectives and international commitments. The OECD report also reviews Hungary's progress in the context of the OECD Environmental Strategy for the First Decade of the 21st Century. Some 46 recommendations were made that should contribute to further environmental progress in Hungary. It addresses the combined efforts of government and civil society (including industry, labour, households and environmental NGOs).

The first environmental review of Hungary assessed the progress made between 1990 and 2000, a period marked by Hungary's accession to the OECD (in 1996). It was very timely to release the second report, covering the period since 2000, after accession of Hungary to the EU and after more than 10 years of co-operation with OECD. Since 2000,

Hungary has experienced a high rate of economic growth – averaging 4% annually – as well as significant structural change and integration in the European and global economy. Imports and exports of goods now represent 78% of GDP. Fiscal consolidation and economic convergence with the rest of the OECD are high on the agenda.

Since 2000, Hungary has made significant environmental progress in several fields. Hungary has not only transposed the EU environmental legislation, but it has also improved its environmental policy planning and its law enforcement activities; progressing towards the Polluter-Pays and User-Pays Principles, with increasing use of economic instruments. Hungary's pollution abatement and control expenditure has reached 1.6% of GDP. Hungary has considerably reduced air pollutants emissions and improved air quality. For instance, sulphur oxides and carbon dioxide emissions have been further decoupled from economic growth. Sulphur oxides emissions per unit of GDP in Hungary now stand below the OECD average, but are still above the Europe OECD average. Nature protection has benefited from government action with the creation of the Natura 2000 network. Nature and biodiversity are key assets for Hungary's tourism sector and they provide important ecological services such as flood protection. The report stresses that environmental democracy has progressed in Hungary with improved environmental information, environmental education, and environmental awareness. An innovative ombudsman's position has been established in 2008, to protect the rights of future generations. This can be seen as a model for other countries.

In the energy sector, energy pricing has become "greener", with regulated tariffs to consumers reflecting the cost of supply. For instance, in 2006 the gas subsidy was abolished and replaced by a direct income support scheme for poorer households. This makes sense from the economic, energy and environmental points of view. Hungary has developed a proactive stance in international environmental co-operation. It chairs the International Network of Basin Organisations and plays an important role in river basin and flood management, with 52% of its territory flood-prone. Following the Baia Mare accident in Romania, which contaminated the Tisza and Danube Rivers in 2000 with toxic mining waste, Hungary played a pivotal role by ensuring public safety and communications in affected towns downstream; but also by leading the negotiations of the Protocol on Civil Liability under Europe's Water and Industrial Accident Convention. Hungary launched in Budapest a sequence of international conferences on the environment-health interface.

These are all important achievements, but there are number of areas for further progress. Hungary still needs to address a number of environmental challenges, while pursuing sustainable development and balancing economic, environmental and social concerns. Meeting these challenges is achievable and affordable and should bring significant economic and social benefits.

Hungary faces a multiple challenge in water management; not only to satisfy the very demanding EU Water Framework Directive, but also to improve flood management, strengthen waste water treatment infrastructure and upgrade drinking water quality. A number of health-related indicators are not favourable. Drinking water is still often contaminated by ammonium, arsenic (of geological origin), nitrates, fluoride and boron. This is despite costly programmes to open new drinking water sources, extend public water supply and improve purification technology which have only reached 10% of the target population under the Drinking Water Quality Improvement Programme. Improving air and drinking water quality should bring well-being to the population, as well as economic benefits such as reduced health expenditure and improved labour productivity.

Hungary's energy and transport policies need to better integrate environmental concerns, for example by better addressing demand management. The country must fur-

ther improve efficiency in energy and materials use. In doing so, it could capture multiple benefits, such as reducing dependency on imported energy, cutting CO_2 emissions, reducing air pollution and related health costs and being prepared to respond to more stringent greenhouse gas emission reduction goals by 2020. Hungary should identify a set of priority measures to mitigate and adapt to climate change, and implement fully its National Climate Change Strategy. It also needs to adopt and implement its National Biodiversity Strategy and to strengthen the financial and human resources for nature protection. The OECD report also recommends establishing institutional arrangements to review the environmental effects of fiscal instruments, identify environmentally harmful subsidies and improve the use of economic instruments such as taxes, charges and emission trading schemes.

István Pomázi

Hungarian Geographical Bulletin 2009. Vol. 58. No 3. pp. 220–223.

7th International Conference on Geomorphology (ANZIAG), Melbourne, VIC, 6–11 July, 2009

It is a tradition more than a quarter of a century old that the world's geomorphologists gather at a wide-scale international congress every four year to present their most recent findings to each other. For twenty years now the International Association of Geomorphologists (IAG/AIG) coordinates the organization of such events and the Association selects the conference venue based on the evaluation of national bids. In 2005, at the Zaragoza Conference the decision was made that the Australian and New Zealand Geomorphology Group Inc. (ANZGG) would host the next meeting in the second most populous city of Australia, the capital of Victoria state, Melbourne, which is – in spite of its size – also one of the most habitable cities of the continent.

The Organizing Committee, led by Associate Professor Brian Finlayson, and the convention bureau Tour Host, responsible for the technical organization, immediately started work – as it was made evident by internet news (on the IAG/AIG website www.geomorph.org), frequent messages and circulars sent. Although many potential participants were scared by the long flight (24 hours at least from Europe), the organizers have eventually managed to recruit a decent number (more than 650) of geomorphologists from 52 countries, including numerous young scientists at the beginning of their career. Recently, they are particularly favoured by IAG/AIG as grants for participation and field training courses are available for them after selection. Australia proved to be not only a distant but an expensive place for a conference. The brand new Melbourne Convention and Exhibition Centre (MCEC) was not at all cheap to hire and thus the registration fee was not really adjusted to the resources of participants arriving from developing countries. To find affordable accommodation and meals in the CBD of Melbourne was not easy either. Taken as a whole, however, no complaint is due concerning the organization of the event.

It is true that no one regards the above circumstances crucial for the success of the conference, the scientific program is more decisive. The attraction of the program lay in its diversity, which is also characteristic of Australian geomorphology. Among the traditional branches of geomorphology, as it is logical on the driest inhabited continent, eolian processes received particular attention. The plenary lecture by IAG/AIG President Andrew Goudie also enumerated the main fields of research in arid geomorphology. In addition, as matter of fact, dozens of papers dealt with coasts, rivers, glacial, periglacial, tectonic and karst geomorphology as well as mass movements and geomorphological mapping and quite of number of oral and poster presentations touched upon biogeomorphological, volcanic, weathering and tropical issues. Sessions of special topic included techniques in geochronology, the role of fire in geomorphic evolution, the functioning of small catchments, landscape connectivity, planetary geomorphology, the geomorphology of Gondwana, laser scanning of topography and tsunamis. The sessions organized by the

various Working Groups (their number amounts to 20 at present) were welcome additions to the scientific program. It was a novel tendency to observe that the geomorphological implications of global climate change were excessively studied. Unfortunately, the time span of each oral presentation (except for plenary papers) was limited to 15 minutes and this did not allow profound discussion. Among the plenary papers (with no discussion planned of course) the most successful and best illustrated was presented by Monique Fort (Paris) on the environmental problems of the Himalayas. Her satellite images were particularly impressive on the extra large screens of the Convention Centre. The posters of equally variable topic and spectacular design were exhibited in a spacious corridor – making us forget that we had to pay 20 Australian dollars for showing them. Many of us missed the List of Participants and the Abstracts which were only published on CD for environmental protection considerations. It was not easy to find the papers most interesting for us and to get an idea in advance on their contents.

For the days prior to the conference four field trips were planned. The most comprehensive led us to Western Victoria, where Bernie Joyce (Melbourne) showed us a series of volcanoes of different types and surprisingly young age as well as sea stacks and archways, a karst plateau, a lake region and at one plaeontological site we could receive information on the Australian megafauna, which became extinct some ten thousand years ago. The bus field trips of Wednesday took the participants to a drained swamp area, to coastal landforms, to the suburbs of Melbourne and into the vineyards of the Yarra Valley. At the same time, a trip was organized for bikers and paddlers along the Yarra River. Those who were particularly interested in the Australian Outback (and could afford it) started for a logn journey after the conference to see the Lake Eyre Basin or the tropical rivers and coasts of the Cape York Peninsula.

The IAG/AIG elected new Honorary Members in recognition of their life-work: Takasuke Suzuki (Japan), John Chappel (Australia), Olav Slaymaker (Canada) and Paul Williams (New Zealand) – great figures of the discipline, mostly well known in Hungary too – were presented with the walking stick that accompanies this award. The 34 representatives of the Association's Scientific Members (member countries) with a voting right elected Michael Crozier (New Zealand), a renowned researcher of landslides, as the new IAG/AIG President, while Morgan de Dapper has kept his position as Secretary. The next Regional Conference (in 2011) will be held in Addis Ababa, organized by the Italian and the Ethiopian group of geomorphologists, while the venue of the 8th International Conference on Geomorphology in 2013 will be Paris

We congratulate on the organizers "down under" in the hope that the French colleagues would manage to host an equally successful and remarkable meeting – perhaps at lower expenses and with slightly more inclusive services for the participants.

Dénes Lóczy

Report on the second international congress of EUGEO Bratislava (Slovakia), August 13–16, 2009

EUGEO is the society of scholarly geographical societies, associations of geographers and other membership organisations representing geographers and geographical science in the European Union. The EUGEO initiative was first conceived in January 1994, at a meeting in Rome organised by the Italian Geographical Society. The idea was to encourage and enhance greater collaboration among geographical societies of EU member states and in general, geographers of the continent. The Royal Dutch Geographical Society (KNAG) initiated the first congress of EUGEO in Amsterdam in August 2007, which was a turning point in the life of the society. The success of the Amsterdam congress convinced both the participants and EUGEO Board members about the necessity of such an event where – similar to the AAG annual conferences in the US – European geographers can meet and discuss the most relevant issues of the discipline. In Amsterdam decision was made by EUGEO Board to organise the biennial congresses.

The second international congress of EUGEO entitled 'Challenges for the European Geography in the 21st Century' was organised by the Slovak Geographical Society in close collaboration with Comenius University, Faculty of Sciences and the Institute of Geography of the Slovak Academy of Sciences. The congress was held in Bratislava, capital of Slovakia, between August 13–16, 2009. Bratislava with its geographical location provided also excellent opportunity for geographers of the former state-socialist countries (including Hungary) to get involved in the work of the major international conference. The second congress of EUGEO was attended by ca. 150 participants from 28 countries. During the three day long meeting plenary and thematic sessions as well as poster sessions were organised. The congress was followed by optional excursions to various parts of Slovakia and to the neighbouring countries (including Hungary).

The congress was officially opened by Vladimir Ira, president of the organizing committee, followed by high rank representatives of the Comenius University and the Slovak Academy of Sciences, and not least by Christian Vandermotten, president of EUGEO. After the opening ceremony three keynote papers were delivered in the opening plenary session. Tadeusz Stryjakiewicz (Poland) introduced the results of a major EU funded project (ACRE) focusing on the location factors of the creative and knowledge-intensive industries in European metropolitan regions. Armando Montanari (Italy) explored the topic of human mobility and local development from a broad theoretical perspective. Finally, Jozef Minár (Slovakia) presented his research findings in the context of geographical fields and spatial organisation of landscape. During the congress 12 sessions were organised under the main topic, these explored broad but relevant issues, such as:

- Theoretical geography;
- Land use and land cover change;
- Geomorphology;
- GIS and spatial data processing;
- Sustainable development;
- Population development;
- Global mobility;
- Political geography and governance;
- Urban renewal;
- Geography of governance;
- Trends in tourism geography;
- Regions – development – disparities.

In the closing plenary session three presentations took place. Christian Vandermotten (Belgium) summarized his long experience about regional disparities within Europe under the title 'The new map of the European regional structures and their evolution'. Jiři Blažek (Czech Republic) devoted his lecture to the challenges and dilemmas of the future EU cohesion policy. Finally, Zoltán Kovács (Hungary) summarised the most important features of urbanisation in East Central Europe prior to and after the change of regime in 1989–90.

The scientific programme of the congress was extended by a book exhibition, a guided tour in Bratislava old town and different social events like the congress dinner, which was held on a ship cruising on the Danube river.

It can be concluded that the second congress of EUGEO was an outstanding event of European geography: it stimulated fruitful discussions about research, education, and developments in the subject. The diversity of disciplines represented by the participants emphasised a rich dialogue between geographers and practitioners, researchers and teachers. Hopefully the next EUGEO congress to be held at The Royal Geographical Society (with IBG) in London at the end of August 2011 will attract even more geographers from all over the continent and beyond, and it will further strengthen the academic appreciation of EUGEO and the European congress of geographers. Further details about forthcoming congresses of EUGEO can be found in the following website: www.eugeo.org.

Zoltán Kovács