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Review Article

Spatial Analysis of Data on the Basis of the Digital Model of Relief and Locality (Example of Shemakha, Akhsu and Ismayilli Districts)

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Abstract

The article examines the issues of studying the degree of susceptibility of sloping lands in Azerbaijan in the example of specific administrative territorial units, flat areas with a slope of up to 6% (about 3.50) are concentrated in Akhsu district 71%, and in Shemakha almost 49%. The steepest slopes are observed in the Ismaili region, where almost 26% of the territory has a slope of 10-18%, 30% of its area slope is 18%.

Keywords: Sloping slopes; Arable lands; A layer; A database; A Gradient class; Soil; Forest pastures; Geese; Cartographic materials

Introduction

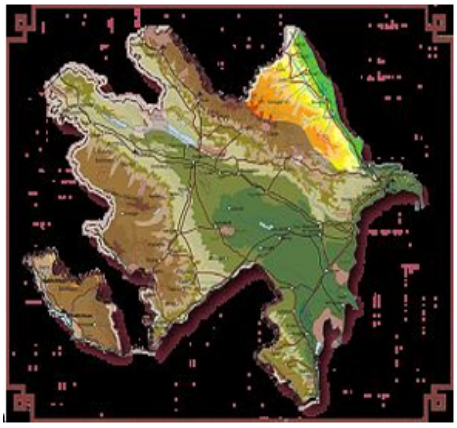

Figure 1

Figure 1 Spatial analysis includes operations performed on geographic data using available methods and techniques in GIS software, with a view to describing the relationships between elements of the geographical environment. The analysis can be carried out on the data, both in the vector and raster systems, and touch the geometry and attributes of the vector data [1-8].

Search for Information in the Database

The main operation that can be performed based on the GIS database is information retrieval. This database has a relational nature and therefore, the object designation provokes the selection of the corresponding records from the corresponding attribute table, and vice versa. The first thematic layer in the database was the Digital Elevation Model in raster format. On its basis, as a result of the transformations and calculations, information on the height of the nos. and the slope of the terrain on the territory of Azerbaijan selected for analysis, which includes three regions: Shemakha, Akhsu and Ismayilli.

Vertical Position Factor

The major part of the study area is in the following ranges of heights: 1) from 0 to 300 mas-23.16%, from 300 to 600 m-19.84% and 3) 600-900 m-23, 75% of the total area. Above 900 m and up to 3400 m above sea level, about 30% of its area is located (Table 1). Of the administrative units belonging to the study area, the most highly allocated land Ismaili region. In this area 90: it is at an altitude of more than 300 meters above sea level, and sometimes the altitude is even higher than 3400 m. In Akhsu region about 73% of the earth is at an altitude up to the sea level. Shemakha district is an intermediate region, its largest area is at an altitude of 900 m above sea level-about 75%. In this area there is also a territory located below sea level-31244.66 hectares [8-18].

Classes of Slope

In the analyzed territory, the largest area is occupied by areas with a slope of up to 6-46%. Significant areas are also in the intervals from 6 to 10% -18% and from 18% to almost 23% of the total area

(Table 2). Against the backdrop of administrative-territorial units, gently sloping areas with a slope of up to 6% (about 3.50) are concentrated in the Akhsu district 71%, and in Shemakha almost 49%. The steepest slopes are observed in the Ismaili region, where almost 26% of the territory has a slope of 10-18%, 30% of its area slope is 18%.

Table 1: The distribution of the study area (ha and%) over the altitude intervals.

Height, m. н.у.м.		Regions			Together
		Shemakha	Akhsuinsky	Ismailinskiy	
<0	ha	31 245	0	0	31245
	%	8,12	0,00	0,00	5
0-300	ha	69 737	73029	17334	160101
	%	18,13	72,99	8,39	23
300-600	ha	84924	11744	40470	137138
	%	22,08	11,74	19,58	20
600-900	ha	101 678	13550	48965	164193
	%	26,44	13,54	23,69	24
900-1200	ha	46975	1562	15671	64208
	%	12,21	1,56	7,58	9
1200-1500	ha	23469	162	20529	44159
	%	6,10	0,16	9,93	6
1500-1800	ha	15775	0	22305	38080
	%	4,10	0,00	10,79	6
1800-2100	ha	7885	0	22460	30345
	%	2,05	0,00	10,87	4
2100-2400	ha	2279	0	10223	12502
	%	0,59	0,00	4,95	2
2400-2700	ha	572	0	4197	4769
	%	0,15	0,00	2,03	1
2700-3000	ha	42	0	2915	2967
	%	0,01	0,00	1,41	0
3000-3300	ha	0	0	1400	1400
	%	0,00	0,00	0,68	0
>3400	ha	0	0	191	191
	%	0,00	0,00	0,09	0
Together	ha	384 582	100 047	206660	691289

Table 2: The distribution of the study area (ha and%) over the slopes of the terrain.

Height, m. н.у.м		Regions			Together
		Shemakha	Akhsuinsky	Ismailinskiy	
0-6	ha	187157	71131	61504	319792
	%	48,67	71,10	29,76	46,26
6-10	ha	88830	7393	28770	124993
	%	23,10	7,39	13,92	18,08
10-18	ha	87641	17033	53425	158099
	%	22,79	17,02	25,85	22,87
18-27	ha	17782	4326	34060	56168
	%	4,62	4,32	16,48	8,13
27-35	ha	2855	164	20176	23195
	%	0,74	0,16	9,76	3,36
>35	ha	317	0	8724	9041
	%	0,08	0,00	4,22	1,31
Together		384582	100 047	206660	691289

Classes of the Slope of the Terrain, Depending on the Altitude Intervals

Table 3: The distribution of the territory of the Shemakha district according to the grades of the terrain according to the altitude intervals.

Height, m. above sea level	slope classes%												sum
	0-6		6-10		10-18		18-27		27-37		37-52		
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<0	31245	8.12	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	31245
0-100	37036	9,63	714	0,19	251	0,07	27	0,01	2	0,00	0	0,00	38030
100-200	13223	3,44	2852	0,74	1957	0,51	372	0,10	19	0,00	0	0,00	18422
200-300	4661	1,21	4076	1,06	3730	0,97	752	0,20	67	0,02	0	0,00	13285
300-400	7157	1,86	5037	1,31	5548	1,44	1159	0,30	73	0,02	0	0,00	18978
400-500	15741	4,09	7078	1,84	6609	1,72	1302	0,34	70	0,02	0	0,00	30800
500-600	16189	4,21	8845	2,30	8644	2,25	1420	0,37	52	0,01	0	0,00	35150
600-700	17033	4,43	11665	3,03	9814	2,55	1245	0,32	41	0,01	1	0,00	39799
700-800	16708	4,34	12164	3,16	8375	2,18	890	0,23	24	0,01	1	0,00	38162
800-900	7497	1,95	8050	2,09	7152	1,86	962	0,25	55	0,01	1	0,00	23717
900-1000	4810	1,25	6280	1,63	5615	1,46	786	0,20	100	0,03	5	0,00	17596
1000-1100	4415	1,15	4804	1,25	5480	1,43	658	0,17	97	0,03	11	0,00	15466
1100-1200	4078	1,06	4265	1,11	4780	1,24	637	0,17	128	0,03	25	0,01	13914
1200-1300	3402	0,88	3522	0,92	3348	0,84	424	0,11	101	0,03	18	0,00	10816
1300-1400	1625	0,42	2665	0,69	2605	0,68	287	0,07	79	0,02	25	0,01	7286
1400-1500	722	0,19	1880	0,49	2342	0,61	342	0,09	73	0,02	9	0,00	5368
1500-1600	472	0,12	1765	0,46	2806	0,73	634	0,16	63	0,02	1	0,00	5741
1600-1700	497	0,13	1161	0,30	2885	0,75	833	0,22	58	0,02	2	0,00	5437
1700-1800	290	0,08	988	0,26	2183	0,57	1063	0,28	73	0,02	1	0,00	4597

1800-1900	230	0,06	650	0,17	1654	0,43	1040	0,27	133	0,03	1	0,00	3708
1900-2000	88	0,02	242	0,06	991	0,26	998	0,26	203	0,05	1	0,00	2523
2000-2100	32	0,01	69	0,02	439	0,11	741	0,19	357	0,09	17	0,00	1655
2100-2200	1	0,00	17	0,00	194	0,05	521	0,14	346	0,09	45	0,01	1124
2200-2300	2	0,00	16	0,00	102	0,03	353	0,09	264	0,07	46	0,01	782
2300-2400	5	0,00	4	0,00	28	0,01	132	0,03	156	0,04	49	0,01	373
1	2	3	4	5	6	7	8	9	10	11	12	13	14
2400-2500	0	0,00	11	0,00	42	0,01	92	0,02	111	0,03	27	0,01	282
2500-2600	0	0,00	7	0,00	27	0,01	75	0,02	62	0,02	24	0,01	197
2600-2700	0	0,00	3	0,00	20	0,01	25	0,01	41	0,01	5	0,00	94
2700-2800	0	0,00	1	0,00	14	0,00	12	0,00	7	0,00	2	0,00	35
2800-2900	0	0,00	1	0,00	3	0,00	2	0,00	0	0,00	0	0,00	7
Sum	187 157	48,67	88830	23,10	87641	22,79	17782	4,62	2855	0,74	317	0,08	384582

Table 4: Distribution of the territory of the Akhsu region according to the grade of the terrain depending on the altitude interval.

Height, m. above sea level	Slope classes%										Sum
	0-6		6-10		10-18		18-27		27-35		
	ra	%	ra	%	ra	%	ra	%	ra	%	
<100	52626	52,60	16	0,02	13	0,01	0	0,00	0	0,00	52656
100-200	12380	12,37	817	0,82	485	0,49	74	0,07	0	0,00	13757
200-300	3315	3,31	1150	1,15	1830	1,83	317	0,32	5	0,01	6617
300-400	418	0,42	693	0,69	2051	2,05	507	0,51	19	0,02	3687
400-500	215	0,21	390	0,39	2220	2,22	834	0,83	13	0,01	3672
500-600	273	0,27	538	0,54	2594	2,59	974	0,97	5	0,01	4384
600-700	327	0,33	575	0,76	3338	3,34	846	0,88	20	0,02	5318
700-800	690	0,69	1516	1,52	2689	2,69	406	0,41	22	0,02	5324
800-900	681	0,68	988	0,99	1060	1,06	166	0,17	13	0,01	2909
900-1000	154	0,15	254	0,28	241	0,24	79	0,08	16	0,02	775
1000-1100	29	0,03	198	0,20	281	0,28	27	0,03	16	0,02	551
1100-1200	23	0,02	36	0,04	127	0,13	32	0,03	17	0,02	236
1200-1300	0	0,00	7	0,01	82	0,08	29	0,03	13	0,01	131
1300-1400	0	0,00	4	0,00	20	0,02	5	0,00	3	0,00	31
Sum	71131	71,1	7393	7,39	17033	17,02	4326	4,32	164	0,16	100 047

Table 5: The distribution of the territory of the Isma yilli region according to the grades of the terrain according to the altitude intervals.

Height, m. above sea level	Slope classes%												Sum
	<6		6-10		10-18		18-27		27-37		37-68		
	Ґa	%	ra	%	ra	%	ra	%	ra	%	ra	%	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<100	1849	0,89	321	0,16	92	04	0	0.00	0	0,00	0	0,00	2262
100-200	624	0,30	376	0,18	484	0.23	51	0.02	10	0.01	0	0,00	1546
200-300	10302	4,98	1937	0,94	1065	0.52	194	0.09	29	0.01	0	0,00	13,527
300-400	3303	1,60	2322	1,12	2564	1.24	288	0.14	26	0,01	3	0,00	8507
400-500	4112	1,99	2019	0,98	3240	1.57	569	0.29	30	0,01	2	0,00	9999
500-600	13759	6,66	28668	1,39	4220	2..04	1090	0.53	26	0,01	1	0,00	21964
600-700	13807	6,68	4012	1,94	4640	2.25	982	0.48	32	0,02	3	0,00	23476
700-800	8587	4,15	4068	1,97	3569	1.73	841	0.41	82	0,04	7	0,00	17154
800-900	2114	1,02	2386	1,15	2679	1.30	985	0.48	147	0,07	25	0,01	8336

900-1000	872	0,42	1190	0,58	2029	0.98	1130	0.55	349	0,17	48	0,02	5617
1000-1100	414	0,20	740	0,36	1699	0.82	1446	0.70	492	0,24	96	0,05	4887
1100-1200	194	0,09	552	0,27	1713	0.83	1776	0.86	776	0,38	158	0,08	5167
1200-1300	212	0,10	621	0,30	2015	0.98	2117	1.02	1025	0,50	191	0,09	6181
1300-1400	182	0,09	720	0,35	2553	1.24	2269	1.10	1154	0,56	237	0,11	7114
1400-1500	177	0,09	695	0,32	2440	1.18	2325	1.13	1359	0,66	276	0,13	7233
1500-1600	119	0,6	547	0,26	2499	1.21	2275	1.10	1429	0,69	376	0,18	7244
1600-1700	152	0,7	558	0,27	2440	1.18	2394	1.16	1527	0,74	455	0,22	7527
1700-1800	154	0,07	520	0,25	2490	1.21	2339	1.12	1561	0,76	448	0,24	7534
1800-1900	153	0,07	610	0,30	2743	1.32	2440	1.18	1522	0,74	533	0,26	7991
1900-2000	174	0,08	638	0,31	2682	1.30	2112	1.18	1268	0,61	604	0,29	7806
2000-2100	86	0,04	405	0,20	2355	1.14	1439	1.02	1130	0,55	573	0,28	6662
2100-2200	81	0,04	359	0,17	1723	0.83	661	0.70	1057	0,51	572	0,28	5231
2200-2300	59	0,03	246	0,12	769	0.37	2439	0.32	794	0,38	619	0,30	3148
2300-2400	7	0,00	30	0,01	156	0.08	373	0.18	682	0.33	596	0.29	1844
2400-2500	2	0,00	9	0,00	53	0.03	217	0.10	674	0.33	569	0.28	1523
1	20	3	4	5	6	7	8	9	10	11	12	13	14
2500-2600	0	0,00	2	0,00	52	0,02	232	0,11	603	0,29	562	0,27	1451
2600-2700	2	0,00	6	0,00	42	0,02	172	0,08	557	0,27	446	0,22	1223
2700-2800	1	0,00	5	0,00	65	0,03	168	0,08	509	0,25	394	0,19	1141
2800-2900	0	0,00	10	0,00	66	0,03	141	0,07	382	0,18	317	0,15	916
2900-3000	6	0,00	7	0,00	77	0,04	173	0,08	329	0,16	267	0,13	858
3000-3100	1	0,00	21	0,00	84	0,04	183	0,09	292	0,14	174	0,08	754
3100-3200	2	0,00	2	0,00	59	0,03	110	0,05	177	0,09	98	0,05	448
3200-3300	0	0,00	3	0,00	34	0,02	59	0,03	76	0,04	26	0,01	198
3300-3400	0	0,00	3	0,00	35	0,02	38	0,02	42	0,02	4	0,00	122
3400-3500	0	0,00	0	0,00	3	0,00	16	0,01	21	0,01	2	0,00	42
3500-3600	0	0,00	2	0,00	4	0,00	11	0,01	11	0,01	0	0,00	28
Sum	61504	29,76	28,770	13,92	53425	25,85	34060	16,48	20176	9,76	8724	4,22	206660

Tables 3-5 contain data that allow analyzing the distribution of the slope of the terrain along altitude intervals. This distribution was prepared for all administrative units of the area under consideration. In the Shemakha region, a clear dependence is shown, an increase in the slope, along with an increase in altitude above sea level. Up to a height of 1200 m there are lands with a slight slope-up to 6% (3.50). They occupy 49% of the area. Territories here with a slope of 6-10% and 10-18% are located at an altitude of 400-1700 m. M.u.m. about 23% of the area's area. Areas with a slope of more than 18% make up more than 5% of the total area and are located in the highlands. In the Aksuinsky area, the terrain with an insignificant slope of up to 6% (3.50) prevails and they are located mainly at an altitude of 300 m above sea level - this is 71% of the total area. Areas with a slope of more than 6% are located at altitudes from 300 to 1400 m above sea level - about 29%. Clearly marked (17% of the total area) of land with a slope of 10-18% (6-100) (Table 4).

In the Ismayilli region, most of the territory with a slope of <6 to 10% is located at an altitude of 300 to 900 m above sea level. Areas with a slope of 10 to 37% occur at an altitude of 3000 meters above sea level. Locations with a slope of more than 37%% are located at the highest altitude but make up only 4% of the total area of the area. The second, from the thematic layers created in the database, is the land use of the study area. Due to the availability of cartographic materials, it was considered exclusively for the territory of the Akhsu district.

Analysis of the structure of land use in the Akhsu district showed that it is purely agricultural. The area is dominated by arable land, which makes up about 50% and tilled areas, which include pastures, meadows and degrees - more than 23% of the total area. Agricultural lands are supplemented with vegetable gardens, orchards and vineyards, occupying 3% of the area. There are few forests and shrubs, in general, about 12%. There are also areas completely devoid of vegetation in the Akhsu district, about 4% of them. A small part is occupied by water reservoirs, wetlands and urban and rural areas, amounting to 6.9% of the total area (Tables 6-8) provide information on the distribution of land use patterns over altitudinal intervals and grades of terrain slopes.

Most agricultural land is located at a height of up to 400 m above sea level. Only pastures are located up to an altitude of 1400 meters above sea level. forest territories are in all altitude intervals. The remaining forms of land use are located at lower altitudes (Table 7). Considering the slope of the slopes, most of the territories are in the gradient class 0-6% - almost 71%. Only pastures, green lands, as well as deciduous forests, are located on slopes with a higher slope (Table 8).

Table 6: Land use in Ahsuinsky district.

Land use	ha	%
The Cities	1237	1,24
Pshchenitsa	49979	49,96
Gardens	1123	1,12
Vineyards	528	0,53
Arable land	52868	52,84
Pastures	12394	12,39
Green grounds	6511	6,51
Power	4708	4,71
Dry dried valleys	673	0,67
Coniferous forests	535	0,53
Deciduous forests	8451	8,45
Mixed forests	216	0,22
Marshes	844	0,84
Reservoirs	27	0,03
Stavy	25	0,02
Piece of lake	80	0,08
Bays	1137	1,14
Shrubs	2668	2,67
Soil without vegetation	248	0,25
Rocks	3827	3,38
Rural low construction	527	0,53
City low building	3919	3,92
High Urban Construction	147	0,15
Rockstones, mines	241	0,24
Together	100 047	100 00

Table 7: Land use by altitude intervals.

Land use	Height, m. above sea level															
	<100		100-200		200-300		300-400		400-500		500-600		600-700		700-800	
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
The Cities	231	0,23	953	0,95	53	0,05	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Pshchenitsa	42825	42,81	5607	5,60	690	0,69	235	0,23	0	0,00	0	0,00	7	0,01	142	0,14
Gardens	339	0,34	701	0,70	42	0,04	0	0,00	0	0,00	0	0,00	1	0,00	41	0,04
Vineyards	19	0,02	113	0,11	306	0,31	40	0,04	11	0,01	0	0,00	0	0,00	35	0,04
Pastures	438	0,44	1635	1,63	461	0,46	511	0,51	691	0,69	1392	1,39	2385	2,38	2623	2,62
Green grounds	42	0,04	596	0,60	1345	1,34	1418	1,42	1239	1,24	873	0,87	495	0,49	31	0,31
Power	3188	3,19	1459	1,46	61	0,06	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Dry Dried Loose Valleys	223	0,22	242	0,24	201	0,20	6	0,01	0	0,00	0	0,00	0	0,00	0	0,00
Coniferous forests	535	0,53	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Deciduous forests	0	0,00	93	0,09	62	0,06	421	0,42	1018	1,02	1546	1,55	1928	1,93	1901	1,90
Mixed forests	33	0,03	76	,08	104	0,10	0	0,00	0	0,00	3	0,00	0	0,00	0	0,00

Marshes	844	0,84	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Reservoirs	0	0,00	27	0,03	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Stavy	23	0,02	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	2	0,00
Piece of lake	0	0,00	80	0,08	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Bays	0	0,00	82	0,08	289	0,29	165	0,16	96	0,10	196	0,20	230	0,23	78	0,08
Shrubs	1110	1,11	312	0,31	1244	1,24	2	0,00	0	0,00	0	0,00	0	0,00	0	0,00
The soil layer without vegetation	138	0,14	56	0,06	53	0,05	1	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Rocks	1	0,00	414	0,41	1114	1,11	904	0,90	627	0,63	372	0,37	273	0,24	136	0,14
Rural low construction	0	0,00	219	0,22	45	0,04	8	0,01	0	0,00	0	0,00	16	0,02	38	0,04
City low building	2383	2,38	905	0,90	541	0,54	2	0,00	12	0,01	25	0,03	23	0,02	28	0,03
High Urban Construction	147	0,15	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Rockstones, mines	0	0,00	217	0,22	24	0,02	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00
Together	52521	52,50	13786	13,78	6636	6,60	3713	3,71	3696	3,69	4408	4,41	5322	5,32	5333	5,33

Land use	**Height, m. above sea level**												**Вместе**	
	800-900		**900-1000**		**1000-1100**		**1100-1200**		**1200-1300**		**1300-1400**			
	ha	**%**	**ha**	**%**	**ha**	**%**	**ha**	**%**	**ha**	**%**	**ha**	**%**	**ha**	**%**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**16**	**17**
The Cities	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	1237	1,24
Pshchenitsa	367	0,37	105	0,11	1	0,00	0	0,00	0	0,00	0	0,00	49979	49,96
Gardens	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	1123	1,12
Vineyards	4	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	528	0,53
Pastures	1530	1,53	384	0,38	217	0,22	98	0,10	28	0,03	1	0,00	12394	12,39
Green grounds	189	0,19	3	0,00	0	0,00	0	0,00	0	0,00	0	0,00	6511	6,51
Power	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	4708	4,71
Dry Dried Loose Valleys	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	673	0,67
Coniferous forests	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	535	0,53
Deciduous forests	617	0,62	260	0,26	334	0,33	137	0,14	103	0,10	30	0,03	8451	8,45
Mixed forests	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	216	0,22
Marshes	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	844	0,84
Reservoirs	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	27	0,03
Stavy	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	25	0,02
Piece of lake	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	80	0,08
Bays	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	1137	1,14
Shrubs	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	2668	2,67
The soil layer without vegetation	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	248	0,25
Rocks	21	0,02	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	3827	3,83
Rural low construction	180	0,18	22	0,02	0	0,00	0	0,00	0	0,00	0	0,00	527	0,53
City low building	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	3919	3,92
High Urban Construction	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	147	0,15
Rockstones, mines	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	241	0,24
Together	2909	2,91	775	0,77	551	0,55	236	0,24	131	0,13	31	0,03	100047	100,0

Table 8: Land use according to grades of the slope of the terrain.

Land use	Classes slopes%										Together	
	0-6		6-10		10-18		18-27		27-37			
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
The Cities	49085	49,06	533,2	0,53	348	0,35	13	0,01	1	0,00	49979	49,96
Pshchenitsa	1113	1,11	105,3	0,11	19	0,02	0	0,00	0	0,00	1237	1,24
Gardens	1083	1,08	32,8	0,03	8	0,01	0	0,00	0	0,00	1123	1,12
Vineyards	371	0,37	51,2	0,05	90	0,09	16	0,02	0	0,00	528	0,53
Pastures	2895	2,89	2602,5	2,60	5956	5,95	932	0,93	8	0,01	12394	12,39
Green grounds	658	0,66	1462,2	1,46	3486	3,48	893	0,89	12	0,01	6511	6,51
Power	4632	4,63	53,8	0,05	19	0,02	3	0,00	0	0,00	4708	4,71
Dry Dried Loose Valleys	642	0,64	5,8	0,01	12	0,01	12	0,01	0	0,00	673	0,67
Coniferous forests	535	0,53	0,0	0,00	0	0,00	0	0,00	0	0,00	535	0,53
Deciduous forests	595	0,60	1565,0	1,56	4655	4,65	1501	1,50	134	0,13	8451	8,45
Mixed forests	208	0,21	1,7	0,00	6	0,01	11	0,00	0	0,00	216	0,22
Marshes	844	0,84	0,0	0,00	0	0,00	0	0,00	0	0,00	844	0,84
Reservoirs	27	0,03	0,0	0,00	0	0,00	0	0,00	0	0,00	27	0,03
Stavy	25	0,02	0,4	0,00	0	0,00	0	0,00	0	0,00	25	0,02
Piece of lake	78	0,08	1,9	0,00	0	0,00	0	0,00	0	0,00	80	0,08
Bays	735	0,74	146,5	0,15	179	0,18	74	0,07	2	0,00	1137	1,14
Shrubs	2550	2,55	25,3	0,03	62	0,06	31	0,03	0	0,00	2668	2,67
The soil layer without vegetation	196	0,20	16,8	0,02	24	0,02	11	0,01	0	0,00	248	0,25
Rocks	310	0,31	585,5	0,59	2051	2,05	872	0,87	8	0,01	3827	3,83
Rural low construction	354	0,35	117,1	0,12	55	0,05	1	0,00	0	0,00	527	0,53
City low building	3723	3,72	87,9	0,09	98	0,10	1	,01	0	0,00	3919	3,92
High Urban Construction	147	0,15	0,0	0,00	0	0,00	0	0,00	0	0,00	147	0,15
Rockstones, mines	217	0,22	8,1	0,01	16	0,02	0	0,00	0	0,00	241	0,24
Together	71026	70,99	7403,2	7,40	17084	17,08	4369	4,37	165	0,17	100047	100,00

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