

5 Carpathian settlement structure

Carpathian development region (CDR) with its borders roughly defined covers parts of 8 countries. Moreover it covers not only the mountain range of Carpathians but also foothills of the mountains and areas neighbouring the mountains as well as some areas which apparently have little to do with Carpathians in a geographic sense. Their inclusion into the project area is rather the result of administrative division, social and economic links than of physical features of the area.

Analyzing the settlement structure covering the CDR, authors have concentrated on the substantive area covered by Carpathian Mountains with respect to administrative units (mostly NUTS3 level). The first step was to divide population living in these units into urban and rural. On this level it is necessary to say that in some countries there are not only cities, towns and villages as the main types of settlements, but there are also other urban settlements like e.g. town type villages in Ukraine (treated in the analysis as urban settlements) or Marktgemeinde in Austria (treated in the analysis as rural settlements).

The urban settlements have been divided into four ranges:

- above 500,000 inhabitants,
- 100,000 – 499,999 inhabitants,
- 20,000 – 99,999 inhabitants,
- below 20,000 inhabitants.

Moreover the urbanization index and population density have been calculated. The results are included in the final table “General Characteristic of Carpathian Settlements”. Because of the fact that there has been lack of data concerning the number of villages for some regions, settlement density had not been included in the table. Some information about settlement density and spatial distribution are included in the text and in *Table 13*.

This study covers the characteristics of settlement structure in each country within the project area and its final part contains conclusions concerning the whole project area.

5.1 Austria

Generously drafted the Carpathian development region encompasses 3 NUTS2 units of Austria namely Niederösterreich, Burgenland and the capital city of Vienna. Population of such territory amounts to 3,473,000 inhabitants. Leaving aside the very city of Vienna population density in Niederösterreich is 80 inh./km² and in Burgenland 70 inh./km². So the settlement network of this part of Austria consists of the metropolis of Vienna (1,651,365 inh.) and of several towns

Table 13

General characteristic of Carpathian settlements

Administrative unit	Urban settlements				Urban population	Rural population	Total population	Urbanization index (%)	Area (km ²)	Population density (inh./km ²)
	above 500,000 inhab.	100,000–499,999 inhab.	20,000–99,999 inhab.	below 20,000 inhab.						
AUSTRIA										
Bezirk Bruck an der Leitha	0	0	0	3	16,693	23,313	40,006	41.7	495.0	81
Czech Republic										
Jihomoravský kraj	0	1	5	16	621,641	508,717	1,130,358	55.0	7,196.0	157
Zlínský kraj	0	0	5	15	325,649	265,057	590,706	55.1	3,963.0	149
Olomoucký kraj	0	1	3	9	329,455	309,706	639,161	51.5	5,267.0	121
Moravskoslezský kraj	0	1	11	21	939,941	310,828	1,250,769	75.1	5,427.0	230
HUNGARY										
Békés	0	0	4	12	267,303	131,999	399,302	66.9	5,631.1	71
Borsod-Abaúj-Zemplén	0	1	2	14	398,284	352,538	750,822	53.1	7,247.2	104
Csongrád	0	1	3	4	299,666	118,908	418,574	71.6	4,262.7	98
Győr-Moson-Sopron	0	1	2	4	236,154	192,388	428,542	55.1	4,088.7	105
Hajdú-Bihar	0	1	2	14	402,242	142,340	544,582	73.9	6,210.6	88
Heves	0	0	3	4	139,803	185,329	325,132	43.0	3,637.4	89
Jász-Nagykun-Szolnok	0	0	4	12	273,991	143,017	417,008	65.7	5,581.7	75
Komárom-Esztergom	0	0	4	4	191,400	122,958	314,358	60.9	2,265.1	139
Nógrád	0	0	1	5	98,248	123,394	221,642	44.3	2,544.2	87

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Count. Table 13

Administrative unit	Urban settlements				Urban population	Rural population	Total population	Urbanization index (%)	Area (km ²)	Population density (inh./km ²)
	above 500,000 inhab.	100,000–499,999 inhab.	20,000–99,999 inhab.	below 20,000 inh.						
Pest	0	0	11	16	496,891	570,690	1,067,581	46.5	6,393.5	167
City of Budapest	1	0	0	0	1,712,677	0	1,712,677	100.0	525.2	3,261
Szabolcs-Szatmár-Bereg	0	1	0	18	271,672	314,486	586,158	46.4	5,936.5	99
POLAND										
Krakowsko-Tarnowski	0	1	5	25	528,098	873,475	1,401,573	37.7	7,385.0	190
Nowosądecki	0	0	5	18	362,103	750,618	1,112,721	32.5	7,478.0	149
City of Kraków	1	0	0	0	733,439	0	733,439	100.0	327.0	2,243
Rzeszowsko-Tarnobrzeski	0	1	4	18	534,284	624,715	1,158,999	46.1	7,512.0	154
Krośnieńsko-Przemyski	0	0	5	17	339,939	608,848	948,787	35.8	10,332.0	92
Częstochowski	0	1	1	6	332,986	203,748	536,734	62.0	3,047.0	176
Bielsko-Bialski	0	1	3	6	340,732	304,595	645,327	52.8	2,352.0	274
Centralny Śląski	0	9	16	17	2,678,780	188,308	2,867,088	93.4	5,578.0	514
Świętokrzyski	0	1	5	24	614,477	680,988	1,295,465	47.4	11,708.0	111
Rybnicko-Jastrzębski	0	2	5	4	528,349	114,951	643,300	82.1	1,354.0	475
ROMANIA										
Alba	0	0	5	6	224,036	161,478	385,514	58.1	6,242.0	62
Arad	0	1	0	7	233,341	228,403	461,744	50.5	7,754.0	60
Arges	0	1	3	3	315,198	335,304	650,502	48.5	6,826.0	95

Count. Table 13

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	above 500,000 inhab.	100,000–499,999 inhab.	20,000–99,999 inhab.	below 20,000 inhab.						
Bacău	0	1	4	3	339,377	385,628	725,005	46.8	6,621.0	110
Bistrița-Năsăud	0	0	1	3	115,686	203,404	319,090	36.3	5,355.0	60
Brasov	0	1	4	5	448,470	147,307	595,777	75.3	5,363.0	111
Buzău	0	1	1	3	206,846	291,239	498,085	41.5	6,103.0	82
Caraș-Severin	0	0	2	6	188,800	145,060	333,860	56.6	8,520.0	39
Cluj-Napoka	0	1	4	1	435,722	230,661	684,383	66.3	6,674.0	103
Covasna	0	0	2	3	114,368	110,554	224,922	50.8	3,710.0	61
Dambovita	0	0	2	5	169,158	370,164	539,322	31.4	4,054.0	133
Gorj	0	0	2	5	163,905	222,985	386,890	42.4	5,602.0	69
Harghita	0	0	3	6	145,693	183,651	329,344	44.2	6,639.0	50
Hunedoara	0	0	7	7	377,365	112,507	489,872	77.0	7,063.0	69
Ilfov	0	0	2	2	73,423	203,441	276,864	26.5	1,583.0	175
City of București	1	0	0	0	1,929,615	0	1,929,615	100.0	238.0	8,178
Maramureș	0	1	2	10	305,389	213,668	519,057	58.8	6,304.0	82
Mehedinți	0	1	0	4	148,422	158,866	307,288	48.3	4,933.0	62
Mureș	0	1	3	7	313,827	272,163	585,990	53.6	6,714.0	87
Neamț	0	1	2	2	223,144	349,111	572,255	39.0	5,896.0	97
Prahova	0	1	1	12	425,381	407,177	832,558	51.1	4,716.0	177
Satu Mare	0	1	1	3	173,012	199,921	372,933	46.4	4,418.0	85
Sălaj	0	0	1	3	101,784	147,410	249,194	40.8	3,864.0	64
Suceava	0	1	3	11	293,792	411,755	705,547	41.6	8,553.0	82
Timiș	0	1	1	7	414,273	246,898	661,171	62.7	8,697.0	76

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Count. Table 13

Administrative unit	Urban settlements				Urban population	Rural population	Total population	Urbanization index (%)	Area (km ²)	Population density (inh./km ²)
	above 500,000 inhab.	100,000–499,999 inhab.	20,000–99,999 inhab.	below 20,000 inhab.						
Valcea	0	1	1	9	188,486	229,977	418,463	45.0	5,765.0	73
Vrancea	0	1	0	4	150,395	244,935	395,330	38.0	4,857.0	81
SERBIA										
Borski Okrug	0	0	1	5	80,556	65,985	146,541	55.0	3,507.0	42
SLOVAKIA										
Bratislavský kraj	0	1	1	5	501,970	101,729	603,699	83.1	2,052.6	294
Trnavský kraj	0	0	5	11	272,355	282,720	555,075	49.1	4,147.2	134
Trencianský kraj	0	0	7	11	342,634	257,213	599,847	57.1	4,501.9	133
Nitrianský kraj	0	0	6	9	335,426	373,072	708,498	47.3	6,343.4	112
Zilinský kraj	0	0	5	13	355,024	339,739	694,763	51.1	6,808.4	102
Banskobystrický kraj	0	0	5	19	356,158	300,961	657,119	54.2	9,454.8	70
Presovský kraj	0	0	7	16	400,895	397,701	798,596	50.2	8,974.5	89
Kosický kraj	0	1	2	14	432,290	339,657	771,947	56.0	6,751.9	114
UKRAINE										
Chernivtsi Oblast	0	1	0	18	386,625	518,819	905,444	42.7	8,100.0	112
Ivano-Frankivsk Oblast	0	1	4	34	596,480	787,464	1,383,944	43.1	13,900.0	100
Lviv Oblast	1	0	12	64	1,554,232	1,010,508	2,564,740	60.6	21,800.0	118
Zakarpattia Oblast	0	1	4	27	462,383	780,582	1,242,965	37.2	12,800.0	97

Source: Author's construction.

with population above 20,000 inh. located along the main transport corridors leading westwards to Linz and southwards to Graz. A few hundreds villages and small towns belong to the rural settlements. Villages and small towns are more evenly distributed in the Northern part of the territory, on plains, whereas in the south they are concentrated along alpine valleys. Moreover the city of Sopron, the historic centre of Burgenland with its population of more than 50,000 inh. is now in Hungary.

One should note, however, that this territory covers mainly plains along the River Danube and around Neusiedler Lake as well as parts of Alps and it has little to do with the Carpathians, as a mountain range. Only a small hilly area between the Danube and the Leitha rivers belongs to the Carpathian Mountains. Administratively it is the district (Bezirk) Bruck an der Leitha. This small area covers 494.9 km² and it is inhabited by about 40,000 people. 3 small towns and 17 villages constitute its settlement network. As the very name indicates the adminis-

trative centre Bruck an der Leitha with its more than 7000 inh. is situated in the valley of Leitha. The second largest town, Hainburg an der Donau (above 5000 inh.) is located on the right bank of the Danube. The third and the smallest town, Mannersdorf am Leithagebirge is located further to south-west. Villages are located mainly along valleys of small streams. So, settlement in Austrian Carpathians has predominantly rural character (urbanization index 41,7%). A relatively low share of forests in the total area of the district (23%) also reflects its agricultural character.

5.2 Czech Republic

There are 4 regions in the Czech Republic belonging to the Carpathian Mountain range. They are located in the east of country and form a compact area, bordering Poland I North, Slovakia on the East and Austria I South. These administrative regions (looking from North to South) are: Olomoucký kraj with capital in Olomouc, Moravskoslezský kraj with capital in Ostrava, Zlinsky kraj- concentrated around Zlin (former Gottwaldov) and most to South – Jihomoravský kraj with its main city- Brno. Carpathian range, as it occupies the eastern parts of the above regions the only exception is Zlinsky kraj which is located almost in whole Carpathian Mountains. Valleys of the upper Odra in the North and Morava in the South separate Czech Carpathians from other mountains and uplands of Czech Republic and constitute a transport corridor of international importance between Northern and Southern Europe.

The most urbanized area among above is Moravskoslezský kraj with the highest population density (230 inh./km²) and highest urbanization index (75,1%). Due to the largest amount of towns and cities (12 with population over 20,000 and 21 with population below 20,000) it has also the greatest urban population which fluctuates about near 1 million inhabitants. It is caused by the presence of hard coal deposits in the area and all the heavy industry connected to it. An opportunity of work it offers is the factor that attracts people to the cities and towns of the region. The settlement network develops mostly in lower parts of Moravskoslezský kraj in the valleys of the rivers Odra and Morávka. They are located in the 2nd largest agglomeration in the Czech Republic, in Ostrava. It is simultaneously the biggest agglomeration in the Czech part of the project area. Apart from the very city of Ostrava it consists of many cities and towns of the coal mining area extending eastwards to the Polish border. Havířov, Petrvald, Orlova and Karvina are secondary urban centres of the agglomeration. Along with the increase of height decreases the number of settlements and their population (harder climate conditions, poorer soils, less possibilities of production or creation- it all leads to one conclusion: less available workplaces).

Although Moravskoslezský kraj is the most urbanized area, it is not the most populated one. Jihomoravský kraj has the largest population (1.3 million inh.) and also the greatest area (7,196 km²). Its population density is on level much approximately on the same level as the rest of area (about 150 inh./km²). This similarity refers also to the urbanization index, which amounts, for remaining three areas, to about 55–50%. Besides, a greater balance between urban and rural (with a slight advantage to urban) population is to observe. Over the half of the urban population of this region is gained due to the city of Brno (it is famous for its university: the 2nd largest in the whole Czech Republic) which has over 300,000 inhabitants. Jihomoravský kraj has the lowest location among the considered regions but there are considerably less cities than in Moravskoslezský kraj. Most small settlements are concentrated in the Southern part of the region, larger cities are located around capital Brno, in a circle that stretches out to the borders of the region.

Zlinsky kraj and Olomoucký kraj are similar when it comes to the characteristics, such as urban-rural population and urbanization index. Concerning their area the differences are more noticeable (Olomoucký kraj has about 5,200 km² whereas Zlinsky kraj is nearly 1,300 km² smaller). This fact affects, of course, the population density which is greater in Zlinsky kraj. This area has also a better developed network of towns with a population below 20,000 inh., however, there is no city greater than 100,000. Most of the largest cities like, Prostějov or Přerov in Olomoucký kraj, are concentrated towards the neighborhood of Olomouc and crossing it railways. Smaller settlements are spreading rather north. Zlinsky kraj is similar; large cities (Uherské Hradiště, Kroměříž) are situated near the regional center of the city of Zlin and in the direct neighborhood of railways in the valley of river Morava. Towns and villages are specific to the high located areas of the Carpathian Mountains, their majos part is to be found in Zlinsky kraj.

5.3 Hungary

The part of Carpathians situated in Hungary constitutes about 4.3% of the total area of the Carpathians. Concerning the Carpathian development region only 4 Northern Hungarian counties have some of the Carpathian Mountain ranges on their areas (Pest, Nógrád, Heves and Borsod-Abaúj-Zemplén). All of them are part of the Inner-Western Carpathians. The other counties are mostly situated on Hungarian Great Plain and have little to do with Carpathians in geographic sense.

The main Hungarian city situated in the CDR is of course Budapest capital of the country, which is an administrative district in its own right. Budapest is located on both sides of River Danube that is one of the main transport routes, not only for Hungary. There are more than 1,700 thousand inh. living in Budapest on

525.16 km² that gives more than 3.2 thousand inh./km². Budapest is not only a large centre of industry, science and trade and financial business, but it is also a great tourist and cultural site with excellent communication and accessibility.

Furthermore, there are 5 cities with a population above 100 thousand inh. in the Hungarian part of the CDR (Debrecen, Miskolc, Szeged, Győr and Nyíregyháza), but only Miskolc is located in the Carpathian area in geographic meaning. The city is situated on Eastern side of Bükk Mountain, in the valleys of 3 rivers. Miskolc is the third (after Budapest and Debrecen) industrial city in Hungary. The city has also many higher education institutions and is a health resort with the famous cave bath place in Miskolctapolca district.

There are 36 towns situated in the CDR in the third populate range (20–99 thousand inh.). Nearly half of them is located in counties belonging to the Carpathians (11 in Pest, 3 in Heves, 2 in Borsod-Abaúj-Zemplén and 1 in Nógrád). Talking about smaller towns (below 20 thousand inh.) 39 of them are situated in Carpathian counties (16 in Pest, 14 in Borsod-Abaúj-Zemplén, 4 in Heves and 5 in Nógrád).

Pest that surrounds the capital of Hungary is also the county with the highest (besides Budapest) population (more than 1 million inh.) and population density (that is 167 pers./km²). The lowest amount of inhabitants per km² is in county Békés, in the Hungarian Great Plain next to the border with Romania.

Taking the amount of urban and rural population into consideration, urbanization index had been analyzed. The highest index (besides Budapest) is in Hajdú-Bihar and Csongrád that are situated on Great Hungarian Lowland. If we are talking about mountainous region, only Borsod-Abaúj-Zemplén has an index above 50%; in the other 3 counties 43–47% of the people live in urban areas.

Generally, the Hungarian part of the CDR is occupied by more than 7 million inhabitants. 60.6% of them lives in some urban areas. There are 149 cities and towns and more than 1.4 thousand villages in the Hungarian part of CDR. The settlement density is the highest in Nógrád and Borsod-Abaúj-Zemplén, next to the Slovakian border (about 5 settl./100 km²). The lowest figures (about 1,3 settl./100 km²) are observed in Eastern Hungary near to Romania (counties Hajdú-Bihar, Békés, Csongrád).

5.4 Poland

This section concerns the southern part of Poland which is located in the Carpathian development region. This region covers ten subregions on the level NUTS3; Krakowsko-Tarnowski, Nowosądecki, City of Kraków, Rzeszowsko-Tarnobrzegi, Krośnieńsko-Przemyski, Częstochowski, Bielsko-Bialski, Centralny Śląski, Świętokrzyski and Rybnicko-Jastrzębski. It has to be pointed out

that the real Carpathians cover only part of the region mentioned above. It covers three subregions; Nowosądecki, Krośnieńsko-Przemyski, Bielsko-Bialski and parts of three others; Krakowsko-Tarnowski, City of Kraków, Rzeszowsko-Tarnobrzeski.

Among the subregions which are located in the real Carpathians, Krośnieńsko-Przemyski subregion has the biggest territory (10,332 km²) and has the lowest population density (91.8 inh./km²). The highest population density is in Bielsko-Bialski subregion (274.4 inh./km²) which is the smallest one (2,352 km²). This subregion is the only one among those, located in the real Carpathian area with a city that has a population above 100,000 inh. (city of Bielsko-Biała – 176 987 inh.). On the other hand it has the lowest number of cities (10) comparing to Nowosądecki subregion (23) and Krośnieńsko-Przemyski subregion (22). Bielsko-Bialski subregion has the highest urbanization index: 52.8% of population is living in cities, comparing to 32.5% in Nowosądecki subregion and 35.8% in Krośnieńsko-Przemyski subregion. The last one has the highest number of villages: 988 compared to 240 in Bielsko-Bialski subregion.

Subregions which are partly located in Carpathians have a higher population density: from 154.3 inh./km² in Rzeszowsko-Tarnobrzeski to 2242.9 inh./km² in City of Kraków. All those subregions which have population above 100,000 inh. have one big city. The biggest and most populated city in the Polish part of the Carpathian development region is the City of Kraków (734,510 inh.). Two other cities are: Rzeszów in Rzeszowsko-Tarnobrzeski subregion (157,702 inh.) and Tarnów in Krakowsko-Tarnowski subregion (116,487 inh.). The city of Kraków has the highest urbanization index: 100% of population is living in city, compared to 37.7% in Krakowsko-Tarnowski subregion and 46.1% in Rzeszowsko-Tarnobrzeski subregion. The number of villages is growing from Rzeszowsko-Tarnobrzeski subregion (829) to Krakowsko-Tarnowski subregion (1,445).

Out of the remaining subregions located in the Carpathian development region the most populated is Centralny Śląski (2,867,088 inh.) with a population density of 514 inh./km². Comparable population density is in Rybnicko-Jastrzębski subregion (475.1 inh./km²), population density is much lower in Świętokrzyski subregion (110.7 inh./km²) and in Częstochowski subregion (176.2 inh./km²). Centralny Śląski subregion has the utmost number of big cities with population above 100,000 inh. (9) and cities with population between 20,000 and 99,000 inh. (16). The most populated city is Katowice (313,219 inh.). This subregion has also the highest level of urbanization: 93.4% of its population living in cities. On the other hand Świętokrzyski subregion has the utmost number of small cities (24) and villages (2,202).

The main result of the analysis carried out on the population in Polish part of the Carpathian development region is that utmost numbers of cities are located at the edge of the Carpathian area (Krakowsko-Tarnowski and Centralny Śląski

subregion). In mountain areas, because of natural conditions, the number of cities, inhabitants and population density decreases as elevation increases. What is more, the number of inhabitants and population density decline in SE direction. This is due to historical conditions like world wars, destructions and resettlements.

The highest population density is in the city of Kraków (2,242.9 inh/km²) and Centralny Śląski subregion (514 inh/km²). On the other side, there is Krośnieńsko-Przemyski subregion (111.7 inh/km²) and Świętokrzyski subregion (110.7 inh/km²).

There is a comparable number of cities with population below 100,000 inh. in subregions partly located in Carpathian area (Krakowsko-Tarnowski and Rzeszowsko-Tarnobrzeski – 52 cities all together) and those located in real Carpathian area (Bielsko-Bialski, Nowosądecki and Krośnieńsko-Przemyski – 54 cities altogether).

The highest level of urban population is in the city of Kraków (100%), Centralny Śląski subregion (93.4%) and Rybnicko-Jastrzębski subregion (82.1%). On the other hand the highest level of rural population is in Nowosądecki subregion (32.5%), Krośnieńsko-Przemyski subregion (35.8%) and Krakowsko-Tarnowski subregion (37.7%).

5.5 Romania

Approximately 55% of all Carpathians is in Romania: more than the half of the Eastern Carpathians and all the Southern and West-Romanian Carpathians. Because of the fact that Romanian Carpathians are curved, majority of Romanian counties are covered by some mountainous ranges.

Analyzing the settlement structure in the Romanian part of the Carpathian development region it is necessary to mention that some of the cities, towns or villages situated in the CDR have much more in common with Carpathians in the geographic sense than others (for example on one side: Braşov – the big city located between the Inner-Eastern Carpathians and the Southern Carpathians and on the other side: Bucaresti – the capital and largest city of Romania situated on Romanian (Valahian) Lowland, on both sides of the River Dambovita). Moreover, some settlements are located on the River Danube near the Iron Gate (e.g. Drobeta-Turnu Severin, Orsova, Berzasca, Moldova Veche). However, the analysis is based on administrative units. That is why the analysis of Romanian settlement structure concerns not only the mountainous parts of counties but also the rest of their areas.

The main Romanian city, which is also an administrative unit in its own right, is Bucaresti – capital of Romania. There are nearly 2 million inhabitants living in Bucaresti on 238 km² that gives more than 8 thousand inh./km². Bucaresti is not

only one single city which fits the range above 500 thousand inh. living in, but it is also the most important industrial (processing industry) and business centre of Romania. Furthermore there are 18 cities with population above 100 thousand inh. in the Romanian part of the CDR. Many of them are very important as industrial and as transport centres (e.g. Arad, Braşov, Ploieşti, Piteşti, Sibiu, Ramnicu Valcea). Timişoara and Cluj-Napoca are also university centers. Hunedoara – situated in Western Romania (Transylvania) – is the county with the highest amount (7) of towns included to the third populate range (20–99 thousand inh.). However, Prahova, Suceava and Maramureş are the counties with 10 and more small towns (below 20 thousand inh.) located in.

Moreover Prahova is the county with the highest (besides Bucuresti) population (more than 800 thousand inh.) and population density (that is 176.5 inh./km²). It is quite understandable, because of the fact that it is near to the Romanian capital. Ilfov, in which Bucuresti is the administrative centre, has also very high population density (174.9 inh./km²). The lowest amount of inhabitants per km² is in Caras Severin the county located in the Southern Carpathians next to the border with Serbia.

Analyzing the populations division to urban and rural, urbanization index has been counted (besides administrative unit Bucuresti that has 100% urban population). The highest index is in Hunedoara (77.03%) and Braşov (75.28%). Moreover almost all Transylvania (exempt of North-West Romania – counties: Satu Mare, Bihor and Salaj) has an urbanization index of higher than 50%. The counties belonging to Banat, Valahia (exempt Prahova and Bucuresti) and Moldovia have indexes lower than 50%. The least urban population is in Ilfov that surrounds Bucuresti (26.5%). There are rather small villages located along roads running to Piteşti, Ploieşti or Buzău. There are also many interesting, in the ethnographic context long villages, located in the wide valleys (called “cimpulung”) in the Eastern Carpathians.

Romanian settlements are mostly inhabited by Romanian people. However there are places where majority of the inhabitants speaks Hungarian. For example, in Harghita (county located in the middle of Romanian part of Eastern Carpathians) more than 80% inhabitants speak this language. More than 90% of inhabitants speak Hungarian in the smallest town of Romania – Baile Tusnad. Hungarians are the biggest national minority in Romania settled especially in Transylvania.

Generally, the Romanian part of the CDR is occupied by nearly 15.5 million inhabitants. Romania has a very differentiated settlement structure. People live rather in or near the centers of industry than in mountainous villages or on Romanian edges. The highest settlement density is in Northern county Maramureş and in Central Romania – county Prahova and small subregion the surrounding industrial town of Medias. Towns and villages are mostly located along the main roads

or around industrial centers. Concerning the CDR more than the half of Romanians live in urban areas. 12.5% of the total amount of inhabitants living in the Romanian part of the CDR lives in Bucuresti.

5.6 Serbia

Borders of Carpathian development region (CDR) adopted for the purpose of this project cover significant part of Serbia extending far behind what is usually defined as Carpathian Mountains. Ten NUTS3 units, called in Serbian okrug, and districts either names are included in the project area. These are: North Banat District; Central Banat District; South Banat District; City of Belgrade; Podunavski District; Branicevski District; Pomoravski District; Borski District; Zaječarski District; Nisavski District. This way outlined project area is inhabited by almost half of Serbia's population. It includes also the capital city of Belgrade with more than 1.5 million people. Secondary urban centres of this territory are: Nis, Smederevo, Pancevo and Zrenjanin.

As regards the Serbian part of the Carpathian Mountains it stretches southward from the Iron Gate Danube bent in the eastern part of the country. Morphological structure of the mountain range fits relatively well the administrative boundaries of Borski district. So the settlement pattern of this district reflects well the characteristics of the Serbian Carpathian settlements.

Borski district is relatively sparsely populated – 42 inh./km². Settlement network consists of 6 urban settlements and 84 villages. The majority of people lives in urban areas (55%). The principal city of the districts has 39 thousand inhabitants. It is significantly bigger than other towns of the district due to the fact that it has been developing since the beginning of 20th century as copper mining centre. The remaining 5 towns are of small with population below 20 thousand. Among them Majdanpek is another mining town in the district.

Rural settlement networks in Borski district consists of 84 villages. They are situated along the Danube valley which is simultaneously the border between Serbia and Romania. Similarly valleys of small rivers are also places where villages have developed using the wider, more flat parts of the valleys with relatively better conditions for agriculture.

5.7 Slovakia

Slovakia is the only country included as a whole into the Carpathian development region. Moreover mountains and hills of the Carpathian range cover the country

except for plains in the very south and south east. The settlement network of this country consists of 138 cities and towns and 2,753 villages. The following characteristic of Slovakian settlement network is based on data for 8 NUTS3 territorial units called in Slovakia kraj, including Bratislavský kraj, which encompasses only the capital city of Bratislava with its vicinity. Leaving aside the capital, the density of population which goes in pair with settlement density spans from 70 inh./km² in Banskobystrický kraj to 134 inh./km² in Trnavský kraj. The level of urbanization is differentiated as urbanization index varies from 47% in Nitrianský kraj to 57% in Trenčianský kraj. Certainly Bratislavský kraj is the most densely populated (294 inh./km²) and the most urbanized (urbanization index 83%).

As far as urban settlements are concerned, there are two big cities in the country: the capital city of Bratislava with population of 425,000 and the regional centre of eastern Slovakia Košice, with population of 235,000. All other cities in Slovakia have less than 100,000 inhabitants. The number of cities with a population between 20,000 and 100,000 inh. varies from 1 in Bratislavský kraj to 7 in Trenčianský kraj and in Presovský kraj. Towns below 20,000 inh. are more numerous and their number spans from 5 in Bratislavský kraj to 19 in Banskobystrický kraj. The overall number of urban settlements (excluding Bratislavský kraj which consists mainly of the capital) spans from 15 in Nitrianský kraj to 24 in Banskobystrický kraj.

Rural settlements are almost equally important as cities and towns as they provide home for 44% of Slovaks. For obvious reasons it plays only a marginal role in Bratislavský kraj where 66 villages are located around the city of Bratislava. In other regions, the number of villages varies from 235 in Trnavský kraj to 643 in Presovský kraj. The density of rural settlements counted as number of villages per 100 km² varies from 3.2 in Bratislavský kraj and 4.4 in Zilinský kraj to 7.2 in Presovský kraj. Bearing in mind that in the neighboring Kosický kraj it is 6.3 it is evident that the density of rural settlement is significantly higher in eastern Slovakia than in other parts of the country. Slovak villages have usually compact shape with a few single farmsteads scattered far from the main built-up area. It results from cultural tradition as well as from the fact that the collectivization of farming during the communist period prevented the sprawl of farming settlements.

Slovakia is a typical mountainous country. Therefore relief to high extent determines spatial pattern of settlements. Two major urban centers (Bratislava and Košice) and several cities of secondary importance (e.g. Trnava, Nitra, Michalovce) are located at the foothill of the mountains. Except for small, flat areas in the south and south-east of the country rural and urban settlements are concentrated along valleys of the main rivers. River valleys provided favorable conditions for rural settlements due to their fertile soils as well as for urban set-

tlements as natural transport corridors. Initially it was mainly rafting transport and later also road and railway transport. The longest chain of settlements has developed along the Vah valley with the following cities: Liptovský Mikuláš, Ružomberok, Žilina, Považská Bystrica, Dubnica nad Váhom, Trenčín, Nove Mesto nad Vahom, Piest'any. Similar but shorter are chains of settlements along other rivers e.g. Hron – with the cities of Brezno, Banská Bystrica and Zvolen; Poprad – with Poprad, Kežmarok, Stará Ľubovňa, Plavec (downstream it continues in Poland with Muszyna, Piwniczna and Stary Sącz). Important urban centers have often developed in merging points of two or more river valleys e.g. city of Žilina has developed the point where two tributaries (Kysuca, Rajcanka) join Vah River. Due to their suitability for settlement development bowl shaped valleys are usually densely built-up and the density of population reaches there extremely high values – sometimes about 600 people per sq. km.

By contrast mountains are sparsely populated and there are no permanent settlements in the highest parts of the mountains. Human activity on this high has been limited to seasonal grazing and to the construction of tourism facilities.

5.8 Ukraine

Ukrainian Carpathians that are the part of Eastern Carpathians occupy more than 14% of the area of all Carpathian Mountains. They are situated in the territory of 4 regions (oblasts): Zakarpattia, Lviv, Ivano-Frankivsk and Chernivtsi Oblast.

The settlement structure in the Ukrainian part of the Carpathian development region is very differentiated. Firstly, it is necessary to say that there are not only districts, cities, towns and villages as the main types of settlements, but there are also other urban settlements like e.g. town type villages. For the purpose of this analysis, inhabitants living in each urban type settlement were included to the final amount of urban population.

The main Ukrainian city in the CDR is Lviv – the biggest city of Western Ukraine, very important historic and cultural centre of Eastern Europe. There are more than 730 thousand inh. living in Lviv. Furthermore there are 3 cities with a population above 100 thousand inh. in the Ukrainian part of the CDR (Cernivci, Ivano-Frankivsk and Uzhorod). Cernivci is the most populated city among them (242.25 thousand inh.) and the only one in Chernivtsi Oblast with more than 20 thousand inh. Ivano-Frankivsk (situated in Ivano-Frankivsk Oblast) is also a big city with more than 200 thousand inh. It is developed especially in light industry. In Zakarpattia Oblast there is also one city with more than 100 thousand inhabitants – Uzhorod. Very important international railway connecting Lviv with Budapest runs through the city (so called The First Hungar-Galician Iron Railway).

Lviv Oblast – situated in Western Ukraine – is not only the region with the highest amount (12) of towns belonging to the third populates range (20–99 thousand inh.), but it has also the highest amount of small towns (below 20 thousand inh.) – 64. Moreover Lviv Oblast is the region with the highest population (more than 2.5 million inh.) and population density (that is 117.6 inh./ km²) in the CDR. The amount of inhabitants is the lowest in Chernivtsi Oblast (905,4 thousand of inh.) but the lowest population density can be observed in Zakarpattia Oblast (97.2 inh./km²).

Furthermore, if we are talking about population's division into urban and rural categories, the highest urbanization index is in Lviv Oblast (60.6%). The rest of Oblasts situated in the CDR have the index lower than 50%.

The highest number of villages is in Lviv Oblast (1,850 villages). If we add it to the amount of towns and cities we will achieve 1,927 settlements that will give us more than 8 settlements per 100 km². This is the highest index of settlement density in the CDR's oblasts. The lowest settlement density is in Zakarpattia Oblast that is the most mountainous region in the Ukrainian part of the CDR.

Generally, the Ukrainian part of the CDR is occupied by more than 6 million inhabitants. Lviv Oblast is the most populated region with the densest settlement structure. Zakarpattia, as the main mountainous oblast, has the lowest index of population and settlement density. Beside high mountain ranges, towns and villages are rather evenly located. Concerning the CDR about 46% of the Ukrainians live in urban areas. Approximately 12% of the CDR's Ukrainian inhabitants live in Lviv.

5.9 Conclusions

Having researched the characteristics of settlements in each country in Carpathian development region, it is a time to present, in the following chapter, our findings concerning the whole project area.

The very first of them and the most evident one seems to be the difference between settlements of Carpathian Mountains and settlements located either at the foothills of mountains or completely outside Carpathian mountain range on plains or in other mountain groups (Alps, Balkans). Namely all metropolises and the vast majority of big cities (100,000–500,000 inhabitants) included into Carpathian development region belong to the latter category. E.g. Budapest, Bratislava, Krakow at the foothills and Belgrade, Lviv, Bucharest and Vienna located completely outside Carpathians. So settlement network of Carpathian Mountains consists predominantly of medium sized cities towns and villages.

The next feature of the settlements to point out is a relatively low level of urbanisation in the whole Carpathian range. Values of the urbanisation index quoted

in the table below usually fluctuate around 50% with significant parts of Romania and Ukraine as well as eastern part of Polish Carpathians where it is below 50%. However, if we exclude the above mentioned urban centres located outside Carpathians it would be much lower and probably the Czech Carpathians would also turn out predominantly rural. Mining regions are an exemption from this rule and they are always highly urbanised regardless of their location in the mountains e.g. Bor copper mining region in Serbia or outside the mountain range e.g. Ostrava and Upper Silesia coal mining region in Czech Republic and in Poland.

As regards the number of urban settlements below 100,000 inhabitants there is a visible difference between the Western Carpathians on one hand and the Eastern and Southern Carpathians on the other. The number of cities and towns of this size is significantly higher in Czech Republic, Poland, Slovakia and Hungary than in Romania. The highest numbers in Ukraine result mainly from the fact that Ukrainian NUTS3 units (oblast) are much larger so more settlements fall within their borders.

The influence of natural environmental features namely the network of navigable rivers and the relief on the spatial structure of human settlements in the project area. Danube river links four capital cities in the project area: Vienna, Bratislava, Budapest and Belgrade. Other rivers which constituted axis for settlement development are Vah, Morava (in Czech Republic), Mureş. The mountainous relief of Carpathians cause the concentration of human settlements (urban as well as rural) in valleys of rivers and streams where land is more suitable for construction and for agriculture. Together with an irregular rainfall pattern it leads to the fact that floods endanger many settlements across the project area.

Traditional trade routes which had greatly contributed for centuries to the settlement development and to the development of economic links between cities (which often took form of market chains) are now less noticeable in the current spatial structure of settlements. Indeed they are visible only where modern transport corridors (railways and roads) developed along ancient routes. One of the best examples of this sort of settlement concentration is an almost continuous belt of rural and urban settlements between Krakow and Lviv along foothills of the Carpathians.

As rural settlements in many areas of the Carpathians (especially in Romania) provide home for more than the half of the population they are equally important as urban ones. They differ very much in terms of spatial patterns pending on cultural traditions and effects of collectivisation processes as well as in terms of size, economic prosperity and quality of life. Therefore special attention should be paid to multifunctional development of rural settlements while formulating final conclusions, recommendations and policy guidelines in the end of the project.