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Protection against damaging water effects in the Republic of Serbia, 2011

– Preliminary results –

The data represent the preliminary results of the annual survey referring to protection against flood and river control, land drainage, land erosion control and torrent regulation.

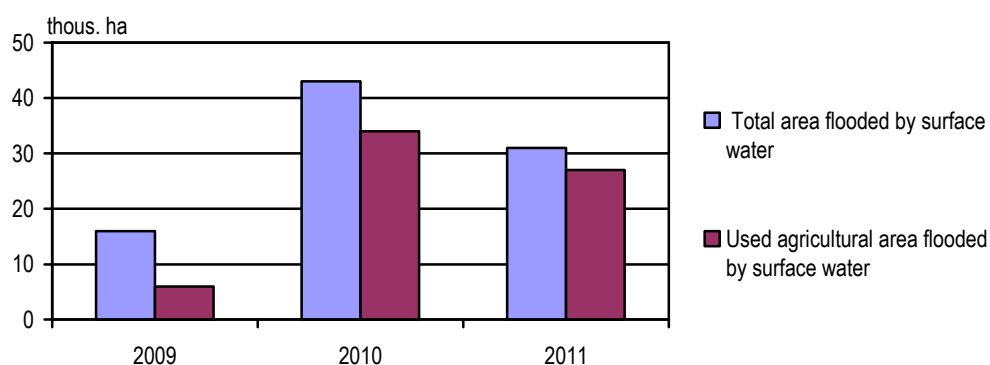
The total area flooded by surface waters in 2011 was 30 706 ha, of which 88.2% referred to used agricultural land.

The total area defended from flooding in 2011 amounted to 1 958 thous. ha and is almost unaltered in relation to the previous year. Used agricultural land represented 87.3% of the area defended from flooding, showing the decrease of 3.1%, compared to 2010.

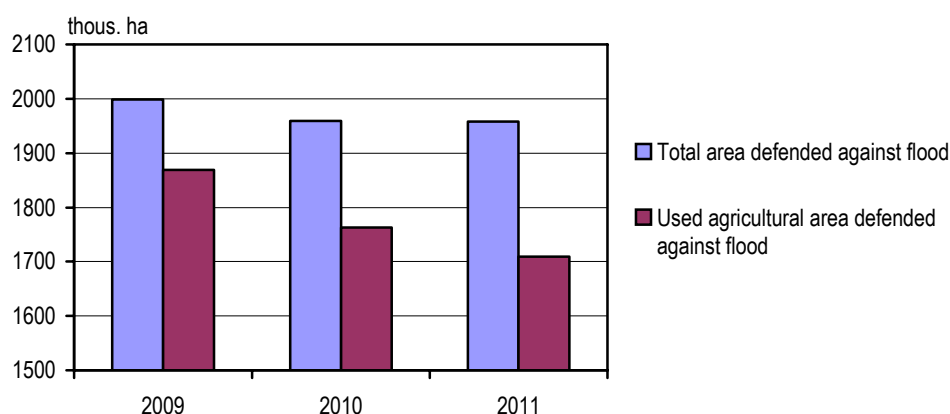
In 2011, system of drainage area decreased by 4.0% relative to 2010, while the length of drainage canals was by 2.7% shorter than the referent values in 2010. Area of eroded land in 2011 amounted to 3 708 km², i.e. 41.4% more than in the same period last year.

Starting from 1999 the Statistical Office of the Republic of Serbia has not at disposal and may not provide available certain data relative to AP Kosovo and Metohia and therefore these data are not included in the coverage for the Republic of Serbia (total).

Graph 1. Total and used agricultural areas flooded by surface waters in the Republic of Serbia, 2009–2011



Graph 2. Total and used agricultural areas defended against flood in the Republic of Serbia, 2009–2011



1. Protection against damaging water effects, 2011¹⁾ by Regions

	Republic of Serbia				
	Total	Belgrade	Vojvodina	Šumadija and West Serbia	South and East Serbia
Areas and facilities flooded by surface water					
Total flooded area, ha	30 706	350	17 967	11 246	1 143
Used agricultural area, ha	27 086	230	15 567	10 601	688
Settlements, number	125	10	23	60	32
Buildings, number	3 160	180	82	2 804	94
Industrial facilities, number	107	-	5	89	13
Other industrial facilities, number	1 446	-	3	1 401	42
Railway lines, km	33	-	3	3	27
Roads, km	269	1	15	168	85
Areas and facilities protected against floods					
Total area protected against floods, ha	1 957 725	33 819	764 269	253 588	906 049
Used agricultural area, ha	1 709 029	28 429	615 800	186 624	878 176
Settlements, number	644	13	169	178	284
Industrial facilities, number	481	7	129	208	137
Other industrial facilities, number	5 952	120	288	4 676	868
Railway lines, km	1 039	46	280	419	294
Roads, km	4 832	70	766	2 996	1 000
Total length of embankment, km	3 446	471	1 238	643	1 094
Areas and facilities flooded by ground water					
Total flooded area, ha	43 842	-	32 221	10 365	1 256
Used agricultural area, ha	40 339	-	29 572	9 513	1 254
Settlements, number	103	4	34	18	47
Buildings, number	599	75	135	384	5
Industrial facilities, number	156	132	4	15	5
Other industrial facilities, number	498	-	161	332	5
Railway lines, km	6	-	5	1	-
Roads, km	54	-	15	36	3
Drainage					
Total area covered by drainage system, ha	2 239 992	115 370	1 848 992	200 657	74 973
Used agricultural area covered by drainage system, ha	1 874 176	65 206	1 592 273	153 045	63 652
Total drained area, ha	1 978 814	34 013	1 715 625	179 587	49 589
Used agricultural drained area, ha	1 679 097	28 594	1 464 406	137 575	48 522
Drainage canals, km	5 336	878	3 380	416	662
Pumping stations, number	249	27	167	13	42
Land erosion					
Eroded land, km ²	3 708	1 100	36	489	2 083
Reclaimed land, km ²	362	-	-	239	123

¹⁾ Preliminary data

2. Floods and protection against damaging water effects, 2009–2011

Republic of Serbia

	2009	2010	2011 ¹⁾
Areas and facilities flooded by surface water			
Total flooded area, thous. ha	16	43	31
Used agricultural area, thous. ha	6	34	27
Settlements, number	32	292	125
Industrial facilities, number	176	126	107
Railway lines, km	12	44	33
Roads, km	56	622	269
Areas and facilities protected against floods			
Total area protected against floods, thous.ha	1 999	1 959	1 958
Used agricultural area, thous. ha	1 869	1 763	1 709
Settlements, number	563	657	644
Industrial facilities, number	442	498	481
Railway lines, km	983	862	1 039
Roads, km	2 558	4 810	4 832
Total length of embankments, km	3 032	3 299	3 446
Areas and facilities flooded by ground water			
Total flooded area, thous. ha	33	74	44
Used agricultural area, thous. ha	17	64	40
Settlements, number	56	154	103
Industrial facilities, number	137	45	156
Railway lines, km	3	6	6
Roads, km	25	141	54
Drainage			
Total drainage area, thous. ha	1 917	1 954	1 979
Drainage canals, km	5 093	5 488	5 336
Pumping stations, number	226	231	249
Land erosion			
Eroded land, km ²	3 201	2 623	3 708
Reclaimed land, km ²	505	316	362

¹⁾ Preliminary data

Methodological explanations

Data on the protection against damaging effects of water are compiled from regular reports of business entities dealing with water management, protection against damaging water effects and construction of hydro facilities, i.e. entities which activity is defined in the following sections: Construction (divisions 42 – Civil engineering and 43 – Specialized construction activities) and Professional, Scientific and Technical Activities (division 71 - Architectural and engineering activities), according to Classification of Activities (2010).

The reports of the statistical survey related to protection against floods used to be collected three-annually in the period 1993-2008. However, due to climate changes, unpredictable periodicity of flood occurrence, as well as due to users' requests, the survey has been conducted annually since 2009.

The survey covers, from geographical aspect, all business entities that perform their activity on the entire territory of the Republic of Serbia. Starting from 1999 the Statistical Office of the Republic of Serbia has not at disposal and may not provide available certain data relative to AP Kosovo and Metohia and therefore these data are not included in the coverage for the Republic of Serbia (total).

Data collection is done by the reporting method, meaning that the reporting unit uses its available documentation and records to fill in the questionnaire in the first quarter of the current year for the previous year. If related records are non-existent for certain data, an expert will make an evaluation. The reporting unit forwards the questionnaire to the relevant statistical authority on which territory its head office is located.

Flood by surface waters is meant to be a (temporary) unusual flooding of land (valleys with large rivers) caused by the overflow of water from natural and artificial water bodies, over protective embankments and dams or by the break, i.e. destruction, of dams and other protective waterworks structures, including flood as a result of ice jams in waterways.

Flood by ground waters is the submersion of land (lowlands) due to an overflow of surface waters and high ground waters in period of abnormal water situation, and due to their slow drainage as well (lack of structures and insufficient capacity of the drainage network).

The drained area is made of total areas drained in a year irrespective of the number of drainages performed.

Under *protection against flood* presented are areas and structures being protected against damaging effects of surface, underground and torrent waters by protective embankments, drainage systems and devices.

Under *eroded land* presented is the land from which the fertile layer and vegetative cover have been detached or entirely transported by the devastating action of water or wind, thus its use in plant production has been significantly diminished or totally made impossible.

Reclaimed land is the land where there is no more nutrients wash off, landslide and transport of new alluviums.

More detailed view of methodologies by areas is available on SORS website: <http://webrzs.stat.gov.rs/WebSite/Public/PageView.aspx?pKey=201>.