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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS,
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1. AKARÇAY RIVER BASIN

1.1. MUNICIPAL DEMANDS

Current population and forecasts: Results

Population forecast results (obtained with the projection method which complies most with the trend of the previous censuses) as well as the current population for Akarçay Basin are presented below for each settlement in the basin under 4 settlement categories (according to the DSI methodology). The current population data (for the year 2016) also include the additional population by immigrants. Population of immigrants has been considered as part of the total population for each settlement, hence results of the population forecast adopted in all scenarios also take into account the population of immigrants (which represents 0.8% of the total basin population currently).

Table 1. Settlements categories for population forecasts. Source: authors.

Municipality Size	Category
Over 25,000	1
5,000 - 25,000	2
Below 5,000	3
Other neighbourhood and villages	4

Table 2. Population Forecast and current population Results for Akarçay Basin. Source: authors based on TurkStat and settlements data.

Category	Province Name	District Name	Settlement Name	2016	2026	2032	2038
1	Afyonkarahisar	Bolvadin	Bolvadin	31,833	35,163	37,327	39,623
1	Afyonkarahisar	Merkez	Merkez	228,095	318,922	372,121	419,099
1	Konya	Akşehir	Akşehir	63,827	70,505	74,842	79,446
2	Afyonkarahisar	Çay	Çay	14,628	16,158	17,152	18,208
2	Afyonkarahisar	Çobanlar	Çobanlar	9,278	10,258	10,846	11,434
2	Afyonkarahisar	İscehisar	İscehisar	12,979	15,745	17,453	19,161
2	Afyonkarahisar	Sultandağı	Sultandağı	5,575	6,135	6,471	6,807
2	Afyonkarahisar	Şuhut	Şuhut	13,910	17,008	18,901	20,766
2	Afyonkarahisar	Merkez	Işıklar	7,473	8,143	8,545	8,947
3	Afyonkarahisar	Bolvadin	Özburun	1,994	2,203	2,338	2,482
3	Afyonkarahisar	Bolvadin	Dişli	2,951	3,260	3,460	3,673
3	Afyonkarahisar	Çay	Pazarağaç	2,623	2,897	3,076	3,265
3	Afyonkarahisar	Çay	Karamıkkaracaören	2,781	3,072	3,261	3,462
3	Afyonkarahisar	Çobanlar	Kocaöz	2,695	3,029	3,250	3,486
3	Afyonkarahisar	İhsaniye	Yaylabağı	2,209	2,440	2,590	2,750
3	Afyonkarahisar	İhsaniye	Gazligöl	2,331	2,575	2,733	2,901
3	Afyonkarahisar	İhsaniye	Kayihan	2,178	2,406	2,554	2,711



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Category	Province Name	District Name	Settlement Name	2016	2026	2032	2038
3	Afyonkarahisar	İscehisar	Seydiler	2,124	2,346	2,491	2,644
3	Afyonkarahisar	Sinanpaşa	Merkez	3,890	4,297	4,561	4,842
3	Afyonkarahisar	Sinanpaşa	Akören	3,081	3,403	3,613	3,835
3	Afyonkarahisar	Sinanpaşa	Kılıçarslan	2,656	2,934	3,114	3,306
3	Afyonkarahisar	Sinanpaşa	Tınaztepe	3,098	3,422	3,633	3,856
3	Afyonkarahisar	Sinanpaşa	Küçükhüyük	2,018	2,229	2,366	2,512
3	Afyonkarahisar	Sinanpaşa	Kırka	2,041	2,255	2,393	2,540
3	Afyonkarahisar	Sinanpaşa	Düzağaç	2,194	2,424	2,573	2,731
3	Afyonkarahisar	Sinanpaşa	Ahmetpaşa	2,624	2,899	3,077	3,266
3	Afyonkarahisar	Sultandağı	Dereçine	2,099	2,319	2,461	2,613
3	Afyonkarahisar	Sultandağı	Yeşilçiftlik	2,183	2,411	2,560	2,717
3	Afyonkarahisar	Şuhut	Karadilli	2,450	2,706	2,873	3,050
3	Afyonkarahisar	Merkez	Beyyazi	3,121	3,448	3,660	3,885
3	Afyonkarahisar	Merkez	Büyükkalecik	3,124	3,451	3,663	3,888
3	Afyonkarahisar	Merkez	Çayırbağ	4,202	4,894	5,362	5,876
3	Afyonkarahisar	Merkez	Çikrik	2,352	2,598	2,758	2,928
3	Afyonkarahisar	Merkez	Değirmenayvalı	2,812	3,106	3,297	3,500
3	Afyonkarahisar	Merkez	Erkmen	4,917	6,935	8,172	9,327
3	Afyonkarahisar	Merkez	Fethibey	2,650	2,927	3,107	3,298
3	Afyonkarahisar	Merkez	Gebeceler	3,407	3,763	3,995	4,241
3	Afyonkarahisar	Merkez	Nuribey	3,129	3,456	3,669	3,895
3	Afyonkarahisar	Merkez	Salar	4,361	4,927	5,301	5,704
3	Afyonkarahisar	Merkez	Sülümenli	4,430	4,893	5,195	5,514
3	Afyonkarahisar	Merkez	Sülün	2,862	3,223	3,461	3,716
3	Afyonkarahisar	Merkez	Susuz	4,633	5,118	5,433	5,767
3	Konya	Tuzlukçu	Tuzlukçu	3,397	3,752	3,983	4,228
4	Afyonkarahisar	Bayat	All Neighbourhoods	2,015	2,230	2,369	2,517
4	Afyonkarahisar	Bolvadin	All Neighbourhoods	6,310	6,988	7,429	7,900
4	Afyonkarahisar	Çay	All Neighbourhoods	11,835	13,109	13,935	14,819
4	Afyonkarahisar	Çobanlar	All Neighbourhoods	2,276	2,606	2,815	3,023
4	Afyonkarahisar	Dinar	All Neighbourhoods	1,475	1,629	1,729	1,836
4	Afyonkarahisar	İhsaniye	All Neighbourhoods	6,394	7,114	7,582	8,079
4	Afyonkarahisar	İscehisar	All Neighbourhoods	7,894	8,771	9,343	9,955
4	Afyonkarahisar	Sinanpaşa	All Neighbourhoods	11,754	13,158	14,084	15,089
4	Afyonkarahisar	Sultandağı	All Neighbourhoods	5,435	6,003	6,373	6,765
4	Afyonkarahisar	Şuhut	All Neighbourhoods	20,702	23,020	24,551	26,195
4	Afyonkarahisar	Merkez	All Neighbourhoods	10,263	11,361	12,069	12,822
4	Konya	Tuzlukçu	All Neighbourhoods	2,812	3,106	3,298	3,500
4	Konya	Akşehir	All Neighbourhoods	30,195	33,352	35,405	37,586
4	Konya	Doğanşehir	All Neighbourhoods	3,135	3,464	3,675	3,902



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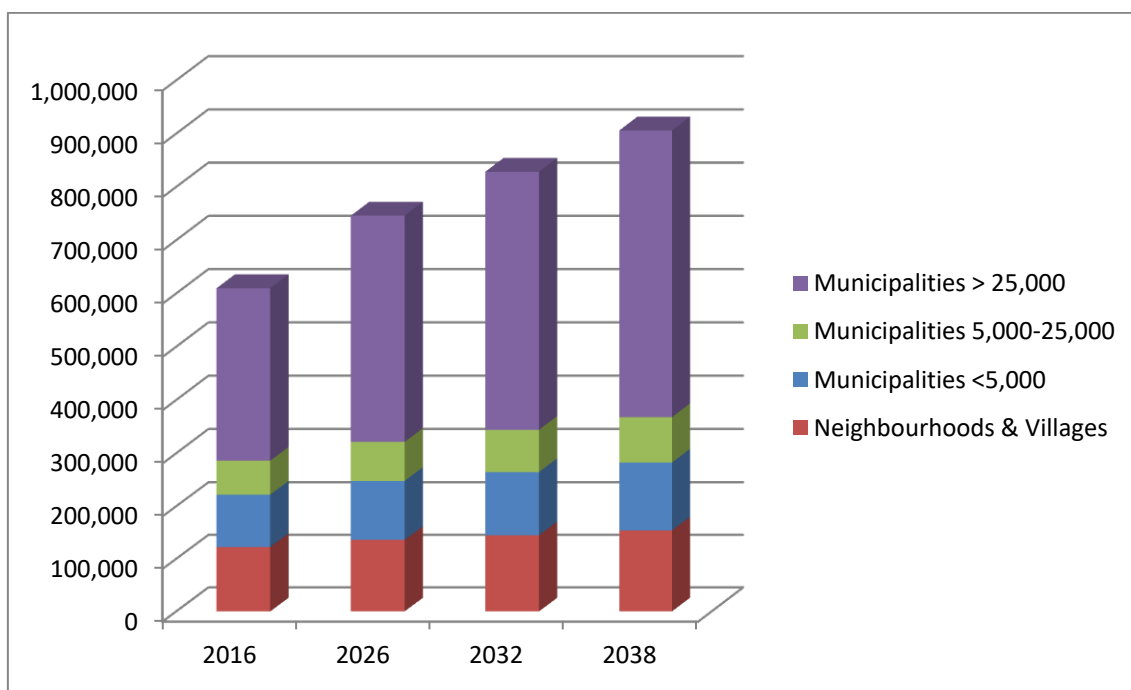


Figure 1. Total population of Akarçay basin by settlement category and year

Results of Water Consumption Per Capita Calculations (municipalities > 2000 inhabitants and municipal towns)

Calculations have been principally based on the accrual data collected from field surveys for the net water consumption per capita values in the municipal sector. In cases where no data from field surveys were available, net water consumption per capita in the municipal water networks for the years 2014 and 2016 received from TurkStat have been used. If neither of these sources included the related data, biannual water abstraction and distribution data of provinces collected from TurkStat web site have been used for the affiliated municipalities and districts.

The following tables show the average net water consumption per capita (lcd) for municipalities with populations above 2000 inhabitants and municipal towns calculated with field data and TurkStat 2014 and 2016 district-based water abstraction and distribution data, respectively. As district-based TurkStat data do not cover the districts of Konya province, values of Konya province have been used for its districts.

As the data from the field survey and TurkStat are combined, a full set of data is obtained for the calculation of per capita water consumption for all municipal settlements in the basin. Using the calculated 2016 data, a population-weighted average per capita water consumption value of 106 lcd is obtained for Akarçay Basin.



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Table 3. Results of past Net Water Consumption per Capita calculations in municipalities above 2000 inhabitants and municipal towns, Akarçay basin. Source: authors based on received data.

		Water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
		Afyonkarahisar									
Bolvadin	Bolvadin	100 FS	108 FS	68 FS	98 FS	109 FS	95 FS	105 FS	114 FS	91 FS	
Bolvadin	Özburun		33 FS	46 FS	66 FS	88 FS	56 FS	81 FS	63 FS	129 FS	
Bolvadin	Dişli	60 FS	59 FS	64 FS	69 FS	75 FS	70 FS	71 FS	75 FS	87 FS	
Çay	Çay							154 TS	155 TS	157 TS	
Çay	Pazarağaç							154 TS	155 TS	170 FS	
Çay	Karamık							154 TS	155 TS	157 TS	76 FS
Çobanlar	Çobanlar							222 TS	177 TS	133 TS	
Çobanlar	Kocaöz							222 TS	177 TS	133 TS	
İhsaniye	Yaylabağı	63 FS	87 FS	97 FS	105 FS	133 FS	84 FS	133 FS	97 FS	122 FS	
İhsaniye	Gazlıgöl	82 FS	83 FS	120 FS	96 FS	122 FS	103 FS	118 FS	103 FS	108 FS	
İhsaniye	Kayıhan	99 FS	105 FS	75 FS	86 FS	86 FS	69 FS	86 FS	93 FS	118 FS	
İscehisar	İscehisar	111 FS	105 FS	125 FS	134 FS	130 FS	122 FS	124 FS	134 FS	176 FS	
İscehisar	Seydiler			52 FS	58 FS	81 FS	53 FS	81 FS	72 FS	70 FS	
Sinanpaşa	Sinanpaşa			77 FS	85 FS	95 FS	79 FS	85 FS	92 FS	114 FS	
Sinanpaşa	Akören		76 FS	68 FS	78 FS	92 FS	69 FS	90 FS	90 FS	96 FS	
Sinanpaşa	Kılıçarslan							110 TS	133 TS	156 TS	
Sinanpaşa	Tınaztepe	85 FS	96 FS	95 FS	101 FS	122 FS	104 FS	115 FS	116 FS	132 FS	
Sinanpaşa	Küçükhüyük	110 FS	106 FS	111 FS	119 FS	129 FS	122 FS	128 FS	114 FS	135 FS	129 FS
Sinanpaşa	Kırka							110 TS	133 TS	156 TS	95 FS
Sinanpaşa	Düzağaç							110 TS	133 TS	156 TS	
Sinanpaşa	Ahmetpaşa							78 FS	78 FS	81 FS	
Sultandağı	Sultandağı							236 TS	176 TS	114 FS	
Sultandağı	Dereçine							236 TS	55 FS	66 FS	76 FS
Sultandağı	Yeşilçiftlik							236 TS	176 TS	391 FS	
Şuhut	Şuhut		82 FS	90 FS	83 FS	92 FS	78 FS	97 FS	102 FS	115 FS	
Şuhut	Karaadilli							117 TS	96 TS	76 TS	
Merkez	Merkez							88 TS	87 TS	87 TS	
Merkez	Beyyazı							88 TS	87 TS	87 TS	
Merkez	Büyükkalecik	103 FS	66 FS	88 FS	80 FS	93 FS	89 FS	87 FS	87 FS	90 FS	
Merkez	Çayırbağ							88 TS	87 TS	122 FS	
Merkez	Çikrik							88 TS	73 FS	71 FS	
Merkez	Değirmenayvalı			54 FS	59 FS	81 FS	77 FS	88 FS	98 FS	121 FS	
Merkez	Erkmen	57 FS	81 FS	81 FS	52 FS	19 FS	67 FS	101 FS	173 FS	110 FS	
Merkez	Fethibey						92 FS	97 FS	112 FS	101 FS	
Merkez	Gebeceler							88 TS	90 FS	101 FS	
Merkez	Işıklar							88 TS	87 TS	387 FS	
Merkez	Nuribey							88 TS	87 TS	195 FS	
Merkez	Salar							88 TS	87 TS	87 TS	
Merkez	Sülümenli							88 TS	87 TS	87 TS	
Merkez	Sülün							88 TS	87 TS	87 TS	
Merkez	Susuz							88 TS	87 TS	87 TS	



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		Water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)									
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
		Konya									
Tuzlukçu	Tuzlukçu					199 TS	180 TS	160 TS	181 TS	201 TS	
Akşehir	Akşehir					199 TS	180 TS	160 TS	181 TS	201 TS	

* FS denotes field survey data and TS stands for TurkStat data. TurkStat data for the years 2014 and 2016 are received for the majority of the districts in the basin. For the districts not included in scope of this data set, data released biannually by TurkStat for the province where the district is affiliated are used. For trend calculations, TurkStat 2015 data are predicted by linear interpolation of the data for the years 2014 and 2016.

Table 4. Results of future Net Water Consumption per Capita calculations in municipalities above 2000 inhabitants and municipal towns, Akarçay basin. Source: authors based on received data.

		Water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)			
		2016	2026	2032	2038
		Afyonkarahisar			
Bolvadin	Bolvadin	85	90	93	95
Bolvadin	Özburun	104	109	113	116
Bolvadin	Dişli	142	192	229	250
Çay	Çay	157	173	183	194
Çay	Pazarağaç	157	173	183	194
Çay	Karamık	157	173	183	194
Çobanlar	Çobanlar	91	96	99	102
Çobanlar	Kocaöz	129	174	209	250
İhsaniye	Yaylabağı	87	117	140	168
İhsaniye	Gazlıgöl	86	91	94	97
İhsaniye	Kayıhan	86	91	94	97
İscehisar	İscehisar	75	81	85	89
İscehisar	Seydiler	75	81	85	89
Sinanpaşa	Sinanpaşa	156	211	250	250
Sinanpaşa	Akören	122	165	198	237
Sinanpaşa	Kılıçarslan	108	146	174	209
Sinanpaşa	Tınaztepe	118	149	171	196
Sinanpaşa	Küçükhöyük	176	238	250	250
Sinanpaşa	Kırka	70	95	113	136
Sinanpaşa	Düzağaç	114	154	185	221
Sinanpaşa	Ahmetpaşa	96	129	155	185
Sultandağı	Sultandağı	116	122	125	129
Sultandağı	Dereçine	132	179	214	250
Sultandağı	Yeşilçiftlik	135	160	178	197
Şuhut	Şuhut	76	80	82	85
Şuhut	Karaadilli	76	80	82	85
Merkez	Merkez	81	99	112	126
Merkez	Beyyazı	87	91	94	97
Merkez	Büyükkalecik	66	89	107	128
Merkez	Çayırbağ	87	91	94	97
Merkez	Çıkrik	115	155	186	223



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS,
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		Water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)			
		2016	2026	2032	2038
Merkez	Değirmenayvalı	87	91	94	97
Merkez	Erkmen	87	91	94	97
Merkez	Fethibey	87	91	94	97
Merkez	Gebeceler	90	95	98	101
Merkez	Işıklar	87	91	94	97
Merkez	Nuribey	71	75	77	80
Merkez	Salar	121	163	195	234
Merkez	Sülümenli	110	149	178	213
Merkez	Sülün	101	137	164	196
Merkez	Susuz	101	137	164	196
		Konya			
Tuzlukçu	Tuzlukçu	201	211	218	224
Akşehir	Akşehir	201	211	218	224



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS, CALCULATIONS.

Table 5. Results of future Gross Water Consumption per Capita calculations in municipalities above 2000 inhabitants and municipal towns, Akarçay basin. Source: authors based on received data.

			Gross water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)											
			Trend Scenario				Optimistic Scenario				Realistic Scenario			
Province	District	Settlement	2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Afyonkarahisar	Bolvadin	Bolvadin	129	151	157	162	129	136	141	146	129	160	157	162
Afyonkarahisar	Merkez	Merkez	231	325	426	583	231	225	263	312	231	237	263	312
Konya	Akşehir	Akşehir	366	410	432	456	366	398	420	443	366	433	432	456
Afyonkarahisar	Çay	Çay	300	774	878	1,004	300	364	413	473	300	409	439	502
Afyonkarahisar	Çobanlar	Çobanlar	129	152	159	168	129	139	146	154	129	160	159	168
Afyonkarahisar	İşcehisar	İşcehisar	131	179	201	227	131	155	174	197	131	190	201	227
Afyonkarahisar	Sultandağı	Sultandağı	181	455	491	533	181	203	219	237	181	241	245	266
Afyonkarahisar	Şuhut	Şuhut	172	191	204	218	172	178	185	193	172	188	185	193
Afyonkarahisar	Merkez	Işıklar	137	203	327	340	137	146	152	158	137	166	163	170
Afyonkarahisar	Sinanpaşa	Sinanpaşa	227	671	799	801	227	308	367	368	227	355	399	401
Konya	Tuzlukçu	Tuzlukçu	365	409	431	455	365	397	419	442	365	432	431	455
Afyonkarahisar	Bolvadin	Dişli	211	317	382	418	211	286	344	376	211	336	382	418
Afyonkarahisar	Çay	Pazarağaç	300	774	878	1,004	300	364	413	473	300	409	439	502
Afyonkarahisar	Çay	Karamık	300	774	878	1,004	300	364	413	473	300	409	439	502
Afyonkarahisar	Çobanlar	Kocaöz	184	278	340	416	184	256	312	383	184	294	340	416
Afyonkarahisar	İhsaniye	Yaylabağı	103	173	209	252	103	140	168	203	103	183	209	252
Afyonkarahisar	İhsaniye	Gazlıgöl	159	191	198	206	159	170	177	184	159	202	198	206
Afyonkarahisar	İhsaniye	Kayıhan	159	191	198	206	159	170	177	184	159	202	198	206
Afyonkarahisar	İşcehisar	Seydiler	130	179	201	227	130	155	174	196	130	189	201	227
Afyonkarahisar	Sinanpaşa	Akören	184	543	652	784	184	250	300	361	184	287	326	392
Afyonkarahisar	Sinanpaşa	Kılıçarslan	155	237	291	358	155	216	265	326	155	251	291	358
Afyonkarahisar	Sinanpaşa	Tınaztepe	353	383	381	394	353	232	261	303	353	238	261	303
Afyonkarahisar	Sinanpaşa	Küçükhüyük	232	682	717	718	232	313	330	330	232	360	359	359
Afyonkarahisar	Sinanpaşa	Kırka	102	302	362	435	102	139	167	200	102	159	181	217
Afyonkarahisar	Sinanpaşa	Düzağaç	156	458	549	658	156	211	253	303	156	242	275	329
Afyonkarahisar	Sinanpaşa	Ahmetpaşa	128	375	449	538	128	173	207	248	128	198	225	269



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS, CALCULATIONS.

			Gross water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)											
			Trend Scenario				Optimistic Scenario				Realistic Scenario			
Afyonkarahisar	Sultandağı	Dereçine	174	527	631	739	174	235	281	329	174	278	315	369
Afyonkarahisar	Sultandağı	Yeşilçiftlik	188	516	584	663	188	230	260	295	188	273	292	332
Afyonkarahisar	Şuhut	Karaadilli	172	191	204	218	172	183	185	193	172	188	185	193
Afyonkarahisar	Merkez	Beyyazı	119	175	281	292	119	126	131	136	119	143	141	146
Afyonkarahisar	Merkez	Büyükkalecik	105	199	373	451	105	144	174	210	105	163	187	226
Afyonkarahisar	Merkez	Çayırbağ	137	203	327	340	137	146	152	158	137	166	163	170
Afyonkarahisar	Merkez	Çıkrık	155	291	539	646	155	210	251	301	155	238	270	323
Afyonkarahisar	Merkez	Değirmenayvalı	137	203	327	340	137	146	152	158	137	166	163	170
Afyonkarahisar	Merkez	Erkmen	137	203	327	340	137	146	152	158	137	166	163	170
Afyonkarahisar	Merkez	Fethibey	137	203	327	340	137	146	152	158	137	166	163	170
Afyonkarahisar	Merkez	Gebeceler	123	181	291	302	123	131	136	141	123	148	145	151
Afyonkarahisar	Merkez	Nuribey	97	142	228	237	97	103	106	110	97	116	114	118
Afyonkarahisar	Merkez	Salar	191	363	679	822	191	262	316	383	191	297	340	411
Afyonkarahisar	Merkez	Sülümenli	174	331	620	750	174	239	289	349	174	271	310	375
Afyonkarahisar	Merkez	Sülün	160	305	571	690	160	220	266	322	160	250	285	345
Afyonkarahisar	Merkez	Susuz	154	290	539	648	154	209	251	302	154	237	270	324
Afyonkarahisar	Bolvadin	Özburun	222	161	166	172	222	165	166	173	222	170	166	173



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS, CALCULATIONS.

Results of (Public+Commercial)/Residential Ratio Calculations (municipalities > 2000 inhabitants and municipal towns)

Calculations have been principally based on the accrual data collected from field surveys for the calculation of public and commercial water use ratios to the domestic consumption. In cases where no data from field surveys were available, domestic water use and water use data categorised under other types of consumption for the years 2014 and 2016 received from TurkStat have been compared and ratios of public and commercial water use to domestic water use have been calculated for each settlement. If neither of these sources included the related data, TurkStat web-based data for provinces or data from tertiary sources such as master plan reports have been used.

The following tables show the public and commercial water consumption to residential consumption ratios [(Public+Commercial)/Residential] for municipalities with populations above 2000 inhabitants and municipal towns, which are calculated either by field data or TurkStat 2014 and 2016 district-based data.

As the data from the field survey and TurkStat are combined, a full set of data is obtained for the calculation of (Public+Commercial)/Residential percentages for all municipal settlements in the basin. Using the calculated 2016 percentages, a population-weighted average (P+C)/R value of 29% is obtained for Akarçay Basin.

Table 6. Results of past Public+Commercial/ Residential percentage calculations (municipalities > 2000 inhabitants and municipal towns), Akarçay Basin. Source: authors based on received data.

			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Afyonkarahisar	Bolvadin	Bolvadin	18 FS	20 FS	7 FS	16 FS	17 FS	19 FS	22 FS	18 FS	17 FS	
Afyonkarahisar	Bolvadin	Özburun							39 TS	2 FS	2 FS	
Afyonkarahisar	Bolvadin	Dişli							39 TS	27 TS	15 TS	
Afyonkarahisar	Çay	Çay							26 TS	34 TS	86 FS	
Afyonkarahisar	Çay	Pazarağaç							26 TS	34 TS	59 FS	
Afyonkarahisar	Çay	Karamık							26 TS	34 TS	42 TS	
Afyonkarahisar	Çobanlar	Çobanlar	4 FS	4 FS	5 FS	7 FS	8 FS	6 FS	7 FS	7 FS	8 FS	
Afyonkarahisar	Çobanlar	Kocaöz							5 TS	7 TS	9 TS	
Afyonkarahisar	İhsaniye	Yaylabağı							56 TS	2 FS	3 FS	
Afyonkarahisar	İhsaniye	Gazlıgöl							56 TS	50 TS	44 TS	
Afyonkarahisar	İhsaniye	Kayıhan							56 TS	50 TS	44 TS	26 FS
Afyonkarahisar	İscehisar	İscehisar							18 TS	29 TS	41 TS	9 FS
Afyonkarahisar	İscehisar	Seydiler							18 TS	29 TS	41 TS	
Afyonkarahisar	Sinanpaşa	Sinanpaşa							14 TS	13 TS	11 TS	
Afyonkarahisar	Sinanpaşa	Akören	15 FS	15 FS	18 FS	16 FS	16 FS	21 FS	16 FS	19 FS	14 FS	
Afyonkarahisar	Sinanpaşa	Kılıçarslan	5 FS	8 FS	13 FS	5 FS	6 FS	8 FS	8 FS	12 FS	10 FS	
Afyonkarahisar	Sinanpaşa	Tınaztepe	3 FS	3 FS	4 FS	4 FS	3 FS	2 FS	3 FS	5 FS	4 FS	
Afyonkarahisar	Sinanpaşa	Küçükhöyük	0 FS	0 FS	0 FS	1 FS	0 FS	1 FS	0 FS	0 FS	0 FS	
Afyonkarahisar	Sinanpaşa	Kırka							14 TS	13 TS	11 TS	
Afyonkarahisar	Sinanpaşa	Düzağaç			10 FS	6 FS	43 FS	11 FS	18 FS	6 FS	4 FS	
Afyonkarahisar	Sinanpaşa	Ahmetpaşa		3 FS	2 FS	1 FS	3 FS	7 FS	4 FS	7 FS	1 FS	
Afyonkarahisar	Sultandağı	Sultandağı							10 TS	16 TS	23 TS	
Afyonkarahisar	Sultandağı	Dereçine	6 FS	7 FS	6 FS	4 FS	5 FS	5 FS	3 FS	4 FS	3 FS	
Afyonkarahisar	Sultandağı	Yeşilçiftlik	8 FS	7 FS	17 FS	4 FS	6 FS	7 FS	9 FS	10 FS	9 FS	15 FS
Afyonkarahisar	Şuhut	Şuhut							74 TS	63 TS	96 FS	



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS, CALCULATIONS.

			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Afyonkarahisar	Şuhut	Karaadilli							74 TS	63 TS	53 TS	
Afyonkarahisar	Merkez	Merkez						19 FS	19 FS	32 FS	35 FS	
Afyonkarahisar	Merkez	Beyyazı							19 TS	1 FS	3 FS	
Afyonkarahisar	Merkez	Büyükkalecik							19 TS	19 TS	19 TS	
Afyonkarahisar	Merkez	Çayırbağ							19 TS	19 TS	19 TS	
Afyonkarahisar	Merkez	Çıkrık		3 FS	2 FS	1 FS	4 FS	8 FS	4 FS	7 FS	1 FS	
Afyonkarahisar	Merkez	Değirmenayvalı							19 TS	19 TS	19 TS	
Afyonkarahisar	Merkez	Erkmen							19 TS	19 TS	19 TS	
Afyonkarahisar	Merkez	Fethibey							19 TS	19 TS	19 TS	
Afyonkarahisar	Merkez	Gebeceler	1 FS	1 FS	3 FS	3 FS	2 FS	2 FS	3 FS	3 FS	3 FS	
Afyonkarahisar	Merkez	Işıklar							19 TS	19 TS	19 TS	1 FS
Afyonkarahisar	Merkez	Nuribey							19 TS	1 FS	2 FS	
Afyonkarahisar	Merkez	Salar							19 TS	19 TS	19 TS	
Afyonkarahisar	Merkez	Sülümenli	0 FS	0 FS	0 FS	0 FS	0 FS	0 FS	0 FS	0 FS	0 FS	
Afyonkarahisar	Merkez	Sülün							19 TS	19 TS	19 TS	
Afyonkarahisar	Merkez	Susuz							19 TS	14 FS	14 FS	
Konya	Tuzlukçu	Tuzlukçu							30 TS	30 TS	4 FS	
Konya	Akşehir	Akşehir							30 TS	30 TS	16 FS	

* FS denotes field survey data and TS stands for TurkStat data. TurkStat data for the years 2014 and 2016 are received for the majority of the districts in the basin. For the districts not included in scope of this data set, data released biannually by TurkStat for the province where the district is affiliated are used. For trend calculations, TurkStat 2015 data are predicted by linear interpolation of the data for the years 2014 and 2016.



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS, CALCULATIONS.

Table 7. Results of future Public+Commercial/ Residential percentage calculations (municipalities > 2000 inhabitants and municipal towns), Akarçay Basin. Source: authors based on received data.

Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Afyonkarahisar	Bolvadin	Bolvadin	17	18	18	19	17	18	18	19	17	18	18	19
Afyonkarahisar	Merkez	Merkez	35	47	56	67	35	47	56	67	35	47	56	67
Konya	Akşehir	Akşehir	31	35	39	42	31	35	39	42	31	35	39	42
Afyonkarahisar	Çay	Çay	42	57	68	82	42	57	68	82	42	57	68	82
Afyonkarahisar	Çobanlar	Çobanlar	8	11	13	15	8	11	13	15	8	11	13	15
Afyonkarahisar	İşcehisar	İşcehisar	41	55	66	79	41	55	66	79	41	55	66	79
Afyonkarahisar	Sultandağı	Sultandağı	23	31	37	44	23	31	37	44	23	31	37	44
Afyonkarahisar	Şuhut	Şuhut	53	55	57	59	53	55	57	59	53	55	57	59
Afyonkarahisar	Merkez	Işıklar	19	21	22	23	19	21	22	23	19	21	22	23
Afyonkarahisar	Sinanpaşa	Sinanpaşa	11	11	12	12	11	11	12	12	11	11	12	12
Konya	Tuzlukçu	Tuzlukçu	31	35	39	42	31	35	39	42	31	35	39	42
Afyonkarahisar	Bolvadin	Dişli	15	16	16	17	15	16	16	17	15	16	16	17
Afyonkarahisar	Çay	Pazarağaç	42	57	68	82	42	57	68	82	42	57	68	82
Afyonkarahisar	Çay	Karamık	42	57	68	82	42	57	68	82	42	57	68	82
Afyonkarahisar	Çobanlar	Kocaöz	9	12	14	17	9	12	14	17	9	12	14	17
Afyonkarahisar	İhsaniye	Yaylabağı	3	4	4	5	3	4	4	5	3	4	4	5
Afyonkarahisar	İhsaniye	Gazlıgöl	44	47	48	50	44	47	48	50	44	47	48	50
Afyonkarahisar	İhsaniye	Kayıhan	44	47	48	50	44	47	48	50	44	47	48	50
Afyonkarahisar	İşcehisar	Seydiler	41	55	66	79	41	55	66	79	41	55	66	79
Afyonkarahisar	Sinanpaşa	Akören	14	15	15	16	14	15	15	16	14	15	15	16
Afyonkarahisar	Sinanpaşa	Kılıçarslan	10	14	17	20	10	14	17	20	10	14	17	20
Afyonkarahisar	Sinanpaşa	Tınaztepe	4	6	7	8	4	6	7	8	4	6	7	8
Afyonkarahisar	Sinanpaşa	Küçükhüyük	0	0	0	1	0	0	0	1	0	0	0	1
Afyonkarahisar	Sinanpaşa	Kırka	11	11	12	12	11	11	12	12	11	11	12	12



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS, CALCULATIONS.

Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Afyonkarahisar	Sinanpaşa	Düzağaç	4	4	4	4	4	4	4	4	4	4	4	4
Afyonkarahisar	Sinanpaşa	Ahmetpaşa	1	1	2	2	1	1	2	2	1	1	2	2
Afyonkarahisar	Sultandağı	Dereçine	3	3	3	3	3	3	3	3	3	3	3	3
Afyonkarahisar	Sultandağı	Yeşilçiftlik	9	13	15	18	9	13	15	18	9	13	15	18
Afyonkarahisar	Şuhut	Karaadilli	53	55	57	59	53	55	57	59	53	55	57	59
Afyonkarahisar	Merkez	Beyyazı	3	4	5	6	3	4	5	6	3	4	5	6
Afyonkarahisar	Merkez	Büyükkalecik	19	21	22	23	19	21	22	23	19	21	22	23
Afyonkarahisar	Merkez	Çayırbağ	19	21	22	23	19	21	22	23	19	21	22	23
Afyonkarahisar	Merkez	Çıkrık	1	1	1	1	1	1	1	1	1	1	1	1
Afyonkarahisar	Merkez	Değirmenayvalı	19	21	22	23	19	21	22	23	19	21	22	23
Afyonkarahisar	Merkez	Erkmen	19	21	22	23	19	21	22	23	19	21	22	23
Afyonkarahisar	Merkez	Fethibey	19	21	22	23	19	21	22	23	19	21	22	23
Afyonkarahisar	Merkez	Gebeceler	3	3	4	5	3	3	4	5	3	3	4	5
Afyonkarahisar	Merkez	Nuribey	2	3	3	4	2	3	3	4	2	3	3	4
Afyonkarahisar	Merkez	Salar	19	21	22	23	19	21	22	23	19	21	22	23
Afyonkarahisar	Merkez	Sülümenli	19	21	22	23	19	21	22	23	19	21	22	23
Afyonkarahisar	Merkez	Sülün	19	21	22	23	19	21	22	23	19	21	22	23
Afyonkarahisar	Merkez	Susuz	14	15	15	16	14	15	15	16	14	15	15	16
Afyonkarahisar	Bolvadin	Özburun	2	3	3	4	2	3	3	4	2	3	3	4



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS, CALCULATIONS.

Results of Non-Revenue Water (municipalities > 2000 inhabitants and municipal towns)

Calculations have been principally based on the accrual data collected from field surveys for the calculation of non-revenue water (NRW) percentages. In cases where no data from field surveys were available, abstracted and distributed water data for the years 2014 and 2016 received from TurkStat have been compared and percentages of water abstracted but

- a) not distributed to the subscribers due to loss and leakage in the system, and,
- b) distributed to special subscribers without payment,

in regard to the total abstracted water have been calculated for each settlement. If neither of these sources included the related data, TurkStat web-based data for provinces or data from tertiary sources such as master plan reports have been used.

The following tables show the NRW percentages for municipalities with populations above 2000 inhabitants and municipal towns, which are calculated either by field data or TurkStat 2014 and 2016 district-based data.

As the data from the field survey and TurkStat are combined, a full set of data is obtained for the calculation of NRW percentages for all municipal settlements in the basin. Using the calculated 2016 percentages, a weighted-average NRW value of 36% is obtained for Akarçay Basin.

Table 8. Results of past Non-Revenue Water percentage calculations (municipalities > 2000 inhabitants and municipal towns), Akarçay Basin. Source: authors based on received data.

			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Afyonkarahisar	Bolvadin	Bolvadin							26 TS	24 TS	75 FS	
Afyonkarahisar	Bolvadin	Özburun							60 FS	56 FS	52 FS	
Afyonkarahisar	Bolvadin	Dişli							26 TS	24 TS	22 TS	
Afyonkarahisar	Çay	Çay							16 TS	21 TS	11 FS	
Afyonkarahisar	Çay	Pazarağaç							16 TS	21 TS	13 FS	
Afyonkarahisar	Çay	Karamık							16 TS	21 TS	26 TS	
Afyonkarahisar	Çobanlar	Çobanlar							26 TS	25 TS	23 FS	
Afyonkarahisar	Çobanlar	Kocaöz							26 TS	25 TS	9 FS	
Afyonkarahisar	İhsaniye	Yaylabağı	43 FS	45 FS	40 FS	35 FS	30 FS	32 FS	32 FS	26 FS	13 FS	
Afyonkarahisar	İhsaniye	Gazlıgöl							22 TS	22 TS	21 TS	
Afyonkarahisar	İhsaniye	Kayıhan							22 TS	22 TS	32 FS	
Afyonkarahisar	İscehisar	İscehisar							28 TS	24 TS	19 TS	35 FS
Afyonkarahisar	İscehisar	Seydiler							28 TS	24 TS	19 TS	
Afyonkarahisar	Sinanpaşa	Sinanpaşa							15 TS	20 TS	24 TS	
Afyonkarahisar	Sinanpaşa	Akören							15 TS	20 TS	24 TS	
Afyonkarahisar	Sinanpaşa	Kılıçarslan	48 FS	47 FS	19 FS	39 FS	20 FS	30 FS	20 FS	26 FS	23 FS	
Afyonkarahisar	Sinanpaşa	Tınaztepe	85 FS	79 FS	86 FS	73 FS	82 FS	83 FS	73 FS	80 FS	65 FS	
Afyonkarahisar	Sinanpaşa	Küçükhüyük							15 TS	20 TS	24 TS	
Afyonkarahisar	Sinanpaşa	Kırka							15 TS	20 TS	24 TS	
Afyonkarahisar	Sinanpaşa	Düzağaç							15 TS	20 TS	37 FS	
Afyonkarahisar	Sinanpaşa	Ahmetpaşa							15 TS	20 TS	72 FS	
Afyonkarahisar	Sultandağı	Sultandağı							15 TS	18 TS	21 TS	
Afyonkarahisar	Sultandağı	Dereçine							15 TS	18 TS	5 FS	
Afyonkarahisar	Sultandağı	Yeşilçiftlik							15 TS	18 TS	21 TS	



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			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Afyonkarahisar	Şuhut	Şuhut							32 TS	32 TS	60 FS	
Afyonkarahisar	Şuhut	Karaadilli							32 TS	32 TS	32 TS	
Afyonkarahisar	Merkez	Merkez							46 FS	42 FS	47 FS	
Afyonkarahisar	Merkez	Beyyazı							22 TS	23 TS	30 FS	
Afyonkarahisar	Merkez	Büyükkalecik							22 TS	23 TS	30 FS	
Afyonkarahisar	Merkez	Çayırbağ							22 TS	23 TS	40 FS	
Afyonkarahisar	Merkez	Çıkrık							22 TS	23 TS	25 TS	
Afyonkarahisar	Merkez	Değirmenayvalı							22 TS	23 TS	25 TS	
Afyonkarahisar	Merkez	Erkmen							22 TS	23 TS	25 TS	
Afyonkarahisar	Merkez	Fethibey							22 TS	23 TS	25 TS	
Afyonkarahisar	Merkez	Gebeceler							22 TS	23 TS	25 TS	
Afyonkarahisar	Merkez	Işıklar							22 TS	23 TS	29 FS	
Afyonkarahisar	Merkez	Nuribey							22 TS	23 TS	25 TS	
Afyonkarahisar	Merkez	Salar							22 TS	23 TS	75 FS	
Afyonkarahisar	Merkez	Sülümenli							22 TS	23 TS	77 FS	
Afyonkarahisar	Merkez	Sülün							22 TS	23 TS	25 TS	
Afyonkarahisar	Merkez	Susuz							22 TS	23 TS	61 FS	
Konya	Tuzlukçu	Tuzlukçu							28 FS	30 FS	28 FS	
Konya	Akşehir	Akşehir							28 FS	30 FS	28 FS	

* FS denotes field survey data and TS stands for TurkStat data. TurkStat data for the years 2014 and 2016 are received for the majority of the districts in the basin. For the districts not included in scope of this data set, data released biannually by TurkStat for the province where the district is affiliated are used. For trend calculations, TurkStat 2015 data are predicted by linear interpolation of the data for the years 2014 and 2016.



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Table 9. Results of future Non-Revenue Water percentage calculations (municipalities > 2000 inhabitants and municipal towns), Akarçay Basin. Source: authors based on received data.

Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Afyonkarahisar	Bolvadin	Bolvadin	22	22	22	22	22	22	22	22	22	34	30	30
Afyonkarahisar	Merkez	Merkez	47	30	30	30	47	30	30	30	47	34	30	30
Konya	Akşehir	Akşehir	28	28	28	28	28	28	28	28	28	34	30	30
Afyonkarahisar	Çay	Çay	26	26	26	26	26	26	26	26	26	34	30	30
Afyonkarahisar	Çobanlar	Çobanlar	24	24	24	24	24	24	24	24	24	34	30	30
Afyonkarahisar	İşcehisar	İşcehisar	19	19	19	19	19	19	19	19	19	34	30	30
Afyonkarahisar	Sultandağı	Sultandağı	21	21	21	21	21	21	21	21	21	34	30	30
Afyonkarahisar	Şuhut	Şuhut	32	30	30	30	32	30	30	30	32	34	30	30
Afyonkarahisar	Merkez	Işıklar	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Sinanpaşa	Sinanpaşa	24	24	24	24	24	24	24	24	24	34	30	30
Konya	Tuzlukçu	Tuzlukçu	28	28	28	28	28	28	28	28	28	34	30	30
Afyonkarahisar	Bolvadin	Dişli	22	22	22	22	22	22	22	22	22	34	30	30
Afyonkarahisar	Çay	Pazarağaç	26	26	26	26	26	26	26	26	26	34	30	30
Afyonkarahisar	Çay	Karamık	26	26	26	26	26	26	26	26	26	34	30	30
Afyonkarahisar	Çobanlar	Kocaöz	24	24	24	24	24	24	24	24	24	34	30	30
Afyonkarahisar	İhsaniye	Yaylabağı	13	13	13	13	13	13	13	13	13	34	30	30
Afyonkarahisar	İhsaniye	Gazlıgöl	21	21	21	21	21	21	21	21	21	34	30	30
Afyonkarahisar	İhsaniye	Kayıhan	21	21	21	21	21	21	21	21	21	34	30	30
Afyonkarahisar	İşcehisar	Seydiler	19	19	19	19	19	19	19	19	19	34	30	30
Afyonkarahisar	Sinanpaşa	Akören	24	24	24	24	24	24	24	24	24	34	30	30
Afyonkarahisar	Sinanpaşa	Kılıçarslan	23	23	23	23	23	23	23	23	23	34	30	30
Afyonkarahisar	Sinanpaşa	Tınaztepe	65	32	30	30	65	32	30	30	65	34	30	30
Afyonkarahisar	Sinanpaşa	Küçükhüyük	24	24	24	24	24	24	24	24	24	34	30	30
Afyonkarahisar	Sinanpaşa	Kırka	24	24	24	24	24	24	24	24	24	34	30	30
Afyonkarahisar	Sinanpaşa	Düzağaç	24	24	24	24	24	24	24	24	24	34	30	30



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Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Afyonkarahisar	Sinanpaşa	Ahmetpaşa	24	24	24	24	24	24	24	24	24	34	30	30
Afyonkarahisar	Sultandağı	Dereçine	21	21	21	21	21	21	21	21	21	34	30	30
Afyonkarahisar	Sultandağı	Yeşilçiftlik	21	21	21	21	21	21	21	21	21	34	30	30
Afyonkarahisar	Şuhut	Karaadilli	32	32	30	30	32	32	30	30	32	34	30	30
Afyonkarahisar	Merkez	Beyyazı	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Büyükkalecik	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Çayırbağ	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Çıkrik	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Değirmenayvalı	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Erkmen	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Fethibey	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Gebeceler	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Nuribey	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Salar	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Sülümenli	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Sülün	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Merkez	Susuz	25	25	25	25	25	25	25	25	25	34	30	30
Afyonkarahisar	Bolvadin	Özburun	52	32	30	30	52	32	30	30	52	34	30	30



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1.2. LIVESTOCK DATA

The data used for livestock in the basins are included in the proceeding tables:

- For municipalities, villages and neighbourhoods, numbers of livestock in the settlements are obtained from Ministry of Agriculture and Forestry (MoAF).

Table 10. Livestock data in villages and neighbourhoods for Akarçay Basin. Source: (former) MoAF.

Basin	Province	District	Town/Village Name	2016 Bovine	2016 Ovine	2016 Poultry	
Akarçay	Afyonkarahisar	Merkez	Merkez (DC)	6899	68267	9141337	
			All NH	65735	31346		
		Bayat	NH	1624	10162	3018	
		Bolvadin	Bolvadin (DC)	18796	25699	1880077	
			Özburun (T)	1106	5371		
			Dişli (T)	3375	4534		
			NH	12488	44057		
		Çay	Çay (DC)	11738	17645	12104	
			Pazarağaç (T)	5187	4523		
			Karamıkkaracaören (T)	3055	1802		
			NH	24115	55018		
		Çobanlar	Çobanlar (DC)	10679	16635	20454	
			Kocaöz(T)	2656	6556		
			NH	2418	7373		
		İhsaniye	Yaylabağı (T)	1105	369		
			Gazlıgöl (T)	987	1604		
			Kayıhan (T)	1244	2289		
			NH	7711	28076		
		İşcehisar	İşcehisar (DC)	2046	13064	3882	
			Seydiler (T)	1111	5472		
			NH	7060	25536		
		Sinanpaşa	Sinanpaşa (DC)	2291	3750	513822	
			Akören (T)	3250	2371		
			Kılıçarslan (T)	1322	1639		
			Tinaztepe (T)	3997	2074		
			Küçük Hüyük (T)	3270	3266		
			Kirka (T)	1068	3229		
			Düzağaç (T)	2633	2666		
			Ahmetpaşa (T)	1890	2763		
			NH	16346	34308		
		Sultandağı	Sultandağı (DC)	3342	14301	87883	
			Dereçine (T)	110	323		
			Yeşilçiftlik (T)	601	4076		
			NH	4409	37152		
		Şuhut	Şuhut (DC)	7340	41722	3747	
			Karadilli (T)	2321	3661		
			NH	25419	78654		
		Dinar	NH	411	2589		
		Konya	Tuzlukçu	Tuzlukçu (DC)	9685	25292	11000
				All Neighbourhood	6993	20108	



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Basin	Province	District	Town/Village Name	2016 Bovine	2016 Ovine	2016 Poultry
		Akşehir	Akşehir (DC)	40361	66480	395000
			All Neighbourhood	35160	28030	361540
		Doğanhisar	All Neighbourhood	10216	8375	

1.3. OTHER DEMANDS

In Akarçay Basin, there are several tourist facilities that require their own water uses. Water demands of these facilities have also been calculated and included in the water demand calculations under “other consumptions” category.

The list of tourist facilities in Afyonkarahisar province was obtained from the Afyonkarahisar Provincial Directorate of Culture and Tourism with an official letter. In addition to these data, Akarçay Basin Water Allocation Plan Report has also been used as a source. Tourism gross demands have been calculated by using the following approaches:

- Tourism with accommodation, summer houses, second houses, etc.; net amount per person: 200 l/person/day
- Thermal complex, net amount per person: 400 l/person/day

The facilities in Akarçay Basin with Tourism Operation and Investment Licenses are given in the table below.

Table 11. The list of Tourism Complexes in Akarçay Basin Source: Afyonkarahisar Provincial Directorate of Culture and Tourism.

Province Name	District Name	Complex Name	Type	Number of Stars	Rooms	Number of Beds	Water Demand (hm ³ /year)
Afyonkarahisar	İhsaniye	Çakır Apart Hotel	Private Apart Hotel		25	50	0.004
Afyonkarahisar	İscehisar	İscetaş Hotel	Hotel	3 Stars	13	26	0.002
Afyonkarahisar	Merkez	Global House Apart	Müstakil Apart Hotel		10	20	0.001
Afyonkarahisar	Merkez	Kolaylı Hotel	Hotel	3 Stars	46	101	0.007
Afyonkarahisar	Merkez	Çakmak Marble Hotel	Hotel	3 Stars	114	228	0.017
Afyonkarahisar	Merkez	Anemon Afyon Hoteli	Hotel	5 Stars	195	390	0.028
Afyonkarahisar	Merkez	Şehitoğlu House	Private Accomadation Complex		10	18	0.001
Afyonkarahisar	Merkez	Garden Kale Hotel	Thermal Hotel	3 Stars	160	320	0.047
Afyonkarahisar	Merkez	Budan Thermal Spa Hotel&Convention Center	Thermal Hotel	5 Stars	157	314	0.046
Afyonkarahisar	Merkez	Termal Resort Oruçoğlu	Thermal Hotel	5 Stars	306	624	0.091
Afyonkarahisar	Merkez	Korel Thermal Resort Clinic &Spa	Thermal Hotel	5 Stars	329	668	0.098
Afyonkarahisar	Merkez	İkbal Thermal Hotel & Spa	Thermal Hotel	5 Stars	286	572	0.084
Afyonkarahisar	Merkez	Eko Thermal Hotel	Thermal Hotel	4 Stars	131	290	0.042
Afyonkarahisar	Merkez	By Thermal Hotel	Thermal Hotel	5 Stars	259	548	0.080
Afyonkarahisar	Merkez	Akrones Thermal Hotel	Thermal Hotel	5 Stars	308	756	0.110



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Province Name	District Name	Complex Name	Type	Number of Stars	Rooms	Number of Beds	Water Demand (hm ³ /year)
Afyonkarahisar	Merkez	Rixos Thermal Afyon	Thermal Hotel	5 Stars	825	1654	0.241
Afyonkarahisar	Merkez	Eminevim Thermal Hotel	Thermal Hotel	5 Stars	1003	2442	0.357
Afyonkarahisar	Merkez	Afyon Saray Thermal	Thermal Hotel	5 Stars	1415	2830	0.413
Afyonkarahisar	Merkez	Alila Nil Thermal	Tourism Complex		300	912	0.067
Afyonkarahisar	Merkez	Afyonkarahisar Thermal Spa Tourism Accommodation Ve Leisure Complex	Tourism Complex		500	1000	0.073
Afyonkarahisar	Merkez	Salutaris	Tourism Complex		768	2236	0.163
Afyonkarahisar	Sandıklı	May Termal Hotel	Thermal Hotel	5 Stars	376	806	0.118
Afyonkarahisar	Erkmen	MCG Çakmak Termal Hotel	Thermal Hotel	5 Stars	195	390	0.057
Afyonkarahisar	Sandıklı	Sandıklı Termal Park Hotel	Thermal Hotel	5 Stars	220	444	0.065
Afyonkarahisar	Sandıklı	Safran Termal Resort Hotel	Thermal Hotel	5 Stars	352	760	0.111
Afyonkarahisar	Merkez	Söztürk Hotel	Hotel	3 Stars	25	50	0.004
Afyonkarahisar	Merkez	Ng Güral Afyon Şifa Hotel	Hotel	3 Stars	126	336	0.025
Konya	Akşehir	Nasreddin Hoca Önder Hotel	Hotel	3 Stars	30	60	0.004
Konya	Akşehir	Grand Hotel Akşehir	Hotel	3 Stars	39	78	0.006
Konya	Akşehir	Özpark Hotel	Hotel	3 Stars	78	156	0.011



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2. BATI AKDENİZ RIVER BASIN

2.1. MUNICIPAL DEMANDS

Current population and forecasts: Results

Population forecast results (obtained with the projection method which complies most with the trend of the previous censuses) as well as the current population for Batı Akdeniz Basin are presented below for each settlement in the basin under 4 settlement categories (according to the DSI methodology). The current population data (for the year 2016) also include the additional population by immigrants. Population of immigrants has been considered as part of the total population for each settlement, hence results of the population forecast adopted in all scenarios also take into account the population of immigrants (which represents 2.2% of the total basin population currently).

Table 12. Population Forecast and current population Results for Batı Akdeniz Basin. Source: authors based on TurkStat and settlements data.

Category	Province Name	District Name	Settlement Name	2016	2026	2032	2038
1	Antalya	Kumluca	Kumluca	36580	49160	58700	70091
1	Muğla	Menteşe	Menteşe	73113	98258	117325	140092
1	Muğla	Bodrum	Bodrum	41500	55773	66595	79518
1	Muğla	Dalaman	Dalaman	28643	39048	45204	50793
1	Muğla	Fethiye	Fethiye	97433	130942	156351	186692
1	Muğla	Marmaris	Marmaris	35081	46057	54230	63852
1	Muğla	Milas	Milas	62533	84039	100347	119820
1	Muğla	Ortaca	Ortaca	32447	48739	56483	62704
2	Antalya	Demre	Demre	16877	18643	19790	21007
2	Antalya	Elmalı	Elmalı	16648	19435	21327	23403
2	Antalya	Finike	Finike	13764	18421	21203	23784
2	Antalya	Kaş	Kaş	8225	10546	11893	13123
2	Antalya	Kemer	Kemer	22966	30256	35698	42120
2	Burdur	Çavdır	Çavdır	5160	7279	8576	9789
2	Burdur	Göhlhisar	Göhlhisar	17612	24482	28514	32097
2	Denizli	Acıpayam	Acıpayam	16502	22828	26547	29869
2	Denizli	Serinhisar	Serinhisar	10435	10698	11098	11702
2	Muğla	Datça	Datça	13596	19177	22597	25791
2	Muğla	Köyceğiz	Köyceğiz	10452	14268	16525	18570
2	Muğla	Seydikemer	Seydikemer	6138	7462	8277	9089
2	Muğla	Ula	Ula	6093	7311	7890	8357
3	Burdur	Altinyayla	Altinyayla	2973	3284	3486	3701
3	Burdur	Çavdır	Söğüt	2875	3176	3371	3579
3	Denizli	Çameli	Çameli	2926	3232	3431	3642



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Category	Province Name	District Name	Settlement Name	2016	2026	2032	2038
4	Muğla	Bodrum	Turgutreis	28311	55086	67812	78036
4	Antalya	Finike	Hasyurt	5852	6442	6796	7150
4	Antalya	Finike	Sahilkent	8963	10016	10707	11445
4	Antalya	Finike	Turunçova	7516	8266	8716	9166
4	Antalya	Kaş	Kınık	5580	6167	6549	6954
4	Antalya	Kaş	Ova	5010	5534	5875	6236
4	Antalya	Kemer	Göynük	9613	13561	15979	18237
4	Antalya	Kumluca	Beykonak	5567	6127	6463	6799
4	Antalya	Kumluca	Mavikent	6973	7673	8093	8513
4	Muğla	Bodrum	Bitez	10043	13497	16116	19243
4	Muğla	Bodrum	Gümüslük	5175	7299	8600	9814
4	Muğla	Bodrum	Ortakentyaşlı	9270	13076	15408	17585
4	Muğla	Bodrum	Yalıkavak	5933	6523	6877	7231
4	Muğla	Fethiye	Çamköy	5016	7076	8337	9516
4	Muğla	Fethiye	Esenköy	5052	5782	6220	6658
4	Muğla	Fethiye	Karaçulha	14246	16125	17497	19088
4	Muğla	Marmaris	Armutalan	20749	27847	32081	35996
4	Muğla	Marmaris	Beldibi	10376	13444	15210	16800
4	Muğla	Marmaris	İçmeler	5863	7393	8311	9229
4	Muğla	Ortaca	Dalyan	5162	6412	7162	7912
4	Aydın	Didim	Akbük	5612	7542	9006	10753
4	Antalya	Demre	All Neighbourhoods	9082	10126	10804	11528
4	Antalya	Elmalı	All Neighbourhoods	21982	24333	26018	27932
4	Antalya	Finike	All Neighbourhoods	11412	12711	13611	14610
4	Antalya	Kaş	All Neighbourhoods	37938	45805	51511	58121
4	Antalya	Kemer	All Neighbourhoods	9347	10376	11049	11770
4	Antalya	Kumluca	All Neighbourhoods	18495	20531	21868	23293
4	Antalya	Korkuteli	All Neighbourhoods	4336	4917	5315	5757
4	Burdur	Altinyayla	All Neighbourhoods	2376	2624	2786	2958
4	Burdur	Çavdır	All Neighbourhoods	4972	5491	5829	6190
4	Burdur	Göhlhisar	All Neighbourhoods	5068	5602	5951	6321
4	Burdur	Tepenni	All Neighbourhoods	2189	2418	2566	2726
4	Burdur	Yeşilova	All Neighbourhoods	1428	1577	1675	1777
4	Denizli	Acipayam	All Neighbourhoods	38963	42777	45337	48123
4	Denizli	Çameli	All Neighbourhoods	15312	16976	18066	19227
4	Denizli	Serinhisar	All Neighbourhoods	3555	3927	4168	4425
4	Muğla	Menteşe	All Neighbourhoods	16039	18499	20336	22488
4	Muğla	Bodrum	All Neighbourhoods	56070	64224	70134	76975
4	Muğla	Dalaman	All Neighbourhoods	9658	10742	11453	12207
4	Muğla	Datça	All Neighbourhoods	6917	8346	9367	10542
4	Muğla	Fethiye	All Neighbourhoods	30785	37266	41908	47235
4	Muğla	Köyceğiz	All Neighbourhoods	24800	29775	33330	37396
4	Muğla	Marmaris	All Neighbourhoods	18650	22075	24484	27203
4	Muğla	Milas	All Neighbourhoods	63006	71190	76722	82774
4	Muğla	Ortaca	All Neighbourhoods	11503	13285	14518	15899
4	Muğla	Ula	All Neighbourhoods	17863	20031	21466	23014
4	Muğla	Seydikemer	All Neighbourhoods	54168	61364	66261	71658



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL AND LIVESTOCK DEMANDS, CALCULATIONS.

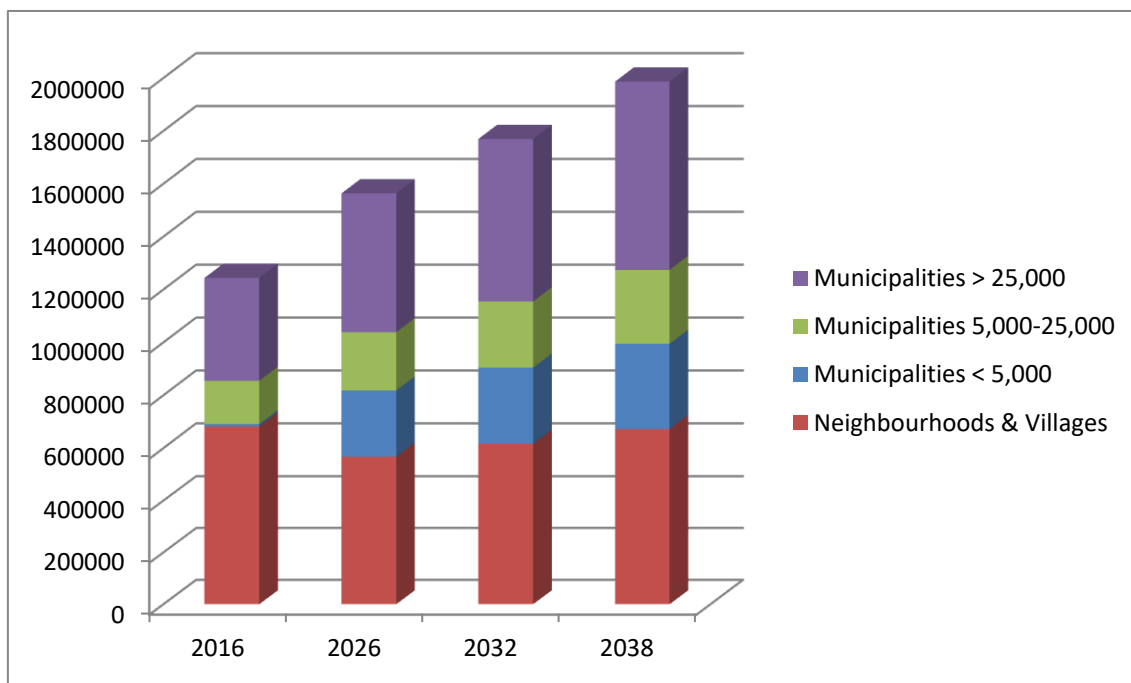


Figure 2. Total population of Bati Akdeniz Basin by settlement category and year

Results of Water Consumption Per Capita Calculations (municipalities > 2000 inhabitants and municipal towns)

Calculations have been principally based on the accrual data collected from field surveys for the net water consumption per capita values in the municipal sector. In cases where no data from field surveys were available, net water consumption per capita in the municipal water networks for the years 2014 and 2016 received from TurkStat have been used. If neither of these sources included the related data, biannual water abstraction and distribution data of provinces collected from TurkStat web site have been used for the affiliated municipalities and districts.

The following tables show the average net water consumption per capita (lcd) for municipalities with populations above 2000 inhabitants and municipal towns calculated with field data and TurkStat 2014 and 2016 district-based water abstraction and distribution data, respectively.

As the data from the field survey and TurkStat are combined, a full set of data is obtained for the calculation of per capita water consumption for all municipal settlements in the basin. Using the calculated 2016 data, a population-weighted average per capita water consumption value of 79 lcd is obtained for Bati Akdeniz Basin.



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Table 13. Results of past Net Water Consumption per Capita (l/cap/day) calculations (municipalities > 2000 inhabitants and municipal towns), Batı Akdeniz Basin. Source: authors based on received data.

			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Antalya	Demre	Merkez							102 TS	89 FS	101 FS	91 FS
Antalya	Elmalı	Merkez							102 TS	80 FS	93 FS	82 FS
Antalya	Finike	Merkez							102 TS	121 FS	123 FS	103 FS
Antalya	Kaş	Merkez							102 TS	101 FS	104 FS	91 FS
Antalya	Kemer	Merkez							102 TS	141 FS	136 FS	132 FS
Antalya	Kumluca	Merkez							102 TS	106 FS	113 FS	101 FS
Burdur	Altinyayla	Merkez	379 FS	353 FS	99 FS	106 FS	122 FS	110 FS	128 FS	135 FS	165 FS	
Burdur	Çavdır	Merkez	112 FS	108 FS	99 FS	115 FS	101 FS	93 FS	115 FS	132 FS	125 FS	
Burdur	Söğüt	Merkez	85 FS	86 FS	84 FS	114 FS	109 FS	99 FS	100 FS	121 FS	125 FS	
Burdur	Göhlisar	Merkez							31 TS	33 TS	35 TS	
Denizli	Acipayam	Merkez							122 TS	95 FS	300 FS	
Denizli	Çameli	Merkez							122 TS	107 FS	125 FS	
Denizli	Serinhisar	Merkez							122 TS	94 FS	131 FS	
Muğla	Menteşe	Merkez							73 TS	70 TS	110 FS	
Muğla	Bodrum	Merkez							73 TS	70 TS	125 FS	
Muğla	Dalaman	Merkez							73 TS	70 TS	107 FS	
Muğla	Datça	Merkez							73 TS	70 TS	161 FS	
Muğla	Fethiye	Merkez							73 TS	70 TS	130 FS	
Muğla	Köyceğiz	Merkez							73 TS	70 TS	135 FS	
Muğla	Marmaris	Merkez							73 TS	70 TS	120 FS	
Muğla	Milas	Merkez							73 TS	70 TS	101 FS	
Muğla	Ortaca	Merkez							73 TS	70 TS	103 FS	
Muğla	Ula	Merkez							73 TS	70 TS	146 FS	
Muğla	Seydikemer	Merkez							73 TS	70 TS	114 FS	

* FS denotes field survey data and TS stands for TurkStat data. TurkStat data for the years 2014 and 2016 are received for the majority of the districts in the basin. For the districts not included in scope of this data set, data released biannually by TurkStat for the province where the district is affiliated are used. For trend calculations, TurkStat 2015 data are predicted by linear interpolation of the data for the years 2014 and 2016.

Table 14. Results of future Net Water Consumption per Capita (l/cap/day) calculations (municipalities > 2000 inhabitants and municipal towns), Batı Akdeniz Basin. Source: authors based on received data.

			Water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)			
			2016	2026	2032	2038
Antalya	Kumluca	Kumluca	113	119	122	126
Antalya	Kumluca	Kumluca	113	119	122	126
Muğla	Menteşe	Menteşe	68	71	73	76
Muğla	Menteşe	Menteşe	68	71	73	76
Muğla	Bodrum	Bodrum	68	71	73	76
Muğla	Bodrum	Bodrum	68	71	73	76
Muğla	Dalaman	Dalaman	68	71	73	76
Muğla	Dalaman	Dalaman	68	71	73	76
Muğla	Fethiye	Fethiye	68	71	73	76
Muğla	Fethiye	Fethiye	68	71	73	76
Muğla	Marmaris	Marmaris	68	71	73	76
Muğla	Marmaris	Marmaris	68	71	73	76
Muğla	Milas	Milas	68	71	73	76



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			Water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)			
			2016	2026	2032	2038
Muğla	Milas	Milas	68	71	73	76
Muğla	Ortaca	Ortaca	68	71	73	76
Muğla	Ortaca	Ortaca	68	71	73	76
Antalya	Demre	Demre	101	115	125	135
Antalya	Demre	Demre	101	115	125	135
Antalya	Elmalı	Elmalı	93	108	117	128
Antalya	Finike	Finike	123	129	133	137
Antalya	Finike	Finike	123	129	133	137
Antalya	Kaş	Kaş	104	109	113	116
Antalya	Kaş	Kaş	104	109	113	116
Antalya	Kemer	Kemer	136	143	147	151
Antalya	Kemer	Kemer	136	143	147	151
Burdur	Çavdır	Çavdır	125	144	157	170
Burdur	Göhlhisar	Göhlhisar	35	50	60	72
Denizli	Acıpayam	Acıpayam	300	250	250	250
Denizli	Serinhisar	Serinhisar	131	177	212	250
Muğla	Datça	Datça	68	71	73	76
Muğla	Datça	Datça	68	71	73	76
Muğla	Köyceğiz	Köyceğiz	68	71	73	76
Muğla	Köyceğiz	Köyceğiz	68	71	73	76
Muğla	Seydikemer	Seydikemer	68	71	73	76
Muğla	Ula	Ula	68	71	73	76
Muğla	Ula	Ula	68	71	73	76
Burdur	Altınyayla	Altınyayla	165	173	179	184
Burdur	Çavdır	Söğüt	125	169	202	242
Denizli	Çameli	Çameli	125	168	202	242



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Table 15. Results of future Gross Water Consumption per Capita (l/cap/day) calculations (municipalities > 2000 inhabitants and municipal towns), Batı Akdeniz Basin. Source: authors based on received data.

			Gross water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)											
			Trend Scenario				Optimistic Scenario				Realistic Scenario			
Province	District	Settlement	2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Antalya	Kumluca	Kumluca*	232	246	256	265	232	213	220	228	232	224	220	228
Muğla	Menteşe	Menteşe*	165	155	163	171	165	155	163	171	165	163	163	171
Muğla	Bodrum	Bodrum*	195	193	193	194	195	193	193	194	195	194	193	194
Muğla	Dalaman	Dalaman*	181	168	174	180	181	168	174	180	181	176	174	180
Muğla	Fethiye	Fethiye*	184	172	177	182	184	172	177	182	184	179	177	182
Muğla	Marmaris	Marmaris*	194	191	191	192	194	191	191	192	194	192	191	192
Muğla	Milas	Milas*	185	172	177	182	185	172	177	182	185	180	177	182
Muğla	Ortaca	Ortaca*	186	173	178	183	186	173	178	183	186	180	178	183
Antalya	Demre	Demre*	204	237	263	295	204	211	232	259	204	220	232	259
Antalya	Elmalı	Elmalı	213	249	274	301	213	214	235	258	213	226	235	258
Antalya	Finike	Finike*	230	244	252	261	230	215	222	229	230	225	222	229
Antalya	Kaş	Kaş*	213	233	250	269	213	212	225	241	213	219	225	241
Antalya	Kemer	Kemer*	247	268	283	300	247	250	262	276	247	256	262	276
Burdur	Çavdır	Çavdır	170	237	259	282	170	197	215	235	170	251	259	282
Burdur	Göhlhisar	Göhlhisar	73	139	183	242	73	118	155	206	73	147	183	242
Denizli	Acıpayam	Acıpayam	415	424	426	428	415	349	351	353	415	448	426	428
Denizli	Serinhisar	Serinhisar	183	302	364	431	183	249	300	355	183	320	364	431
Muğla	Datça	Datça*	186	175	179	184	186	175	179	184	186	182	179	184
Muğla	Köyceğiz	Köyceğiz*	183	169	175	181	183	169	175	181	183	177	175	181
Muğla	Seydikemer	Seydikemer	367	319	311	306	367	319	311	306	367	329	311	306
Muğla	Ula	Ula*	91	94	113	136	91	94	113	136	91	100	113	136
Burdur	Altınyayla	Altınyayla	243	309	331	356	243	269	288	310	243	327	331	356
Burdur	Çavdır	Söğüt	221	537	752	942	221	311	376	471	221	319	376	471
Denizli	Çameli	Çameli	207	374	479	618	207	308	394	509	207	395	479	618

* Summer (temporary) populations are also included in gross per capita consumption calculations.



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Results of (Public+Commercial)/Residential Ratio (municipalities > 2000 inhabitants and municipal towns)

Calculations have been principally based on the accrual data collected from field surveys for the calculation of public and commercial water use ratios to the domestic consumption. In cases where no data from field surveys were available, domestic water use and water use data categorised under other types of consumption for the years 2014 and 2016 received from TurkStat have been compared and ratios of public and commercial water use to domestic water use have been calculated for each settlement. If neither of these sources included the related data, TurkStat web-based data for provinces or data from tertiary sources such as master plan reports have been used.

The following tables show the public and commercial water consumption to residential consumption ratios [(Public+Commercial)/Residential] for municipalities with populations above 2000 inhabitants and municipal towns, which are calculated either by field data or TurkStat 2014 and 2016 district-based data.

As the data from the field survey and TurkStat are combined, a full set of data is obtained for the calculation of (Public+Commercial)/Residential percentages for all municipal settlements in the basin. Using the calculated 2016 percentages, a population-weighted average (P+C)/R value of 57% is obtained for Batı Akdeniz Basin.

Table 16. Results of past Public+Commercial/Residential percentage calculations (municipalities > 2000 inhabitants and municipal towns), Batı Akdeniz Basin. Source: authors based on received data.

			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Antalya	Demre	Merkez							23 TS	28 FS	23 FS	38 FS
Antalya	Elmalı	Merkez							23 TS	49 FS	37 FS	38 FS
Antalya	Finike	Merkez							23 TS	21 FS	18 FS	20 FS
Antalya	Kaş	Merkez							23 TS	30 FS	32 FS	43 FS
Antalya	Kemer	Merkez							23 TS	120 FS	87 FS	82 FS
Antalya	Kumluca	Merkez							23 TS	30 FS	25 FS	29 FS
Burdur	Altinyayla	Merkez	10 FS	11 FS	18 FS	24 FS	21 FS	21 FS	18 FS	17 FS	18 FS	
Burdur	Çavdır	Merkez							15 TS	15 TS	14 TS	
Burdur	Söğüt	Merkez	10 FS	8 FS	11 FS	8 FS	6 FS	9 FS	11 FS	10 FS	19 FS	
Burdur	Göhlhisar	Merkez							65 TS	68 TS	71 TS	
Denizli	Acipayam	Merkez							19 TS	30 FS	18 FS	
Denizli	Çameli	Merkez							19 TS	29 FS	41 FS	
Denizli	Serinhisar	Merkez							19 TS	23 FS	18 FS	
Muğla	Menteşe	Merkez							281 TS	170 TS	46 FS	
Muğla	Bodrum	Merkez							281 TS	170 TS	120 FS	
Muğla	Dalaman	Merkez							281 TS	170 TS	20 FS	
Muğla	Datça	Merkez							281 TS	170 TS	38 FS	
Muğla	Fethiye	Merkez							281 TS	170 TS	39 FS	
Muğla	Köyceğiz	Merkez							281 TS	170 TS	19 FS	
Muğla	Marmaris	Merkez							281 TS	170 TS	130 FS	
Muğla	Milas	Merkez							281 TS	170 TS	27 FS	
Muğla	Ortaca	Merkez							281 TS	170 TS	24 FS	
Muğla	Ula	Merkez							281 TS	170 TS	28 FS	
Muğla	Seydikemer	Merkez							281 TS	170 TS	43 FS	

* FS denotes field survey data and TS stands for TurkStat data. TurkStat data for the years 2014 and 2016 are received for the majority of the districts in the basin.



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Table 17. Results of future Public+Commercial/Residential percentage calculations (municipalities > 2000 inhabitants and municipal towns), Batı Akdeniz Basin. Source: authors based on received data.

Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Antalya	Kumluca	Kumluca	25	26	27	28	25	26	27	28	25	26	27	28
Muğla	Menteşe	Menteşe	59	62	64	66	59	62	64	66	59	62	64	66
Muğla	Bodrum	Bodrum	59	62	64	66	59	62	64	66	59	62	64	66
Muğla	Dalaman	Dalaman	59	62	64	66	59	62	64	66	59	62	64	66
Muğla	Fethiye	Fethiye	59	62	64	66	59	62	64	66	59	62	64	66
Muğla	Marmaris	Marmaris	59	62	64	66	59	62	64	66	59	62	64	66
Muğla	Milas	Milas	59	62	64	66	59	62	64	66	59	62	64	66
Muğla	Ortaca	Ortaca	59	62	64	66	59	62	64	66	59	62	64	66
Antalya	Demre	Demre	23	31	37	44	23	31	37	44	23	31	37	44
Antalya	Elmalı	Elmalı	37	39	40	41	37	39	40	41	37	39	40	41
Antalya	Finike	Finike	18	19	20	20	18	19	20	20	18	19	20	20
Antalya	Kaş	Kaş	32	43	51	61	32	43	51	61	32	43	51	61
Antalya	Kemer	Kemer	87	91	94	97	87	91	94	97	87	91	94	97
Burdur	Çavdır	Çavdır	14	15	16	16	14	15	16	16	14	15	16	16
Burdur	Göhlisar	Göhlisar	71	95	114	137	71	95	114	137	71	95	114	137
Denizli	Acıpayam	Acıpayam	18	19	19	20	18	19	19	20	18	19	19	20
Denizli	Serinhisar	Serinhisar	18	19	20	21	18	19	20	21	18	19	20	21
Muğla	Datça	Datça	59	62	64	66	59	62	64	66	59	62	64	66
Muğla	Köyceğiz	Köyceğiz	59	62	64	66	59	62	64	66	59	62	64	66
Muğla	Seydikemer	Seydikemer	59	62	64	66	59	62	64	66	59	62	64	66
Muğla	Ula	Ula	59	62	64	66	59	62	64	66	59	62	64	66
Burdur	Altınyayla	Altınyayla	18	25	30	36	18	25	30	36	18	25	30	36
Burdur	Çavdır	Söğüt	19	25	30	36	19	25	30	36	19	25	30	36
Denizli	Çameli	Çameli	41	55	66	79	41	55	66	79	41	55	66	79



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Results of Non-Revenue Water (municipalities > 2000 inhabitants and municipal towns)

Calculations have been principally based on the accrual data collected from field surveys for the calculation of non-revenue water (NRW) percentages. In cases where no data from field surveys were available, abstracted and distributed water data for the years 2014 and 2016 received from TurkStat have been compared and percentages of water abstracted but

- a) not distributed to the subscribers due to loss and leakage in the system, and,
- b) distributed to special subscribers without payment,

in regard to the total abstracted water have been calculated for each settlement. If neither of these sources included the related data, TurkStat web-based data for provinces or data from tertiary sources such as master plan reports have been used.

The following tables show the NRW percentages for municipalities with populations above 2000 inhabitants and municipal towns, which are calculated either by field data or TurkStat 2014 and 2016 district-based data.

As the data from the field survey and TurkStat are combined, a full set of data is obtained for the calculation of NRW percentages for all municipal settlements in the basin. Using the calculated 2016 percentages, a weighted-average NRW value of 36% is obtained for Batı Akdeniz Basin.

Table 18. Results of past Non-Revenue Water percentage calculations (municipalities > 2000 inhabitants and municipal towns), Batı Akdeniz Basin. Source: authors based on received data.

			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Antalya	Demre	Merkez							55 TS	40 FS	40 FS	40 FS
Antalya	Elmalı	Merkez							55 TS	40 FS	40 FS	40 FS
Antalya	Finike	Merkez							55 TS	40 FS	40 FS	40 FS
Antalya	Kaş	Merkez							55 TS	40 FS	40 FS	40 FS
Antalya	Kemer	Merkez							55 TS	40 FS	40 FS	40 FS
Antalya	Kumluca	Merkez							55 TS	40 FS	40 FS	40 FS
Burdur	Altınyayla	Merkez							30 TS	25 TS	29 FS	
Burdur	Çavdır	Merkez							20 TS	18 TS	16 TS	
Burdur	Söğüt	Merkez							29 TS	31 TS	50 FS	
Burdur	Göhlhisar	Merkez							22 TS	20 TS	18 TS	
Denizli	Acipayam	Merkez							20 TS	17 TS	90 FS	
Denizli	Çameli	Merkez							20 TS	17 TS	15 TS	
Denizli	Serinhisar	Merkez							20 TS	17 TS	15 TS	
Muğla	Menteşe	Merkez							67 TS	53 TS	40 FS	
Muğla	Bodrum	Merkez							67 TS	53 TS	42 FS	
Muğla	Dalaman	Merkez							67 TS	53 TS	66 FS	
Muğla	Datça	Merkez							67 TS	53 TS	65 FS	
Muğla	Fethiye	Merkez							67 TS	53 TS	49 FS	
Muğla	Köyceğiz	Merkez							67 TS	53 TS	69 FS	
Muğla	Marmaris	Merkez							67 TS	53 TS	49 FS	
Muğla	Milas	Merkez							67 TS	53 TS	55 FS	
Muğla	Ortaca	Merkez							67 TS	53 TS	56 FS	
Muğla	Ula	Merkez							67 TS	53 TS	59 FS	
Muğla	Seydikemer	Merkez							67 TS	53 TS	47 FS	



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CALCULATIONS.**

* FS denotes field survey data and TS stands for TurkStat data. TurkStat data for the years 2014 and 2016 are received for the majority of the districts in the basin. For the districts not included in scope of this data set, data released biannually by TurkStat for the province where the district is affiliated are used. For trend calculations, TurkStat 2015 data are predicted by linear interpolation of the data for the years 2014 and 2016.



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Table 19. Results of future Non-Revenue Water percentage calculations (municipalities > 2000 inhabitants and municipal towns), Batı Akdeniz Basin. Source: authors based on received data.

Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Antalya	Kumluca	Kumluca	40	40	40	40	40	30	30	30	40	34	30	30
Muğla	Menteşe	Menteşe	40	30	30	30	40	30	30	30	40	34	30	30
Muğla	Bodrum	Bodrum	40	30	30	30	40	30	30	30	40	34	30	30
Muğla	Dalaman	Dalaman	40	30	30	30	40	30	30	30	40	34	30	30
Muğla	Fethiye	Fethiye	40	30	30	30	40	30	30	30	40	34	30	30
Muğla	Marmaris	Marmaris	40	30	30	30	40	30	30	30	40	34	30	30
Muğla	Milas	Milas	40	30	30	30	40	30	30	30	40	34	30	30
Muğla	Ortaca	Ortaca	40	30	30	30	40	30	30	30	40	34	30	30
Antalya	Demre	Demre	40	40	40	40	40	30	30	30	40	34	30	30
Antalya	Elmalı	Elmalı	40	40	40	40	40	30	30	30	40	34	30	30
Antalya	Finike	Finike	40	40	40	40	40	30	30	30	40	34	30	30
Antalya	Kaş	Kaş	40	40	40	40	40	30	30	30	40	34	30	30
Antalya	Kemer	Kemer	40	40	40	40	40	30	30	30	40	34	30	30
Burdur	Çavdır	Çavdır	16	30	30	30	16	16	16	16	16	34	30	30
Burdur	Gölnhisar	Gölnhisar	18	30	30	30	18	18	18	18	18	34	30	30
Denizli	Acipayam	Acipayam	15	30	30	30	15	15	15	15	15	34	30	30
Denizli	Serinhisar	Serinhisar	15	30	30	30	15	15	15	15	15	34	30	30
Muğla	Datça	Datça	40	30	30	30	40	30	30	30	40	34	30	30
Muğla	Köyceğiz	Köyceğiz	40	30	30	30	40	30	30	30	40	34	30	30
Muğla	Seydikemer	Seydikemer	40	30	30	30	40	30	30	30	40	34	30	30
Muğla	Ula	Ula	40	30	30	30	40	30	30	30	40	34	30	30
Burdur	Altınyayla	Altınyayla	20	30	30	30	20	20	20	20	20	34	30	30
Burdur	Çavdır	Söğüt	33	61	65	65	33	32	30	30	33	34	30	30
Denizli	Çameli	Çameli	15	30	30	30	15	15	15	15	15	34	30	30



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2.2. LIVESTOCK DATA

The data used for livestock in the basins are included in the following tables:

- For municipalities, villages and neighbourhoods, numbers of livestock in the settlements are obtained from Ministry of Agriculture and Forestry (MoAF).

Table 20. Livestock data in villages and neighbourhoods for Batı Akdeniz Basin. Source: (former) MoFAL.

Basin	Province	District	Town/Village Name	2016 Bovine	2016 Ovine	2016 Poultry	
BATI AKDENİZ BASIN	ANTALYA	Demre	Demre (DC)	50	1863		
			All Neighbourhood	568	30394		
		Elmalı	Elmalı (DC)	778	27140	21450	
			All Neighbourhood	17643	235281		
		Finike	Finike (DC)	23	1538		
			All Neighbourhood	835	28704		
		Kaş	Kaş (DC)	5	544		
			All Neighbourhood	5742	83631	2000	
		Kemer	Kemer (DC)	309	555		
			All Neighbourhood	795	7260	240	
		Kumluca	Kumluca (DC)	106	154	154	
			All Neighbourhood	1748	24025		
				All Neighbourhood	31842	224175	13866
		BURDUR	Altınyayla	Altınyayla (DC)	941	4958	
	Tüm Köyler			1510	7540		
	Çavdır		Çavdır (DC)	1544	4737		
			Tüm Köyler	11641	40999		
	Gölgözü		Gölgözü (DC)	5088	5379		
			Tüm Köyler	11893	13611		
	Tefenni	Tüm Köyler	7189	25082			
	Yeşilova	Tüm Köyler	23910	44016			
	DENİZLİ	Acıpayam	Acıpayam (DC)	1900	10640		
			All Neighbourhood	55500	84080	92890	
		Çameli	Çameli (DC)	1005	468		
			All Neighbourhood	17468	12103		
	Serinhisar	Serinhisar (DC)	2107	28200			
		All Neighbourhood	1414	4554	2000		
	MUĞLA	Menteşe	Menteşe (Muğla DC)	2536	6600		
			All Neighbourhood	21418	41734	939	
		Bodrum	Bodrum (DC)	148	339		
			All Neighbourhood	14247	6535		
		Dalaman	Dalaman (DC)	2878	2720		
			All Neighbourhood	4527	11525		
		Datça	Datça (DC)	118	341		
			All Neighbourhood	1426	2118	2000	
		Fethiye	Fethiye (DC)	543	7429		
			All Neighbourhood	3688	39441	1000	
	Köyceğiz	Köyceğiz (DC)	279	879			
		All Neighbourhood	9705	24850	5050		
	Marmaris	Marmaris (DC)	10	176			



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Basin	Province	District	Town/Village Name	2016 Bovine	2016 Ovine	2016 Poultry
			All Neighbourhood	4120	18282	
		Milas	Milas (DC)	2873	2569	
			All Neighbourhood	89061	40465	76814
		Ortaca	Ortaca (DC)	1927	1218	
			All Neighbourhood	7378	5383	
		Ula	Ula (DC)	689	3161	
			All Neighbourhood	9044	11331	650
		Seydikemer	Seydikemer (DC)	503	1619	
			All Neighbourhood	33447	103638	22740

2.3. OTHER DEMANDS

In Batı Akdeniz Basin, there are several tourist facilities that require special demand calculations. These facilities have been included in the water demand calculations under “other consumptions” category.

The list of tourist facilities in Batı Akdeniz Basin couldn't be obtained from the Muğla and Antalya Provincial Directorates of Culture and Tourism. Batı Akdeniz Basin Master Plan Report has been used as a source. Tourism gross demands have been calculated by using the following approaches:

- Tourism with accommodation, summer houses, second houses, etc.; net amount per person: 200 l/person/day
- Day trip and yachting net amount per person 75 l/person/day
- Boarding school student net amount per person: 100 l/person/day

The facilities in Batı Akdeniz Basin with Tourism Operation and Investment Licenses are given in the table below.

Table 21. The list of Tourism Complex in the Batı Akdeniz Basin Source: Batı Akdeniz Master Plan.

Province Name	District Name	Type	Number	Item	Duration		Consumption (per person per day)	Water Demand hm ³ /year
					mont hs	days		
Muğla	Menteşe	Licensed Tourism Facility	1691	beds	6	180	200	0,06
		Day-Trip	3500	person	6	180	75	0,05
		Student/Personnel	20000	person	9	270	100	0,54
Muğla	Bodrum	Licensed Tourism Facility	108427	beds	6	180	200	3,90
		Summer Villa	680000	person	6	180	200	24,48
		Yachting	3604	beds	6	180	75	0,05
Muğla	Dalaman	Licensed Tourism Facility	1292	beds	6	180	200	0,05
		Summer Villa	6000	person	6	180	200	0,22
		Yachting	63	beds	6	180	75	0,00
Muğla	Datça	Licensed Tourism Facility	3856	beds	6	180	200	0,14
		Summer Villa	14000	person	6	180	200	0,50



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Province Name	District Name	Type	Number	Item	Duration		Consumption (per person per day)	Water Demand hm ³ /year
					months	days		
Muğla	Fethiye	Licensed Tourism Facility	50073	beds	6	180	200	1,80
		Summer Villa	34000	person	6	180	200	1,22
		Yatching	2020	beds	6	180	75	0,03
Muğla	Köyceğiz	Licensed Tourism Facility	653	beds	6	180	200	0,02
		Summer Villa	2000	person	6	180	200	0,07
Muğla	Marmaris	Licensed Tourism Facility	70994	beds	6	180	200	2,56
		Summer Villa	400000	person	6	180	200	14,40
		Yatching	6707	beds	6	180	75	0,09
Muğla	Milas	Licensed Tourism Facility	11497	beds	6	180	200	0,41
		Summer Villa	36000	person	6	180	200	1,30
		Yatching	12	beds	6	180	75	0,00
Muğla	Ortaca	Licensed Tourism Facility	12369	beds	6	180	200	0,45
		Summer Villa	20000	person	6	180	200	0,72
Muğla	Ula	Licensed Tourism Facility	1772	beds	6	180	200	0,06
		Summer Villa	10000	person	6	180	200	0,36
Antalya	Demre	Licensed Tourism Facility	3122	beds	6	180	200	0,11
		Summer Villa	10000	person	6	180	200	0,36
Antalya	Finike	Licensed Tourism Facility	2540	beds	6	180	200	0,09
		Summer Villa	8000	person	6	180	200	0,29
Antalya	Kaş	Licensed Tourism Facility	9053	beds	6	180	200	0,33
		Summer Villa	6000	person	6	180	200	0,22
Antalya	Kemer	Licensed Tourism Facility	100370	beds	6	180	200	3,61
		Summer Villa	60000	person	6	180	200	2,16
Antalya	Kumluca	Licensed Tourism Facility	1423	beds	6	180	200	0,05
		Summer Villa	4000	person	6	180	200	0,14



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3. YEŞİLIRMAK RIVER BASIN

3.1. MUNICIPAL DEMANDS

Current population and forecasts: Results

Population forecast results (obtained with the projection method which complies most with the trend of the previous censuses) as well as the current population for Yeşilirmak Basin are presented below for each settlement in the basin under 4 settlement categories (according to the DSI methodology). The current population data (for the year 2016) also include the additional population by immigrants. Population of immigrants has been considered as part of the total population for each settlement, hence results of the population forecast adopted in all scenarios also take into account the population of immigrants (which represents 0.2% of the total basin population currently).

Table 22. Population Forecast and current population Results for Yeşilirmak Basin. Source: authors based on TurkStat and settlements data.

Category	Province Name	District Name	Settlement Name	2016	2026	2032	2038
1	Samsun	Merkez	Atakum	169060	250210	298900	347590
1	Samsun	Merkez	Canik	68636	75817	80481	85432
1	Samsun	Merkez	İlkadım	135558	149740	158952	168731
1	Samsun	Merkez	Tekkeköy	35253	40300	43669	47319
1	Samsun	Çarşamba	Çarşamba	69896	84945	94217	103454
1	Samsun	Terme	Terme	32409	36714	39846	43474
1	Çorum	Merkez	Çorum Mun.	260613	343745	393872	441225
1	Gümüşhane	Kelkit	Kelkit	31455	44369	52281	59667
1	Tokat	Niksar	Niksar	39360	52473	62355	74097
1	Tokat	Erbaa	Erbaa	65015	78531	87954	98509
1	Tokat	Merkez	Tokat Mun.	148494	187540	210507	231960
1	Tokat	Turhal	Turhal	62976	69276	73056	76836
1	Tokat	Zile	Zile	34145	37717	40038	42501
1	Amasya	Suluova	Suluova	38192	42188	44783	47538
1	Amasya	Merkez	Amasya Mun.	104791	132872	153214	176670
1	Amasya	Merzifon	Merzifon	57259	67408	74033	81056
2	Samsun	Kavak	Kavak	9751	12117	13534	14892
2	Samsun	Ayvacık	Ayvacık	5847	6427	6775	7123
2	Samsun	Salıpazarı	Salıpazarı	6336	6999	7429	7887
2	Samsun	Ladik	Ladik	8672	9579	10169	10794
2	Samsun	Havza	Havza	20977	23172	24597	26110
2	Çorum	Alaca	Alaca	20971	23165	24590	26103
2	Giresun	Şebinkarahisar	Şebinkarahisar	11695	12919	13713	14557
2	Giresun	Alucra	Alucra	10292	14516	17104	19521
2	Gümüşhane	Köse	Köse	6951	9751	11431	13111
2	Gümüşhane	Şiran	Şiran	19946	29046	34506	39966
2	Sivas	Suşehri	Suşehri	15039	16269	17007	17745
2	Tokat	Reşadiye	Hasanşeyh	5457	8167	9793	11419



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Category	Province Name	District Name	Settlement Name	2016	2026	2032	2038
2	Tokat	Reşadiye	Reşadiye	9291	10263	10894	11565
2	Tokat	Almus	Almus	5069	5669	6029	6389
2	Amasya	Taşova	Taşova	11432	14332	16051	17674
2	Amasya	Gümüşhacıköy	Gümüşhacıköy	14455	15967	16950	17992
2	Yozgat	Kadışehri	Kadışehri	5191	5734	6087	6461
2	Yozgat	Çekerek	Çekerek	10766	11892	12624	13401
2	Yozgat	Akdağmadeni	Akdağmadeni	22960	25362	26922	28579
2	Yozgat	Saraykent	Saraykent	5763	6366	6758	7173
3	Samsun	Asarcık	Asarcık	2377	2626	2787	2959
3	Çorum	Mecitözü	Mecitözü	4584	5064	5375	5706
3	Çorum	Ortaköy	Ortaköy	2744	3031	3218	3415
3	Çorum	Ortaköy	Aştavul	2295	2535	2691	2857
3	Çorum	Merkez	Düvenci	1954	2158	2291	2432
3	Erzincan	Refahiye	Refahiye	4244	4776	5210	5752
3	Giresun	Çamoluk	Çamoluk	2451	3213	3701	4196
3	Gümüşhane	Şiran	Yeşilbük	2994	4223	4978	5682
3	Gümüşhane	Kelkit	Deredolu	3583	5055	5956	6796
3	Gümüşhane	Kelkit	Gümüşgöze	3097	4368	5147	5874
3	Gümüşhane	Kelkit	Öbektaş	3898	5499	6479	7394
3	Gümüşhane	Kelkit	Ünlüpinar	3436	4845	5709	6516
3	Gümüşhane	Kelkit	Söğütlü	2860	3799	4362	4889
3	Ordu	Akkuş	Akkuş	4258	4703	4993	5300
3	Sivas	Gölova	Gölova	1239	1369	1453	1542
3	Sivas	Akıncılar	Akıncılar	2544	2810	2983	3167
3	Sivas	Koyulhisar	Koyulhisar	4353	4808	5104	5418
3	Sivas	Doğanşar	Doğanşar	1504	1661	1764	1872
3	Tokat	Reşadiye	Baydarlı	3571	5038	5936	6775
3	Tokat	Reşadiye	Bereketli	4753	6705	7900	9016
3	Tokat	Reşadiye	Bozçalı	2794	3086	3276	3478
3	Tokat	Reşadiye	Cimitekke	3647	5144	6061	6918
3	Tokat	Almus	AkarçayGörümlü	3876	5469	6444	7355
3	Tokat	Almus	Ataköy	3549	5006	5899	6733
3	Tokat	Almus	Çevreli	3120	4093	4715	5345
3	Tokat	Almus	Gölgeli	3069	4328	5101	5822
3	Tokat	Almus	Kinik	2490	3471	4048	4558
3	Tokat	Başçıftlık	Başçıftlık	4592	6479	7635	8714
3	Tokat	Başçıftlık	Hatıplı	4881	6886	8114	9260
3	Tokat	Niksar	Gökçeli	2134	3011	3547	4048
3	Tokat	Niksar	Gürçeşme	2951	4161	4904	5597
3	Tokat	Niksar	Serenli	3200	4294	4947	5551
3	Tokat	Niksar	Yazıcık	2617	3430	3952	4480
3	Tokat	Niksar	Yolkonak	2793	3085	3275	3476
3	Tokat	Erbaa	Gökal	3008	3323	3527	3744
3	Tokat	Erbaa	Karayaka	2738	3024	3211	3408
3	Tokat	Erbaa	Tanoba	2592	3656	4309	4918
3	Tokat	Merkez	Çamlıbel	3381	4769	5619	6413
3	Tokat	Merkez	Çat	3002	3316	3520	3737



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Category	Province Name	District Name	Settlement Name	2016	2026	2032	2038
3	Tokat	Merkez	Emirsehit	1995	2204	2339	2483
3	Tokat	Merkez	Güryildiz	1944	2147	2279	2420
3	Tokat	Turhal	Şenyurt	1984	2192	2326	2470
3	Tokat	Pazar	Pazar	4691	5182	5501	5839
3	Tokat	Pazar	Üzümören	4101	4530	4809	5105
3	Tokat	Artova	Artova	4475	6313	7439	8489
3	Tokat	Yeşilyurt	Yeşilyurt	4643	5129	5444	5779
3	Tokat	Sulusaray	Sulusaray	4554	6283	7300	8210
3	Amasya	AmasyaMerkez	Ziyaret	3870	4862	5449	6002
3	Amasya	Göynücek	Göynücek	4796	6764	7971	9098
3	Yozgat	Kadışehri	Haliköy	1494	1650	1752	1860
3	Yozgat	Çekerek	Özükavak	2054	2897	3415	3897
3	Yozgat	Aydıncık	Aydıncık	2898	3201	3398	3607
3	Yozgat	Aydıncık	Baydıgın	3171	3503	3718	3947
3	Yozgat	Akdeğirmeni	Belekçehan	2084	2302	2444	2594
3	Yozgat	Akdeğirmeni	Oluközü	1359	1501	1594	1692
3	Yozgat	Akdeğirmeni	Umutlu	1696	1873	1989	2111
3	Yozgat	Saraykent	Ozan	1704	1863	1998	2173
3	Yozgat	Sorgun	Araplı	1917	2118	2248	2386
3	Yozgat	Sorgun	Eymir	1763	1947	2067	2194
3	Yozgat	Sorgun	Gülşehri	2018	2229	2366	2512
4	Samsun	Atakum	Atakum Neighbourhood	9130	11203	12736	14540
4	Samsun	Canik	Canik Neighbourhood	17940	19835	21077	22393
4	Samsun	İlkadım	İlkadım Neighbourhood	190108	224363	249183	277884
4	Samsun	Tekkeköy	Tekkeköy Neighbourhood	14675	16213	17226	18320
4	Samsun	Çarşamba	Çarşamba Neighbourhood	68081	76220	81709	87704
4	Samsun	Terme	Terme Neighbourhood	38904	43887	47271	51008
4	Samsun	Kavak	Kavak Neighbourhood	10305	11475	12251	13088
4	Samsun	Asarcık	Asarcık Neighbourhood	14620	16154	17154	18219
4	Samsun	Ayvacık	Ayvacık Neighbourhood	14332	15959	17032	18169
4	Samsun	Salıpazarı	Salıpazarı Neighbourhood	12387	13718	14604	15565
4	Samsun	Ladik	Ladik Neighbourhood	7756	8586	9140	9736
4	Samsun	Havza	Havza Neighbourhood	4956	5522	5887	6287
4	Çorum	Mecitözü	Mecitözü Neighbourhood	10799	11930	12665	13443
4	Çorum	Ortaköy	Ortaköy Neighbourhood	2504	2766	2939	3117
4	Çorum	Alaca	Alaca Neighbourhood	10355	11475	12203	12981
4	Çorum	Merkez	Merkez Neighbourhood	22626	25450	27311	29345
4	Erzincan	Refahiye	Refahiye Neighbourhood	4841	5546	6037	6581
4	Giresun	Çamoluk	Çamoluk Neighbourhood	3317	3664	3894	4141
4	Giresun	Şebinkarahisar	Şebinkarahisar Neighbourhood	9522	10788	11656	12619
4	Giresun	Alucra	Alucra Neighbourhood	3297	3659	3902	4152
4	Gümüşhane	Köse	Köse Neighbourhood	492	542	576	613
4	Gümüşhane	Şiran	Şiran Neighbourhood	4178	4914	5449	6045
4	Gümüşhane	Kelkit	Kelkit Neighbourhood	2819	3274	3595	3955
4	Ordu	Akkuş	Akkuş Neighbourhood	13314	16016	17966	20210
4	Ordu	Mesudiye	Yuvalı	69	99	117	135
4	Ordu	İkizce	İkizce Neighbourhood	851	1111	1307	1539



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Category	Province Name	District Name	Settlement Name	2016	2026	2032	2038
4	Sivas	Gölova	Gölova Neighbourhood	1816	2271	2599	2983
4	Sivas	Akıncılar	Akıncılar Neighbourhood	2354	2697	2927	3181
4	Sivas	Suğehri	Suğehri Neighbourhood	9733	10822	11541	12305
4	Sivas	Koyulhisar	Koyulhisar Neighbourhood	4907	5523	5952	6425
4	Sivas	Zara	Zara Neighbourhood	1800	2063	2252	2468
4	Sivas	Doğanşar	Doğanşar Neighbourhood	1421	1712	1911	2136
4	Sivas	Hafik	Hafik Neighbourhood	1244	1533	1740	1975
4	Sivas	Merkez	Asarcık	239	264	280	297
4	Sivas	Yıldızeli	Yıldızeli Neighbourhood	8561	9464	10047	10671
4	Tokat	Reşadiye	Reşadiye Neighbourhood	8387	9485	10200	10964
4	Tokat	Başçiftlik	Başçiftlik Neighbourhood	488	553	595	638
4	Tokat	Niksar	Niksar Neighbourhood	11520	13004	14016	15132
4	Tokat	Erbaa	Erbaa Neighbourhood	19627	21756	23138	24627
4	Tokat	Merkez	Merkez Neighbourhood	33483	36994	39313	41807
4	Tokat	Turhal	Turhal Neighbourhood	15830	17757	19049	20458
4	Tokat	Pazar	Pazar Neighbourhood	5039	5566	5909	6272
4	Tokat	Artova	Artova Neighbourhood	4801	5306	5631	5978
4	Tokat	Yeşilyurt	Yeşilyurt Neighbourhood	4760	5259	5584	5925
4	Tokat	Sulusaray	Sulusaray Neighbourhood	4056	4807	5345	5963
4	Tokat	Zile	Zile Neighbourhood	22085	24760	26541	28489
4	Tokat	Almus	Almus Neighbourhood	6516	7418	8024	8689
4	Amasya	Taşova	Taşova Neighbourhood	19232	21328	22720	24216
4	Amasya	Suluova	Suluova Neighbourhood	8559	9511	10144	10834
4	Amasya	Merkez	Merkez Neighbourhood	31233	34505	36672	38999
4	Amasya	Göynücek	Göynücek Neighbourhood	5886	6532	6960	7416
4	Amasya	Merzifon	Merzifon Neighbourhood	14529	16218	17343	18549
4	Amasya	Gümüşhacıköy	Gümüşhacıköy Neighbourhood	3572	3965	4222	4497
4	Amasya	Hamamözü	Tekçam	10	11	12	12
4	Bayburt	Demirözü	Kavaklı	97	107	114	121
4	Yozgat	Kadışehri	Kadışehri Neighbourhood	5336	6077	6579	7140
4	Yozgat	Çekerek	Çekerek Neighbourhood	7914	8759	9308	9895
4	Yozgat	Aydıncık	Aydıncık Neighbourhood	3840	4248	4513	4798
4	Yozgat	Akdeğirmeni	Akdeğirmen Neighbourhood	14252	15845	16894	18013
4	Yozgat	Saraykent	Saraykent Neighbourhood	3788	4184	4441	4712
4	Yozgat	Sorgun	Sorgun Neighbourhood	4192	4640	4926	5233
4	Yozgat	Merkez	Merkez Neighbourhood	1893	2116	2261	2409



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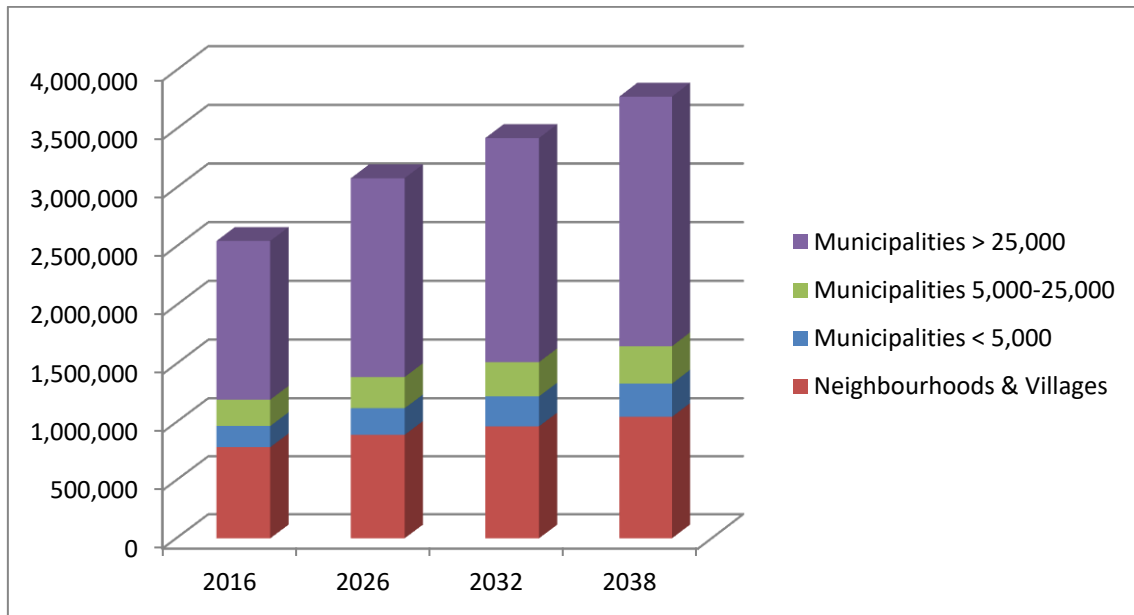


Figure 3. Total population of Yeşilirmak Basin by settlement category and year

Results of Water Consumption Per Capita Calculations (municipalities > 2000 inhabitants and municipal towns)

Calculations have been principally based on the accrual data collected from field surveys for the net water consumption per capita values in the municipal sector. In cases where no data from field surveys were available, net water consumption per capita in the municipal water networks for the years 2014 and 2016 received from TurkStat have been used. If neither of these sources included the related data, biannual water abstraction and distribution data of provinces collected from TurkStat web site have been used for the affiliated municipalities and districts.

The following tables show the average net water consumption per capita (lcd) for municipalities with populations above 2000 inhabitants and municipal towns calculated with field data and TurkStat 2014 and 2016 district-based water abstraction and distribution data, respectively.

As the data from the field survey and TurkStat are combined, a full set of data is obtained for the calculation of per capita water consumption for all municipal settlements in the basin. Using the calculated 2016 data, a population-weighted average per capita water consumption value of 114 lcd is obtained for Yeşilirmak Basin.



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Table 23. Results of past Net Water Consumption per Capita (l/cap/day) calculations (municipalities > 2000 inhabitants and municipal towns), Yeşilirmak Basin. Source: authors based on received data.

			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Amasya	Merkez	Merkez						133 FS	152 FS	130 FS	99 FS	
Amasya	Merkez	Ziyaret							117 TS	109 TS	101 TS	
Amasya	Göynücek	Göynücek							85 TS	91 TS	97 TS	
Amasya	Gümüşhacıköy	Gümüşhacıköy							110 TS	108 TS	106 TS	
Amasya	Merzifon	Merzifon						88 FS	89 FS	98 FS	107 FS	
Amasya	Suluova	Suluova						91 FS	101 FS	92 FS	100 FS	
Amasya	Taşova	Taşova							69 TS	71 TS	72 FS	
Çorum	Merkez	Merkez						96 FS	96 FS	95 FS	100 FS	
Çorum	Merkez	Düvenci							92 TS	90 TS	89 TS	
Çorum	Alaca	Alaca							169 TS	133 TS	96 TS	103 FS
Çorum	Mecitözü	Mecitözü							171 TS	161 TS	151 TS	93 FS
Çorum	Ortaköy	Ortaköy							223 TS	177 TS	131 TS	119 FS
Çorum	Ortaköy	Astavul							223 TS	177 TS	131 TS	
Erzincan	Refahiye	Refahiye							43 FS	54 FS	56 FS	
Giresun	Çamoluk	Çamoluk							53 TS	45 TS	36 TS	
Giresun	Şebinkarahisar	Şebinkarahisar	58 FS	62 FS	80 FS	66 FS	69 FS	73 FS	78 FS	81 FS	78 FS	
Giresun	Alucra	Alucra							22 TS	20 TS	18 TS	
Gümüşhane	Kelkit	Kelkit	86 FS	76 FS	42 FS	71 FS	79 FS	65 FS	75 FS	69 FS	66 FS	
Gümüşhane	Kelkit	Deredolu							54 TS	47 TS	40 TS	
Gümüşhane	Kelkit	Söğütlü							54 TS	47 TS	40 TS	
Gümüşhane	Kelkit	Öbektaş							54 TS	47 TS	40 TS	
Gümüşhane	Kelkit	Gümüsgöze							54 TS	47 TS	118 FS	
Gümüşhane	Kelkit	Ünlüpınar							54 TS	47 TS	40 TS	
Gümüşhane	Köse	Köse							51 TS	49 TS	45 FS	
Gümüşhane	Şiran	Şiran							58 TS	42 TS	26 TS	
Gümüşhane	Şiran	Yeşilbük							58 TS	42 TS	26 TS	
Ordu	Akkuş	Akkuş							73 TS	108 TS	127 FS	
Samsun	Merkez	Canik							159 FS	160 FS	164 FS	
Samsun	Merkez	İlkadım							159 FS	160 FS	164 FS	
Samsun	Terme	Terme							155 FS	245 FS	230 FS	
Samsun	Kavak	Kavak							58 FS	96 FS	131 FS	
Samsun	Merkez	Atakum							159 FS	160 FS	164 FS	
Samsun	Asarcık	Asarcık							80 FS	106 FS	58 FS	
Samsun	Ayvacık	Ayvacık							29 FS	42 FS	58 FS	
Samsun	Merkez	Tekkeköy							159 FS	160 FS	164 FS	
Samsun	Çarşamba	Çarşamba							132 FS	168 FS	177 FS	
Samsun	Havza	Havza							96 FS	167 FS	191 FS	
Samsun	Ladik	Ladik							93 FS	102 FS	114 FS	
Samsun	Salıpazarı	Salıpazarı							70 FS	95 FS	103 FS	
Sivas	Akıncılar	Akıncılar							2 TS	119 FS	152 FS	
Sivas	Doğanşar	Doğanşar							100 TS	107 TS	196 FS	
Sivas	Gölova	Gölova							166 TS	110 FS	178 FS	
Sivas	Koyulhisar	Koyulhisar							78 TS	86 FS	79 FS	
Sivas	Suşehri	Suşehri							110 TS	71 FS	69 FS	
Tokat	Merkez	Merkez	93 FS		98 FS	106 FS	113 FS	115 FS	110 FS	113 FS	99 FS	
Tokat	Merkez	Çamlıbel							119 TS	120 TS	121 TS	
Tokat	Merkez	Çat							119 TS	120 TS	121 TS	
Tokat	Merkez	Güryıldız							119 TS	120 TS	99 FS	
Tokat	Merkez	Emirseyyit							119 TS	120 TS	111 FS	



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			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Tokat	Almus	Almus							85 TS	90 TS	208 FS	
Tokat	Almus	Ataköy							85 TS	90 TS	96 TS	
Tokat	Almus	Çevreli		8 FS	18 FS	16 FS	18 FS	27 FS	30 FS	37 FS	51 FS	95 FS
Tokat	Almus	Gölgeli							85 TS	90 TS	96 TS	
Tokat	Almus	Kinik							85 TS	90 TS	96 TS	
Tokat	Almus	Görümlü				92 FS	83 FS		84 FS	59 FS	66 FS	
Tokat	Artova	Artova	111 FS	119 FS	131 FS	101 FS	112 FS	92 FS	118 FS	106 FS	76 FS	
Tokat	Başçiftlik	Başçiftlik							27 TS	43 TS	60 TS	79 FS
Tokat	Başçiftlik	Hatıplı							27 TS	43 TS	60 TS	
Tokat	Erbaa	Erbaa						79 FS	80 FS	57 TS	37 TS	
Tokat	Erbaa	Karayaka							77 TS	207 FS	159 FS	
Tokat	Erbaa	Tanoba							77 TS	57 TS	37 TS	
Tokat	Erbaa	Gökal							77 TS	57 TS	37 TS	
Tokat	Niksar	Niksar						97 FS	90 FS	99 TS	91 FS	
Tokat	Niksar	Gökçeli							94 TS	99 TS	104 TS	
Tokat	Niksar	Yazıcık							94 TS	99 TS	104 TS	
Tokat	Niksar	Yolkonak							94 TS	99 TS	104 TS	
Tokat	Niksar	Gürçeşme							94 TS	99 TS	104 TS	
Tokat	Niksar	Serenli							94 TS	99 TS	104 TS	
Tokat	Pazar	Pazar							151 TS	152 TS	154 TS	
Tokat	Pazar	Üzümlü	76 FS	84 FS	79 FS	92 FS	98 FS	112 FS	99 FS	112 FS	101 FS	
Tokat	Reşadiye	Reşadiye							45 TS	72 FS	76 FS	
Tokat	Reşadiye	Bereketli							45 TS	56 TS	66 TS	
Tokat	Reşadiye	Hasanşeyh							45 TS	14 FS	12 FS	
Tokat	Reşadiye	Cimitekke							45 TS	56 TS	66 TS	
Tokat	Reşadiye	Baydarlı	33 FS	24 FS	30 FS	34 FS	39 FS	29 FS	13 FS	28 FS	17 FS	
Tokat	Reşadiye	Bozçalı							45 TS	56 TS	66 TS	
Tokat	Sulusaray	Sulusaray							104 TS	104 TS	104 TS	
Tokat	Turhal	Turhal						89 FS	97 FS	97 TS	96 TS	
Tokat	Yeşilyurt	Yeşilyurt							221 TS	196 TS	171 TS	
Tokat	Turhal	Şenyurt							98 TS	136 FS	140 FS	
Tokat	Zile	Zile						90 FS	83 FS	70 FS	72 FS	
Yozgat	Akdağmadeni	Akdağmadeni							74 TS	60 FS	59 FS	
Yozgat	Akdağmadeni	Belekçahan							74 TS	101 TS	128 TS	
Yozgat	Akdağmadeni	Oluközü							74 TS	101 TS	128 TS	
Yozgat	Akdağmadeni	Umutlu							74 TS	101 TS	128 TS	
Yozgat	Aydıncık	Aydıncık							198 TS	156 TS	114 TS	
Yozgat	Aydıncık	Baydıgın							198 TS	156 TS	114 TS	119 FS
Yozgat	Çekerek	Çekerek							111 TS	82 FS	79 FS	
Yozgat	Çekerek	Özükavak							111 TS	110 TS	110 TS	
Yozgat	Kadışehri	Kadışehri							39 TS	61 FS	65 FS	
Yozgat	Kadışehri	Haliköy							39 TS	45 TS	91 FS	101 FS
Yozgat	Saraykent	Saraykent							89 TS	60 FS	67 FS	
Yozgat	Saraykent	Ozan							89 TS	100 TS	111 TS	
Yozgat	Sorgun	Eymir							94 TS	114 TS	134 TS	
Yozgat	Sorgun	Araplı							94 TS	114 TS	134 TS	
Yozgat	Sorgun	Gülşehri							94 TS	114 TS	134 TS	

* FS denotes field survey data and TS stands for TurkStat data. TurkStat data for the years 2014 and 2016 are received for the majority of the districts in the basin. For the districts not included in scope of this data set, data released biannually by TurkStat for the province where the district is affiliated are used. For trend calculations, TurkStat 2015 data are predicted by linear interpolation of the data for the years 2014 and 2016.



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Table 24. Results of future Net Water Consumption per Capita (l/cap/day) calculations (municipalities > 2000 inhabitants and municipal towns), Yeşilirmak Basin. Source: authors based on received data.

			Water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)			
			2016	2026	2032	2038
Samsun	Merkez	Atakum	164	190	208	227
Samsun	Merkez	Canik	164	190	208	227
Samsun	Merkez	İlkadım	164	190	208	227
Samsun	Merkez	Tekkeköy	164	190	208	227
Samsun	Çarşamba	Çarşamba	177	239	250	250
Samsun	Terme	Terme	230	250	250	250
Çorum	Merkez	Merkez	100	118	130	143
Gümüşhane	Kelkit	Kelkit	66	69	71	73
Tokat	Niksar	Niksar	91	95	98	101
Tokat	Erbaa	Erbaa	37	50	52	53
Tokat	Merkez	Merkez	99	104	107	110
Tokat	Turhal	Turhal	96	101	104	107
Tokat	Zile	Zile	72	75	78	80
Amasya	Suluova	Suluova	100	135	162	194
Amasya	Merkez	Merkez	99	104	107	110
Amasya	Merzifon	Merzifon	107	144	172	206
Samsun	Kavak	Kavak	131	177	211	250
Samsun	Ayvacık	Ayvacık	58	78	93	112
Samsun	Salıpazarı	Salıpazarı	103	139	166	199
Samsun	Ladik	Ladik	114	154	184	221
Samsun	Havza	Havza	191	250	250	250
Çorum	Alaca	Alaca	96	101	104	107
Giresun	Şebinkarahisar	Şebinkarahisar	78	105	125	150
Giresun	Alucra	Alucra	18	50	52	53
Gümüşhane	Köse	Köse	47	50	52	53
Gümüşhane	Şiran	Şiran	26	50	52	53
Sivas	Suşehri	Suşehri	69	72	75	77
Tokat	Reşadiye	Hasanşeyh	12	50	52	53
Tokat	Reşadiye	Reşadiye	76	102	122	146
Tokat	Almus	Almus	96	130	155	186
Amasya	Taşova	Taşova	73	94	109	127
Amasya	Gümüşhacıköy	Gümüşhacıköy	106	112	115	119
Yozgat	Kadıışehri	Kadıışehri	65	87	104	125
Yozgat	Çekerek	Çekerek	79	83	86	88
Yozgat	Akdağmadeni	Akdağmadeni	59	62	64	66
Yozgat	Saraykent	Saraykent	67	90	108	129
Samsun	Asarcık	Asarcık	58	61	63	65



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			Water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)			
			2016	2026	2032	2038
Çorum	Mecitözü	Mecitözü	151	159	164	169
Çorum	Ortaköy	Ortaköy	131	138	142	146
Çorum	Ortaköy	Aştavul	131	138	142	146
Erzincan	Refahiye	Refahiye	56	75	90	108
Giresun	Çamoluk	Çamoluk	36	50	52	53
Gümüşhane	Şiran	Yeşilbük	26	50	52	53
Gümüşhane	Kelkit	Deredolu	40	50	52	53
Gümüşhane	Kelkit	Gümüşgöze	40	50	52	53
Gümüşhane	Kelkit	Öbekaş	40	50	52	53
Gümüşhane	Kelkit	Ünlüpinar	40	50	52	53
Gümüşhane	Kelkit	Söğütlü	40	50	52	53
Ordu	Akkuş	Akkuş	144	194	232	250
Sivas	Akıncılar	Akıncılar	152	205	246	250
Sivas	Koyulhisar	Koyulhisar	79	83	85	88
Tokat	Reşadiye	Baydarlı	17	50	52	53
Tokat	Reşadiye	Bereketli	66	89	107	128
Tokat	Reşadiye	Bozçalı	66	89	107	128
Tokat	Reşadiye	Cimitekke	66	89	107	128
Tokat	Almus	Görümlü	66	69	72	74
Tokat	Almus	Ataköy	96	130	155	186
Tokat	Almus	Çevreli	51	69	83	99
Tokat	Almus	Gölgeli	96	130	155	186
Tokat	Almus	Kinik	96	130	155	186
Tokat	Başçıftlık	Başçıftlık	60	81	97	116
Tokat	Başçıftlık	Hatıpli	60	81	97	116
Tokat	Niksar	Gökçeli	104	140	168	201
Tokat	Niksar	Gürçeşme	104	140	168	201
Tokat	Niksar	Serenli	104	140	168	201
Tokat	Niksar	Yazıcık	104	140	168	201
Tokat	Niksar	Yolkonak	104	140	168	201
Tokat	Erbaa	Gököl	37	50	52	53
Tokat	Erbaa	Karayaka	159	167	172	177
Tokat	Erbaa	Tanoba	37	50	52	53
Tokat	Merkez	Çamlıbel	121	128	132	137
Tokat	Merkez	Çat	121	128	132	137
Tokat	Pazar	Pazar	154	168	178	188
Tokat	Pazar	Üzümören	101	137	164	196
Tokat	Artova	Artova	76	80	82	84
Tokat	Yeşilyurt	Yeşilyurt	171	179	185	190



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			Water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)			
			2016	2026	2032	2038
Tokat	Sulusaray	Sulusaray	104	110	113	116
Amasya	Merkez	Ziyaret	101	106	109	113
Amasya	Göynücek	Göynücek	97	130	156	187
Yozgat	Çekerek	Özükavak	110	116	119	123
Yozgat	Aydıncık	Aydıncık	114	120	124	128
Yozgat	Aydıncık	Baydıgın	114	120	124	128
Yozgat	Akdağmadeni	Belekçehan	128	173	207	247
Yozgat	Sorgun	Gülşehri	134	181	216	250
Sivas	Doğanşar	Doğanşar	114	154	184	220
Sivas	Gölova	Gölova	178	240	250	250
Çorum	Merkez	Düvenci	89	93	96	99
Tokat	Merkez	Emirsehit	121	128	132	137
Tokat	Merkez	Güryıldız	121	128	132	137
Tokat	Turhal	Şenyurt	140	189	226	250
Yozgat	Akdağmadeni	Oluközü	128	173	207	247
Yozgat	Akdağmadeni	Umutlu	128	173	207	247
Yozgat	Kadışehri	Halıköy	91	123	148	177
Yozgat	Saraykent	Ozan	111	150	180	215
Yozgat	Sorgun	Araplı	134	181	216	250
Yozgat	Sorgun	Eymir	134	181	216	250



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Table 25. Results of future Gross Water Consumption per Capita (l/cap/day) calculations (municipalities > 2000 inhabitants and municipal towns), Yeşilirmak Basin. Source: authors based on received data.

			Gross water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)											
			Trend Scenario				Optimistic Scenario				Realistic Scenario			
Province	District	Settlement	2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Samsun	Merkez	Atakum	429	602	783	952	429	400	438	481	429	423	438	481
Samsun	Merkez	Canik	375	554	745	942	375	370	419	479	375	390	419	479
Samsun	Merkez	İlkadım	421	623	835	1,050	421	416	469	533	421	438	469	533
Samsun	Merkez	Tekkeköy	420	592	769	934	420	395	433	474	420	417	433	474
Samsun	Çarşamba	Çarşamba	394	478	504	508	394	478	504	508	394	506	504	508
Samsun	Terme	Terme	518	1,080	1,152	1,238	518	540	576	619	518	571	576	619
Çorum	Merkez	Merkez	189	211	233	258	189	217	233	258	189	223	233	258
Gümüşhane	Kelkit	Kelkit	244	241	246	257	244	157	174	194	244	166	174	194
Tokat	Niksar	Niksar	387	340	353	366	387	170	176	183	387	180	176	183
Tokat	Erbaa	Erbaa	110	99	108	118	110	99	108	118	110	105	108	118
Tokat	Merkez	Merkez	272	253	252	253	272	181	182	188	272	186	182	188
Tokat	Turhal	Turhal	150	243	332	343	150	159	164	170	150	170	166	171
Tokat	Zile	Zile	192	299	378	583	192	242	281	328	192	316	346	405
Amasya	Suluova	Suluova	468	449	479	530	468	237	294	366	468	250	294	366
Amasya	Merkez	Merkez	221	210	214	219	221	215	214	219	221	221	214	219
Amasya	Merzifon	Merzifon	317	262	307	370	317	255	307	370	317	269	307	370
Samsun	Kavak	Kavak	242	303	375	460	242	303	375	460	242	320	375	460
Samsun	Ayvacık	Ayvacık	108	130	156	188	108	130	156	188	108	137	156	188
Samsun	Salıpazarı	Salıpazarı	341	460	558	683	341	274	346	439	341	290	346	439
Samsun	Ladik	Ladik	216	374	484	632	216	326	422	551	216	396	484	632



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			Gross water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)											
			Trend Scenario				Optimistic Scenario				Realistic Scenario			
Province	District	Settlement	2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Samsun	Havza	Havza	373	436	439	441	373	436	439	441	373	461	439	441
Çorum	Alaca	Alaca	156	354	367	380	156	166	172	178	156	187	183	190
Giresun	Şebinkarahisar	Şebinkarahisar	438	452	518	615	438	280	366	482	438	296	366	482
Giresun	Alucra	Alucra	195	250	261	272	195	125	130	136	195	132	130	136
Gümüşhane	Köse	Köse	109	231	270	303	109	121	135	151	109	128	135	151
Gümüşhane	Şiran	Şiran	124	148	148	155	124	142	148	155	124	150	148	155
Sivas	Suşehri	Suşehri	368	259	268	278	368	129	134	139	368	137	134	139
Tokat	Reşadiye	Hasanşeyh	32	170	177	184	32	88	89	92	32	91	89	92
Tokat	Reşadiye	Reşadiye	225	379	460	554	225	191	230	277	225	202	230	277
Tokat	Almus	Almus	173	205	246	295	173	205	246	295	173	216	246	295
Amasya	Taşova	Taşova	284	367	481	635	284	367	481	635	284	388	481	635
Amasya	Gümüşhacıköy	Gümüşhacıköy	151	207	222	242	151	168	181	196	151	218	222	241
Yozgat	Kadışehri	Kadışehri	193	162	190	229	193	158	190	229	193	167	190	229
Yozgat	Çekerek	Çekerek	162	234	275	284	162	133	137	142	162	140	137	142
Yozgat	Akdağmadeni	Akdağmadeni	111	109	113	117	111	109	113	117	111	115	113	117
Yozgat	Saraykent	Saraykent	149	152	183	220	149	152	183	220	149	161	183	220
Samsun	Asarcık	Asarcık	130	133	146	161	130	133	146	161	130	140	146	161
Çorum	Mecitözü	Mecitözü	560	935	978	1,024	560	467	489	512	560	494	489	512
Çorum	Ortaköy	Ortaköy	272	677	755	849	272	320	357	402	272	358	377	425
Çorum	Ortaköy	Aştavul	272	677	755	849	272	320	357	402	272	358	377	425
Erzincan	Refahiye	Refahiye	154	225	274	333	154	214	260	317	154	238	274	333



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL DEMANDS, CALCULATIONS.

			Gross water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)											
			Trend Scenario				Optimistic Scenario				Realistic Scenario			
Province	District	Settlement	2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Giresun	Çamoluk	Çamoluk	984	766	916	1,100	984	383	458	550	984	405	458	550
Gümüşhane	Şiran	Yeşilbük	124	148	148	155	124	146	148	155	124	150	148	155
Gümüşhane	Kelkit	Deredolu	127	137	132	128	127	92	93	97	127	95	93	97
Gümüşhane	Kelkit	Gümüşgöze	127	137	132	128	127	92	93	97	127	95	93	97
Gümüşhane	Kelkit	Öbektaş	127	137	132	128	127	92	93	97	127	95	93	97
Gümüşhane	Kelkit	Ünlüpınar	153	175	172	170	153	118	122	129	153	121	122	129
Gümüşhane	Kelkit	Söğütlü	106	108	101	96	106	72	71	72	106	74	71	72
Ordu	Akkuş	Akkuş	285	312	375	406	285	312	375	406	285	330	375	406
Sivas	Akıncılar	Akıncılar	329	1,029	1,336	1,484	329	500	649	721	329	544	668	742
Sivas	Koyulhisar	Koyulhisar	198	272	343	451	198	184	203	225	198	194	203	225
Tokat	Reşadiye	Baydarlı	46	170	177	184	46	88	89	92	46	91	89	92
Tokat	Reşadiye	Bereketli	181	304	367	442	181	157	184	221	181	161	184	221
Tokat	Reşadiye	Bozçalı	181	304	367	442	181	157	184	221	181	161	184	221
Tokat	Reşadiye	Cimitekke	181	304	367	442	181	157	184	221	181	161	184	221
Tokat	Almus	Görümlü	119	110	113	117	119	113	113	117	119	116	113	117
Tokat	Almus	Ataköy	173	205	246	295	173	211	246	295	173	216	246	295
Tokat	Almus	Çevreli	88	105	127	154	88	108	127	154	88	111	127	154
Tokat	Almus	Gölgeli	173	205	246	295	173	211	246	295	173	216	246	295
Tokat	Almus	Kinik	173	205	246	295	173	211	246	295	173	216	246	295
Tokat	Başçıftlık	Başçıftlık	4,435	902	1,104	1,352	4,435	451	552	676	4,435	477	552	676
Tokat	Başçıftlık	Hatıplı	4,435	902	1,104	1,352	4,435	464	552	676	4,435	477	552	676
Tokat	Niksar	Gökçeli	263	263	317	383	263	271	317	383	263	278	317	383



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			Gross water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)											
			Trend Scenario				Optimistic Scenario				Realistic Scenario			
Province	District	Settlement	2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Tokat	Niksar	Gürçeşme	263	263	317	383	263	271	317	383	263	278	317	383
Tokat	Niksar	Serenli	263	263	317	383	263	271	317	383	263	278	317	383
Tokat	Niksar	Yazıcık	263	263	317	383	263	271	317	383	263	278	317	383
Tokat	Niksar	Yolkonak	263	263	317	383	263	271	317	383	263	278	317	383
Tokat	Erbaa	Gökal	110	99	108	118	110	102	108	118	110	105	108	118
Tokat	Erbaa	Karayaka	471	332	361	395	471	341	361	395	471	351	361	395
Tokat	Erbaa	Tanoba	110	99	108	118	110	102	108	118	110	105	108	118
Tokat	Merkez	Çamlıbel	278	280	283	286	278	235	238	248	278	241	238	248
Tokat	Merkez	Çat	278	280	283	286	278	235	238	248	278	241	238	248
Tokat	Pazar	Pazar	296	545	676	719	296	318	338	360	296	336	338	360
Tokat	Pazar	Üzümlören	263	271	295	326	263	216	252	302	263	222	252	302
Tokat	Artova	Artova	221	245	265	290	221	200	223	251	221	211	223	251
Tokat	Yeşilyurt	Yeşilyurt	238	303	376	564	238	252	261	270	238	321	314	325
Tokat	Sulusaray	Sulusaray	137	174	180	186	137	144	149	154	137	184	180	186
Amasya	Merkez	Ziyaret	220	305	345	394	220	265	301	343	220	322	345	394
Amasya	Göynücek	Göynücek	233	277	334	404	233	277	334	404	233	292	334	404
Yozgat	Çekerek	Özükavak	380	636	825	949	380	372	413	475	380	382	413	475
Yozgat	Aydıncık	Aydıncık	294	447	636	713	294	286	318	356	294	303	318	356
Yozgat	Aydıncık	Baydıgın	294	447	636	713	294	295	318	356	294	303	318	356
Yozgat	Akdağmadeni	Belekçehan	243	306	368	444	243	315	368	444	243	324	368	444
Yozgat	Sorgun	Gülşehri	262	338	408	475	262	348	408	475	262	358	408	475
Sivas	Doğanşar	Doğanşar	741	897	1,091	1,327	741	449	545	663	741	474	545	663



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL DEMANDS, CALCULATIONS.

			Gross water consumption per capita in municipalities above 2,000 inhabitants and municipal towns (l/capita/d)											
			Trend Scenario				Optimistic Scenario				Realistic Scenario			
Province	District	Settlement	2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Sivas	Gölova	Gölova	326	585	657	717	326	493	554	604	326	618	657	717
Çorum	Merkez	Düvenci	183	197	217	239	183	203	217	239	183	209	217	239
Tokat	Merkez	Emirseyit	278	280	283	286	278	235	238	248	278	241	238	248
Tokat	Merkez	Güryıldız	278	280	283	286	278	235	238	248	278	241	238	248
Tokat	Turhal	Şenyurt	207	432	691	772	207	283	342	382	207	302	345	386
Yozgat	Akdağmadeni	Oluközü	243	306	368	444	243	315	368	444	243	324	368	444
Yozgat	Akdağmadeni	Umutlu	243	306	368	444	243	315	368	444	243	324	368	444
Yozgat	Kadışehri	Halıköy	519	445	527	643	519	445	527	643	519	457	527	643
Yozgat	Saraykent	Ozan	365	424	558	739	365	437	558	739	365	449	558	739
Yozgat	Sorgun	Araplı	262	338	408	475	262	348	408	475	262	358	408	475
Yozgat	Sorgun	Eymir	262	338	408	475	262	348	408	475	262	358	408	475



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL DEMANDS, CALCULATIONS.

Results of (Public+Commercial)/Residential Ratio (municipalities > 2000 inhabitants and municipal towns)

Calculations have been principally based on the accrual data collected from field surveys for the calculation of public and commercial water use ratios to the domestic consumption. In cases where no data from field surveys were available, domestic water use and water use data categorised under other types of consumption for the years 2014 and 2016 received from TurkStat have been compared and ratios of public and commercial water use to domestic water use have been calculated for each settlement. If neither of these sources included the related data, TurkStat web-based data for provinces or data from tertiary sources such as master plan reports have been used.

The following tables show the public and commercial water consumption to residential consumption ratios [(Public+Commercial)/Residential] for municipalities with populations above 2000 inhabitants and municipal towns, which are calculated either by field data or TurkStat 2014 and 2016 district-based data.

As the data from the field survey and TurkStat are combined, a full set of data is obtained for the calculation of (Public+Commercial)/Residential percentages for all municipal settlements in the basin. Using the calculated 2016 percentages, a population-weighted average (P+C)/R value of 34% is obtained for Yeşilirmak Basin.

Table 26. Results of past Public+Commercial/ Residential percentage calculations (municipalities > 2000 inhabitants and municipal towns), Yeşilirmak Basin. Source: authors based on received data.

			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Amasya	Merkez	Merkez						29 FS	34 FS	28 FS	26 FS	
Amasya	Merkez	Ziyaret							44 TS	60 TS	75 TS	
Amasya	Göynücek	Göynücek							90 TS	68 TS	46 TS	
Amasya	Gümüşhacıköy	Gümüşhacıköy							16 TS	19 TS	22 TS	
Amasya	Merzifon	Merzifon						19 FS	19 FS	23 TS	23 FS	
Amasya	Suluova	Suluova						15 FS	15 FS	20 FS	17 FS	
Amasya	Taşova	Taşova							39 TS	84 TS	129 TS	39 FS
Çorum	Merkez	Merkez						29 FS	28 FS	27 FS	24 FS	
Çorum	Merkez	Düvenci							32 TS	34 TS	36 TS	
Çorum	Alaca	Alaca							27 TS	24 TS	22 TS	18 FS
Çorum	Mecitözü	Mecitözü							132 TS	116 TS	100 TS	
Çorum	Ortaköy	Ortaköy							3 TS	28 TS	53 TS	13 FS
Çorum	Ortaköy	Astavul							3 TS	28 TS	53 TS	
Erzincan	Refahiye	Refahiye							112 FS	115 FS	105 FS	
Giresun	Çamoluk	Çamoluk							214 TS	269 TS	323 TS	
Giresun	Şebinkarahisar	Şebinkarahisar	46 FS	44 FS	28 FS	61 FS	70 FS	75 FS	73 FS	63 FS	65 FS	
Giresun	Alucra	Alucra							72 TS	71 TS	71 TS	
Gümüşhane	Kelkit	Kelkit	28 FS	28 FS	57 FS	52 FS	55 FS	44 FS	37 FS	24 FS	44 FS	
Gümüşhane	Kelkit	Deredolu							30 TS	27 TS	24 TS	
Gümüşhane	Kelkit	Söğütlü							30 TS	27 TS	24 TS	
Gümüşhane	Kelkit	Öbektaş							30 TS	27 TS	24 TS	
Gümüşhane	Kelkit	Gümüşgöze							30 TS	27 TS	24 TS	
Gümüşhane	Kelkit	Ünlüpınar							30 TS	27 TS	24 TS	
Gümüşhane	Köse	Köse							43 TS	47 TS	57 FS	
Gümüşhane	Şiran	Şiran							264 TS	179 TS	94 TS	
Gümüşhane	Şiran	Yeşilbük							264 TS	179 TS	94 TS	
Ordu	Akkuş	Akkuş							28 TS	20 TS	91 FS	
Samsun	Merkez	Canik							16 FS	14 FS	22 FS	



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			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Samsun	Merkez	İlkadım						36 FS	43 FS	36 FS	38 FS	
Samsun	Terme	Terme						26 FS	43 FS	36 FS	38 FS	
Samsun	Kavak	Kavak							13 FS	12 FS	15 FS	
Samsun	Merkez	Atakum							56 FS	41 FS	40 FS	
Samsun	Asarcık	Asarcık						27 FS	43 FS	36 FS	38 FS	
Samsun	Ayvacık	Ayvacık							37 FS	12 FS	16 FS	
Samsun	Merkez	Tekkeköy							46 FS	42 FS	37 FS	
Samsun	Çarşamba	Çarşamba						43 FS	43 FS	36 FS	38 FS	
Samsun	Havza	Havza							30 FS	21 FS	21 FS	
Samsun	Ladik	Ladik							31 FS	60 FS	52 FS	
Samsun	Salıpazarı	Salıpazarı							23 FS	26 FS	28 FS	
Sivas	Akıncılar	Akıncılar							25 TS	34 FS	56 FS	
Sivas	Doğanşar	Doğanşar							114 TS	106 TS	65 FS	
Sivas	Gölova	Gölova							35 TS	48 FS	52 FS	
Sivas	Koyulhisar	Koyulhisar							98 TS	39 FS	41 FS	
Sivas	Suşehri	Suşehri							38 TS	31 TS	24 TS	
Tokat	Merkez	Merkez	28 FS		25 FS	22 FS	22 FS	19 FS	23 FS	19 FS	17 FS	
Tokat	Merkez	Çamlıbel							23 TS	23 TS	23 TS	
Tokat	Merkez	Çat							23 TS	23 TS	23 TS	
Tokat	Merkez	Güryıldız							23 TS	23 TS	0 FS	
Tokat	Merkez	Emirseyit							23 TS	23 TS	25 FS	
Tokat	Almus	Almus							33 TS	21 TS	9 FS	
Tokat	Almus	Ataköy							33 TS	21 TS	10 TS	
Tokat	Almus	Çevreli				0 FS	2 FS	2 FS	0 FS	2 FS	4 FS	35 FS
Tokat	Almus	Gölgeli							33 TS	21 TS	10 TS	
Tokat	Almus	Kinik							33 TS	21 TS	10 TS	
Tokat	Almus	Görümlü							33 TS	21 TS	11 FS	
Tokat	Artova	Artova							47 TS	51 TS	56 TS	
Tokat	Başçıftlık	Başçıftlık							571 TS	423 TS	164 FS	
Tokat	Başçıftlık	Hatıpli							571 TS	423 TS	275 TS	
Tokat	Erbaa	Erbaa						16 FS	15 FS	24 TS	29 TS	
Tokat	Erbaa	Karayaka							20 TS	0 FS	0 FS	
Tokat	Erbaa	Tanoba							20 TS	24 TS	29 TS	
Tokat	Erbaa	Gökal							20 TS	24 TS	29 TS	
Tokat	Niksar	Niksar						28 FS	28 FS	35 TS	23 FS	
Tokat	Niksar	Gökçeli							41 TS	35 TS	30 TS	
Tokat	Niksar	Yazıcık							41 TS	35 TS	30 TS	
Tokat	Niksar	Yolkonak							41 TS	35 TS	30 TS	
Tokat	Niksar	Gürçeşme							41 TS	35 TS	30 TS	
Tokat	Niksar	Serenli							41 TS	35 TS	30 TS	
Tokat	Pazar	Pazar							37 TS	34 TS	30 TS	
Tokat	Pazar	Üzümlüören	7 FS	6 FS	7 FS	6 FS	6 FS	5 FS	5 FS	5 FS	7 FS	
Tokat	Reşadiye	Reşadiye							43 TS	29 FS	29 FS	
Tokat	Reşadiye	Bereketli							43 TS	31 TS	19 TS	
Tokat	Reşadiye	Hasanşeyh							43 TS	31 TS	19 TS	
Tokat	Reşadiye	Cimitekke							43 TS	31 TS	19 TS	
Tokat	Reşadiye	Baydarlı							43 TS	31 TS	19 TS	
Tokat	Reşadiye	Bozçalı							43 TS	31 TS	19 TS	
Tokat	Sulusaray	Sulusaray							21 TS	16 TS	10 TS	
Tokat	Turhal	Turhal						13 FS	12 FS	13 TS	10 TS	
Tokat	Yeşilyurt	Yeşilyurt							22 TS	20 TS	18 TS	



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			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Tokat	Turhal	Şenyurt							15 TS	3 FS	4 FS	
Tokat	Zile	Zile						26 FS	39 FS	85 FS	132 FS	
Yozgat	Akdağmadeni	Akdağmadeni							32 TS	29 FS	22 FS	
Yozgat	Akdağmadeni	Belekçahan							32 TS	27 TS	23 TS	
Yozgat	Akdağmadeni	Oluközü							32 TS	27 TS	23 TS	
Yozgat	Akdağmadeni	Umutlu							32 TS	27 TS	23 TS	
Yozgat	Aydincık	Aydincık							30 TS	40 TS	49 TS	
Yozgat	Aydincık	Baydiğin							30 TS	40 TS	49 TS	
Yozgat	Çekerek	Çekerek							81 TS	15 FS	11 FS	
Yozgat	Çekerek	Özükavak							81 TS	85 TS	88 TS	
Yozgat	Kadışehri	Kadışehri							160 TS	31 FS	25 FS	
Yozgat	Kadışehri	Haliköy							160 TS	149 TS	138 TS	
Yozgat	Saraykent	Saraykent							60 TS	23 FS	18 FS	
Yozgat	Saraykent	Ozan							60 TS	66 TS	73 TS	
Yozgat	Sorgun	Eymir							36 TS	33 TS	29 TS	
Yozgat	Sorgun	Araplı							36 TS	33 TS	29 TS	
Yozgat	Sorgun	Gülşehri							36 TS	33 TS	29 TS	

* FS denotes field survey data and TS stands for TurkStat data. TurkStat data for the years 2014 and 2016 are received for the majority of the districts in the basin. For the districts not included in scope of this data set, data released biannually by TurkStat for the province where the district is affiliated are used. For trend calculations, TurkStat 2015 data are predicted by linear interpolation of the data for the years 2014 and 2016.



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL DEMANDS, CALCULATIONS.

Table 27. Results of future Public+Commercial/ Residential percentage calculations (municipalities > 2000 inhabitants and municipal towns), Yeşilirmak Basin. Source: authors based on received data.

Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Samsun	Merkez	Atakum	40	43	44	45	40	43	44	45	40	43	44	45
Samsun	Merkez	Canik	22	30	36	43	22	30	36	43	22	30	36	43
Samsun	Merkez	İlkadim	38	46	53	59	38	46	53	59	38	46	53	59
Samsun	Merkez	Tekkeköy	37	39	40	42	37	39	40	42	37	39	40	42
Samsun	Çarşamba	Çarşamba	38	40	41	42	38	40	41	42	38	40	41	42
Samsun	Terme	Terme	38	51	61	73	38	51	61	73	38	51	61	73
Çorum	Merkez	Merkez	24	25	26	27	24	25	26	27	24	25	26	27
Gümüşhane	Kelkit	Kelkit	44	59	71	85	44	59	71	85	44	59	71	85
Tokat	Niksar	Niksar	23	25	25	26	23	25	25	26	23	25	25	26
Tokat	Erbaa	Erbaa	29	39	47	56	29	39	47	56	29	39	47	56
Tokat	Merkez	Merkez	17	18	18	19	17	18	18	19	17	18	18	19
Tokat	Turhal	Turhal	10	11	11	12	10	11	11	12	10	11	11	12
Tokat	Zile	Zile	132	178	213	255	132	178	213	255	132	178	213	255
Amasya	Suluova	Suluova	17	23	27	32	17	23	27	32	17	23	27	32
Amasya	Merkez	Merkez	26	27	28	29	26	27	28	29	26	27	28	29
Amasya	Merzifon	Merzifon	23	24	25	25	23	24	25	25	23	24	25	25
Samsun	Kavak	Kavak	15	20	24	29	15	20	24	29	15	20	24	29
Samsun	Ayvacık	Ayvacık	16	17	17	18	16	17	17	18	16	17	17	18
Samsun	Salıpazarı	Salıpazarı	28	38	46	55	28	38	46	55	28	38	46	55
Samsun	Ladik	Ladik	52	70	84	101	52	70	84	101	52	70	84	101
Samsun	Havza	Havza	21	22	23	24	21	22	23	24	21	22	23	24
Çorum	Alaca	Alaca	22	23	23	24	22	23	23	24	22	23	23	24
Giresun	Şebinkarahisar	Şebinkarahisar	65	87	104	125	65	87	104	125	65	87	104	125
Giresun	Alucra	Alucra	71	75	77	80	71	75	77	80	71	75	77	80
Gümüşhane	Köse	Köse	52	70	83	100	52	70	83	100	52	70	83	100
Gümüşhane	Şiran	Şiran	94	98	101	104	94	98	101	104	94	98	101	104
Sivas	Suşehri	Suşehri	24	25	26	27	24	25	26	27	24	25	26	27



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Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Tokat	Reşadiye	Hasanşeyh	19	20	21	21	19	20	21	21	19	20	21	21
Tokat	Reşadiye	Reşadiye	29	31	32	33	29	31	32	33	29	31	32	33
Tokat	Almus	Almus	10	10	11	11	10	10	11	11	10	10	11	11
Amasya	Taşova	Taşova	129	174	208	249	129	174	208	249	129	174	208	249
Amasya	Gümüşhacıköy	Gümüşhacıköy	22	30	35	42	22	30	35	42	22	30	35	42
Yozgat	Kadışehri	Kadışehri	25	27	27	28	25	27	27	28	25	27	27	28
Yozgat	Çekerek	Çekerek	11	12	12	12	11	12	12	12	11	12	12	12
Yozgat	Akdağmadeni	Akdağmadeni	22	23	24	25	22	23	24	25	22	23	24	25
Yozgat	Saraykent	Saraykent	18	18	19	20	18	18	19	20	18	18	19	20
Samsun	Asarcık	Asarcık	38	51	61	73	38	51	61	73	38	51	61	73
Çorum	Mecitözü	Mecitözü	100	106	109	112	100	106	109	112	100	106	109	112
Çorum	Ortaköy	Ortaköy	53	72	86	103	53	72	86	103	53	72	86	103
Çorum	Ortaköy	Aştavul	53	72	86	103	53	72	86	103	53	72	86	103
Erzincan	Refahiye	Refahiye	105	110	113	117	105	110	113	117	105	110	113	117
Giresun	Çamoluk	Çamoluk	323	436	522	625	323	436	522	625	323	436	522	625
Gümüşhane	Şiran	Yeşilbük	94	98	101	104	94	98	101	104	94	98	101	104
Gümüşhane	Kelkit	Deredolu	24	26	26	27	24	26	26	27	24	26	26	27
Gümüşhane	Kelkit	Gümüşgöze	24	26	26	27	24	26	26	27	24	26	26	27
Gümüşhane	Kelkit	Öbektaş	24	26	26	27	24	26	26	27	24	26	26	27
Gümüşhane	Kelkit	Ünlüpınar	24	26	26	27	24	26	26	27	24	26	26	27
Gümüşhane	Kelkit	Söğütlü	24	26	26	27	24	26	26	27	24	26	26	27
Ordu	Akkuş	Akkuş	12	13	13	14	12	13	13	14	12	13	13	14
Sivas	Akıncılar	Akıncılar	56	75	90	108	56	75	90	108	56	75	90	108
Sivas	Koyulhisar	Koyulhisar	41	56	67	80	41	56	67	80	41	56	67	80
Tokat	Reşadiye	Baydarlı	19	20	21	21	19	20	21	21	19	20	21	21
Tokat	Reşadiye	Bereketli	19	20	21	21	19	20	21	21	19	20	21	21
Tokat	Reşadiye	Bozçalı	19	20	21	21	19	20	21	21	19	20	21	21
Tokat	Reşadiye	Cimitekke	19	20	21	21	19	20	21	21	19	20	21	21
Tokat	Almus	Görümlü	10	10	11	11	10	10	11	11	10	10	11	11



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL DEMANDS, CALCULATIONS.

Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Tokat	Almus	Ataköy	10	10	11	11	10	10	11	11	10	10	11	11
Tokat	Almus	Çevreli	4	6	7	8	4	6	7	8	4	6	7	8
Tokat	Almus	Gölgeli	10	10	11	11	10	10	11	11	10	10	11	11
Tokat	Almus	Kinik	10	10	11	11	10	10	11	11	10	10	11	11
Tokat	Başçıftlık	Başçıftlık	275	289	298	307	275	289	298	307	275	289	298	307
Tokat	Başçıftlık	Hatıpli	275	289	298	307	275	289	298	307	275	289	298	307
Tokat	Niksar	Gökçeli	30	31	32	33	30	31	32	33	30	31	32	33
Tokat	Niksar	Gürçeşme	30	31	32	33	30	31	32	33	30	31	32	33
Tokat	Niksar	Serenli	30	31	32	33	30	31	32	33	30	31	32	33
Tokat	Niksar	Yazıcık	30	31	32	33	30	31	32	33	30	31	32	33
Tokat	Niksar	Yolkonak	30	31	32	33	30	31	32	33	30	31	32	33
Tokat	Erbaa	Gökal	29	39	47	56	29	39	47	56	29	39	47	56
Tokat	Erbaa	Karayaka	29	39	47	56	29	39	47	56	29	39	47	56
Tokat	Erbaa	Tanoba	29	39	47	56	29	39	47	56	29	39	47	56
Tokat	Merkez	Çamlıbel	23	25	26	27	23	25	26	27	23	25	26	27
Tokat	Merkez	Çat	23	25	26	27	23	25	26	27	23	25	26	27
Tokat	Pazar	Pazar	30	32	33	34	30	32	33	34	30	32	33	34
Tokat	Pazar	Üzümören	7	8	8	8	7	8	8	8	7	8	8	8
Tokat	Artova	Artova	56	76	91	108	56	76	91	108	56	76	91	108
Tokat	Yeşilyurt	Yeşilyurt	18	18	19	20	18	18	19	20	18	18	19	20
Tokat	Sulusaray	Sulusaray	10	11	11	12	10	11	11	12	10	11	11	12
Amasya	Merkez	Ziyaret	75	101	121	145	75	101	121	145	75	101	121	145
Amasya	Göynücek	Göynücek	46	48	50	51	46	48	50	51	46	48	50	51
Yozgat	Çekerek	Özükavak	88	119	143	171	88	119	143	171	88	119	143	171
Yozgat	Aydıncık	Aydıncık	49	66	80	95	49	66	80	95	49	66	80	95
Yozgat	Aydıncık	Baydıgın	49	66	80	95	49	66	80	95	49	66	80	95
Yozgat	Akdağmadeni	Belekçehan	23	24	25	26	23	24	25	26	23	24	25	26
Yozgat	Sorgun	Gülşehri	29	31	32	33	29	31	32	33	29	31	32	33
Sivas	Doğanşar	Doğanşar	99	104	108	111	99	104	108	111	99	104	108	111



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL DEMANDS, CALCULATIONS.

Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Sivas	Gölova	Gölova	52	70	84	101	52	70	84	101	52	70	84	101
Çorum	Merkez	Düvenci	36	48	57	69	36	48	57	69	36	48	57	69
Tokat	Merkez	Emirsehit	23	25	26	27	23	25	26	27	23	25	26	27
Tokat	Merkez	Güryıldız	23	25	26	27	23	25	26	27	23	25	26	27
Tokat	Turhal	Şenyurt	4	6	7	8	4	6	7	8	4	6	7	8
Yozgat	Akdağmadeni	Oluközü	23	24	25	26	23	24	25	26	23	24	25	26
Yozgat	Akdağmadeni	Umutlu	23	24	25	26	23	24	25	26	23	24	25	26
Yozgat	Kadışehri	Halıköy	138	145	150	154	138	145	150	154	138	145	150	154
Yozgat	Saraykent	Ozan	73	98	117	141	73	98	117	141	73	98	117	141
Yozgat	Sorgun	Araplı	29	31	32	33	29	31	32	33	29	31	32	33
Yozgat	Sorgun	Eymir	29	31	32	33	29	31	32	33	29	31	32	33



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL DEMANDS, CALCULATIONS.

Results of Non-Revenue Water (municipalities > 2000 inhabitants and municipal towns)

Calculations have been principally based on the accrual data collected from field surveys for the calculation of non-revenue water (NRW) percentages. In cases where no data from field surveys were available, abstracted and distributed water data for the years 2014 and 2016 received from TurkStat have been compared and percentages of water abstracted but

- a) not distributed to the subscribers due to loss and leakage in the system, and,
- b) distributed to special subscribers without payment,

in regard to the total abstracted water have been calculated for each settlement. If neither of these sources included the related data, TurkStat web-based data for provinces or data from tertiary sources such as master plan reports have been used.

The following tables show the NRW percentages for municipalities with populations above 2000 inhabitants and municipal towns, which are calculated either by field data or TurkStat 2014 and 2016 district-based data.

As the data from the field survey and TurkStat are combined, a full set of data is obtained for the calculation of NRW percentages for all municipal settlements in the basin. Using the calculated 2016 percentages, a weighted-average NRW value of 45% is obtained for Yeşilirmak Basin.

Table 28. Results of past Non-Revenue Water percentage calculations (municipalities > 2000 inhabitants and municipal towns), Yeşilirmak Basin. Source: authors based on received data.

			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Amasya	Merkez	Merkez						46 FS	35 FS	36 FS	36 FS	
Amasya	Merkez	Ziyaret							24 TS	22 TS	20 TS	
Amasya	Göynücek	Göynücek							48 TS	44 TS	39 TS	
Amasya	Gümüşhacıköy	Gümüşhacıköy							13 TS	14 TS	14 TS	
Amasya	Merzifon	Merzifon						70 FS	70 FS	64 FS	59 FS	
Amasya	Suluova	Suluova						79 FS	76 FS	76 FS	75 FS	
Amasya	Taşova	Taşova							74 TS	58 TS	47 FS	
Çorum	Merkez	Merkez						37 FS	41 FS	38 FS	33 FS	
Çorum	Merkez	Düvenci							42 TS	38 TS	34 TS	
Çorum	Alaca	Alaca							14 TS	20 TS	25 TS	22 FS
Çorum	Mecitözü	Mecitözü							38 TS	42 TS	46 TS	78 FS
Çorum	Ortaköy	Ortaköy							15 TS	20 TS	26 TS	73 FS
Çorum	Ortaköy	Astavul							15 TS	20 TS	26 TS	
Erzincan	Refahiye	Refahiye							40 TS	33 TS	83 FS	
Giresun	Çamoluk	Çamoluk							77 TS	81 TS	84 TS	
Giresun	Şebinkarahisar	Şebinkarahisar	81 FS	79 FS	76 FS	76 FS	72 FS	71 FS	70 FS	70 FS	71 FS	
Giresun	Alucra	Alucra							85 TS	84 TS	84 TS	
Gümüşhane	Kelkit	Kelkit							63 TS	62 TS	61 TS	
Gümüşhane	Kelkit	Deredolu							63 TS	62 TS	61 TS	
Gümüşhane	Kelkit	Söğütlü							63 TS	62 TS	61 TS	
Gümüşhane	Kelkit	Öbektaş							63 TS	62 TS	61 TS	
Gümüşhane	Kelkit	Gümüşgöze							63 TS	62 TS	61 TS	
Gümüşhane	Kelkit	Ünlüpınar							63 TS	62 TS	61 TS	
Gümüşhane	Köse	Köse							31 TS	33 TS	27 FS	



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			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Gümüşhane	Şiran	Şiran							68 TS	64 TS	60 TS	
Gümüşhane	Şiran	Yeşilbük							68 TS	64 TS	60 TS	
Ordu	Akkuş	Akkuş							63 TS	53 TS	58 FS	
Samsun	Merkez	Canik							42 FS	43 FS	44 FS	
Samsun	Merkez	İlkadım							42 FS	43 FS	44 FS	
Samsun	Terme	Terme							47 TS	30 FS	39 FS	
Samsun	Kavak	Kavak							47 TS	42 TS	38 TS	
Samsun	Merkez	Atakum							42 FS	43 FS	44 FS	
Samsun	Asarcık	Asarcık							47 TS	42 TS	38 TS	
Samsun	Ayvacık	Ayvacık							47 TS	42 TS	38 TS	
Samsun	Merkez	Tekkeköy							42 FS	43 FS	44 FS	
Samsun	Çarşamba	Çarşamba							47 TS	42 TS	38 TS	
Samsun	Havza	Havza							47 TS	42 TS	38 TS	
Samsun	Ladik	Ladik							47 TS	20 FS	20 FS	
Samsun	Salıpazarı	Salıpazarı							47 TS	62 FS	61 FS	
Sivas	Akıncılar	Akıncılar							23 TS	25 TS	72 FS	
Sivas	Doğanşar	Doğanşar							61 TS	65 TS	41 FS	
Sivas	Gölova	Gölova							23 TS	20 TS	17 TS	
Sivas	Koyulhisar	Koyulhisar							42 TS	43 TS	63 FS	
Sivas	Suşehri	Suşehri							74 TS	76 TS	50 FS	
Tokat	Merkez	Merkez						58 FS	52 FS	52 FS	57 FS	
Tokat	Merkez	Çamlıbel							47 TS	47 TS	47 TS	
Tokat	Merkez	Çat							47 TS	47 TS	47 TS	
Tokat	Merkez	Güryıldız							47 TS	47 TS	47 TS	
Tokat	Merkez	Emirseyit							47 TS	47 TS	47 TS	
Tokat	Almus	Almus							46 TS	43 TS	45 FS	
Tokat	Almus	Ataköy							46 TS	43 TS	39 TS	
Tokat	Almus	Çevreli							46 TS	43 TS	39 TS	
Tokat	Almus	Gölgeli							46 TS	43 TS	39 TS	
Tokat	Almus	Kinik							46 TS	43 TS	39 TS	
Tokat	Almus	Görümlü							46 TS	43 TS	39 TS	23 FS
Tokat	Artova	Artova							47 TS	47 TS	47 TS	
Tokat	Başçıftlık	Başçıftlık							90 TS	93 TS	95 TS	
Tokat	Başçıftlık	Hatıpli							90 TS	93 TS	95 TS	
Tokat	Erbaa	Erbaa						74 FS	74 FS	62 TS	57 TS	
Tokat	Erbaa	Karayaka							68 TS	62 TS	57 TS	
Tokat	Erbaa	Tanoba							68 TS	62 TS	57 TS	
Tokat	Erbaa	Gökal							68 TS	62 TS	57 TS	
Tokat	Niksar	Niksar						69 FS	69 FS	70 FS	71 FS	
Tokat	Niksar	Gökçeli							54 TS	51 TS	49 TS	
Tokat	Niksar	Yazıcık							54 TS	51 TS	49 TS	
Tokat	Niksar	Yolkonak							54 TS	51 TS	49 TS	
Tokat	Niksar	Gürçeşme							54 TS	51 TS	49 TS	
Tokat	Niksar	Serenli							54 TS	51 TS	49 TS	
Tokat	Pazar	Pazar							29 TS	31 TS	32 TS	
Tokat	Pazar	Üzümlü	69 FS	66 FS	68 FS	63 FS	61 FS	55 FS	62 FS	58 FS	59 FS	
Tokat	Reşadiye	Reşadiye							55 TS	56 TS	72 FS	
Tokat	Reşadiye	Bereketli							55 TS	56 TS	57 TS	
Tokat	Reşadiye	Hasanşeyh							55 TS	56 TS	57 TS	
Tokat	Reşadiye	Cimitekke							55 TS	56 TS	57 TS	
Tokat	Reşadiye	Baydarlı							55 TS	56 TS	57 TS	



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			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Tokat	Reşadiye	Bozçalı							55 TS	56 TS	57 TS	
Tokat	Sulusaray	Sulusaray							24 TS	20 TS	16 TS	
Tokat	Turhal	Turhal						62 FS	58 FS	28 TS	29 TS	
Tokat	Yeşilyurt	Yeşilyurt							14 TS	15 TS	16 TS	
Tokat	Turhal	Şenyurt							26 TS	28 TS	29 TS	
Tokat	Zile	Zile						74 FS	73 FS	13 TS	14 TS	
Yozgat	Akdağmadeni	Akdağmadeni							59 TS	47 TS	68 FS	
Yozgat	Akdağmadeni	Belekçahan							59 TS	47 TS	35 TS	
Yozgat	Akdağmadeni	Oluközü							59 TS	47 TS	35 TS	
Yozgat	Akdağmadeni	Umutlu							59 TS	47 TS	35 TS	
Yozgat	Aydıncık	Aydıncık							40 TS	41 TS	42 TS	
Yozgat	Aydıncık	Baydıgın							40 TS	41 TS	42 TS	
Yozgat	Çekerek	Çekerek							43 TS	44 TS	69 FS	
Yozgat	Çekerek	Özükavak							43 TS	44 TS	46 TS	
Yozgat	Kadışehri	Kadışehri							65 TS	62 TS	18 FS	
Yozgat	Kadışehri	Haliköy							65 TS	62 TS	58 TS	62 FS
Yozgat	Saraykent	Saraykent							67 TS	57 TS	72 FS	
Yozgat	Saraykent	Ozan							67 TS	57 TS	48 TS	
Yozgat	Sorgun	Eymir							44 TS	39 TS	34 TS	
Yozgat	Sorgun	Araplı							44 TS	39 TS	34 TS	
Yozgat	Sorgun	Gülşehri							44 TS	39 TS	34 TS	

* FS denotes field survey data and TS stands for TurkStat data. TurkStat data for the years 2014 and 2016 are received for the majority of the districts in the basin. For the districts not included in scope of this data set, data released biannually by TurkStat for the province where the district is affiliated are used. For trend calculations, TurkStat 2015 data are predicted by linear interpolation of the data for the years 2014 and 2016.,



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ECONOMIC ANALYSIS OF WATER USES. ANNEX 01. MUNICIPAL DEMANDS, CALCULATIONS.

Table 29. Results of future Non-Revenue Water percentage calculations (municipalities > 2000 inhabitants and municipal towns), Yeşilirmak Basin. Source: authors based on received data.

Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Samsun	Merkez	Atakum	44	54	61	65	44	30	30	30	44	34	30	30
Samsun	Merkez	Canik	44	54	61	65	44	30	30	30	44	34	30	30
Samsun	Merkez	İlkadım	44	54	61	65	44	30	30	30	44	34	30	30
Samsun	Merkez	Tekkeköy	44	54	61	65	44	30	30	30	44	34	30	30
Samsun	Çarşamba	Çarşamba	38	30	30	30	38	30	30	30	38	34	30	30
Samsun	Terme	Terme	39	65	65	65	39	30	30	30	39	34	30	30
Çorum	Merkez	Merkez	33	30	30	30	33	32	30	30	33	34	30	30
Gümüşhane	Kelkit	Kelkit	61	54	51	47	61	30	30	30	61	34	30	30
Tokat	Niksar	Niksar	71	65	65	65	71	30	30	30	71	34	30	30
Tokat	Erbaa	Erbaa	57	30	30	30	57	30	30	30	57	34	30	30
Tokat	Merkez	Merkez	57	51	50	48	57	32	30	30	57	34	30	30
Tokat	Turhal	Turhal	29	54	65	65	29	29	29	29	29	34	30	30
Tokat	Zile	Zile	14	30	36	51	14	14	14	14	14	34	30	30
Amasya	Suluova	Suluova	75	63	57	52	75	30	30	30	75	34	30	30
Amasya	Merkez	Merkez	36	30	30	30	36	32	30	30	36	34	30	30
Amasya	Merzifon	Merzifon	59	32	30	30	59	30	30	30	59	34	30	30
Samsun	Kavak	Kavak	38	30	30	30	38	30	30	30	38	34	30	30
Samsun	Ayvacık	Ayvacık	38	30	30	30	38	30	30	30	38	34	30	30
Samsun	Salıpazarı	Salıpazarı	61	58	57	55	61	30	30	30	61	34	30	30
Samsun	Ladik	Ladik	20	30	30	30	20	20	20	20	20	34	30	30
Samsun	Havza	Havza	38	30	30	30	38	30	30	30	38	34	30	30
Çorum	Alaca	Alaca	25	65	65	65	25	25	25	25	25	34	30	30
Giresun	Şebinkarahisar	Şebinkarahisar	71	57	51	45	71	30	30	30	71	34	30	30
Giresun	Alucra	Alucra	84	65	65	65	84	30	30	30	84	34	30	30



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Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Gümüşhane	Köse	Köse	35	63	65	65	35	30	30	30	35	34	30	30
Gümüşhane	Şiran	Şiran	60	33	30	30	60	30	30	30	60	34	30	30
Sivas	Suşehri	Suşehri	77	65	65	65	77	30	30	30	77	34	30	30
Tokat	Reşadiye	Hasanşeyh	57	65	65	65	57	32	30	30	57	34	30	30
Tokat	Reşadiye	Reşadiye	57	65	65	65	57	30	30	30	57	34	30	30
Tokat	Almus	Almus	39	30	30	30	39	30	30	30	39	34	30	30
Amasya	Taşova	Taşova	41	30	30	30	41	30	30	30	41	34	30	30
Amasya	Gümüşhacıköy	Gümüşhacıköy	14	30	30	30	14	14	14	14	14	34	30	30
Yozgat	Kadışehri	Kadışehri	58	32	30	30	58	30	30	30	58	34	30	30
Yozgat	Çekerek	Çekerek	46	60	65	65	46	30	30	30	46	34	30	30
Yozgat	Akdağmadeni	Akdağmadeni	35	30	30	30	35	30	30	30	35	34	30	30
Yozgat	Saraykent	Saraykent	48	30	30	30	48	30	30	30	48	34	30	30
Samsun	Asarcık	Asarcık	38	30	30	30	38	30	30	30	38	34	30	30
Çorum	Mecitözü	Mecitözü	46	65	65	65	46	30	30	30	46	34	30	30
Çorum	Ortaköy	Ortaköy	26	65	65	65	26	26	26	26	26	34	30	30
Çorum	Ortaköy	Aştavul	26	65	65	65	26	26	26	26	26	34	30	30
Erzincan	Refahiye	Refahiye	26	30	30	30	26	26	26	26	26	34	30	30
Giresun	Çamoluk	Çamoluk	84	65	65	65	84	30	30	30	84	34	30	30
Gümüşhane	Şiran	Yeşilbük	60	33	30	30	60	32	30	30	60	34	30	30
Gümüşhane	Kelkit	Deredolu	61	54	51	47	61	32	30	30	61	34	30	30
Gümüşhane	Kelkit	Gümüşgöze	61	54	51	47	61	32	30	30	61	34	30	30
Gümüşhane	Kelkit	Öbekaş	61	54	51	47	61	32	30	30	61	34	30	30
Gümüşhane	Kelkit	Ünlüpınar	61	54	51	47	61	32	30	30	61	34	30	30
Gümüşhane	Kelkit	Söğütlü	61	54	51	47	61	32	30	30	61	34	30	30
Ordu	Akkuş	Akkuş	44	30	30	30	44	30	30	30	44	34	30	30



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Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Sivas	Akıncılar	Akıncılar	28	65	65	65	28	28	28	28	28	34	30	30
Sivas	Koyulhisar	Koyulhisar	44	53	59	65	44	30	30	30	44	34	30	30
Tokat	Reşadiye	Baydarlı	57	65	65	65	57	32	30	30	57	34	30	30
Tokat	Reşadiye	Bereketli	57	65	65	65	57	32	30	30	57	34	30	30
Tokat	Reşadiye	Bozçalı	57	65	65	65	57	32	30	30	57	34	30	30
Tokat	Reşadiye	Cimitekke	57	65	65	65	57	32	30	30	57	34	30	30
Tokat	Almus	Görümlü	39	30	30	30	39	32	30	30	39	34	30	30
Tokat	Almus	Ataköy	39	30	30	30	39	32	30	30	39	34	30	30
Tokat	Almus	Çevreli	39	30	30	30	39	32	30	30	39	34	30	30
Tokat	Almus	Gölgeli	39	30	30	30	39	32	30	30	39	34	30	30
Tokat	Almus	Kinik	39	30	30	30	39	32	30	30	39	34	30	30
Tokat	Başçiftlik	Başçiftlik	95	65	65	65	95	30	30	30	95	34	30	30
Tokat	Başçiftlik	Hatıplı	95	65	65	65	95	32	30	30	95	34	30	30
Tokat	Niksar	Gökçeli	49	30	30	30	49	32	30	30	49	34	30	30
Tokat	Niksar	Gürçeşme	49	30	30	30	49	32	30	30	49	34	30	30
Tokat	Niksar	Serenli	49	30	30	30	49	32	30	30	49	34	30	30
Tokat	Niksar	Yazıcık	49	30	30	30	49	32	30	30	49	34	30	30
Tokat	Niksar	Yolkonak	49	30	30	30	49	32	30	30	49	34	30	30
Tokat	Erbaa	Gökal	57	30	30	30	57	32	30	30	57	34	30	30
Tokat	Erbaa	Karayaka	57	30	30	30	57	32	30	30	57	34	30	30
Tokat	Erbaa	Tanoba	57	30	30	30	57	32	30	30	57	34	30	30
Tokat	Merkez	Çamlıbel	47	43	41	39	47	32	30	30	47	34	30	30
Tokat	Merkez	Çat	47	43	41	39	47	32	30	30	47	34	30	30
Tokat	Pazar	Pazar	32	59	65	65	32	30	30	30	32	34	30	30
Tokat	Pazar	Üzümlü	59	46	40	35	59	32	30	30	59	34	30	30



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Province	District	Settlement	Trend Scenario				Optimistic Scenario				Realistic Scenario			
			2016	2026	2032	2038	2016	2026	2032	2038	2016	2026	2032	2038
Tokat	Artova	Artova	47	43	41	39	47	30	30	30	47	34	30	30
Tokat	Yeşilyurt	Yeşilyurt	16	30	41	60	16	16	16	16	16	34	30	30
Tokat	Sulusaray	Sulusaray	16	30	30	30	16	16	16	16	16	34	30	30
Amasya	Merkez	Ziyaret	20	30	30	30	20	20	20	20	20	34	30	30
Amasya	Göynücek	Göynücek	39	30	30	30	39	30	30	30	39	34	30	30
Yozgat	Çekerek	Özükavak	46	60	65	65	46	32	30	30	46	34	30	30
Yozgat	Aydıncık	Aydıncık	42	55	65	65	42	30	30	30	42	34	30	30
Yozgat	Aydıncık	Baydığın	42	55	65	65	42	32	30	30	42	34	30	30
Yozgat	Akdağmadeni	Belekçehan	35	30	30	30	35	32	30	30	35	34	30	30
Yozgat	Sorgun	Gülşehri	34	30	30	30	34	32	30	30	34	34	30	30
Sivas	Doğanşar	Doğanşar	69	65	65	65	69	30	30	30	69	34	30	30
Sivas	Gölova	Gölova	17	30	30	30	17	17	17	17	17	34	30	30
Çorum	Merkez	Düvenci	34	30	30	30	34	32	30	30	34	34	30	30
Tokat	Merkez	Emirseyit	47	43	41	39	47	32	30	30	47	34	30	30
Tokat	Merkez	Güryıldız	47	43	41	39	47	32	30	30	47	34	30	30
Tokat	Turhal	Şenyurt	29	54	65	65	29	29	29	29	29	34	30	30
Yozgat	Akdağmadeni	Oluközü	35	30	30	30	35	32	30	30	35	34	30	30
Yozgat	Akdağmadeni	Umutlu	35	30	30	30	35	32	30	30	35	34	30	30
Yozgat	Kadışehri	Halıköy	58	32	30	30	58	32	30	30	58	34	30	30
Yozgat	Saraykent	Ozan	48	30	30	30	48	32	30	30	48	34	30	30
Yozgat	Sorgun	Araplı	34	30	30	30	34	32	30	30	34	34	30	30
Yozgat	Sorgun	Eymir	34	30	30	30	34	32	30	30	34	34	30	30



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3.2. LIVESTOCK DATA

The data used for livestock in the basins are included in the proceeding tables:

- For municipalities, villages and neighbourhoods, numbers of livestock in the settlements are obtained from Ministry of Agriculture and Forestry (MoAF).

Table 30. Livestock data in villages and neighbourhoods for Yeşilirmak Basin. Source: (former) MoFAL.

Basin	Province	District	Town/Village Name	2016 Bovine	2016 Ovine	2016 Poultry
Yeşilirmak	Samsun	Asarcik	Asarcik (DC)	470	2188	
	Samsun		NH	16091		
	Samsun	Atakum	Atakum (DC)	6930	4513	
	Samsun		NH	7784	2891	
	Samsun	Ayvacik	Ayvacic (DC)	2514		
	Samsun		NH	13112	2081	
	Samsun	Canik	Canik (DC)	1164	502	
	Samsun		NH	12368	8837	
	Samsun	Çarşamba	Çarşamba (DC)	1439	5	
	Samsun		NH	69806	18257	
	Samsun	Havza	Havza (DC)	2090	2150	
	Samsun		NH	9731	31765	
	Samsun	İlkadim	İlkadım (DC)	4412	3578	
	Samsun		NH	3085	3017	
	Samsun	Kavak	Kavak (DC)	766	146	
	Samsun		NH	15643	10132	
	Samsun	Ladik	Ladik (DC)	1993	2824	
	Samsun		NH	13235	20401	
	Samsun	Salıpazari	Salıpazarı (DC)	1796	818	
	Samsun		NH	12072	1778	
	Samsun	Tekkeköy	Tekkeköy (DC)	18019	12214	
	Samsun		NH	12487	14980	
	Samsun	Terme	Terme (DC)	2876	412	
	Samsun		NH	33712	4767	
	Çorum	Alaca	Alaca (DC)	3713	2258	11656
	Çorum		All Neighbourhood	20852	11371	
	Çorum	Mecitözü	Mecitözü (DC)	5611	857	13000
	Çorum		All Neighbourhood	22273	19161	
	Çorum	Dc	DC	5164	9122	5185500
	Çorum		All Neighbourhood	68234	70827	
	Çorum	Ortaköy	Ortaköy (DC)	681	265	4741
	Çorum		All Neighbourhood	5515	5963	
	Giresun	Alucra	Alucra (DC)	655	662	4792
	Giresun		All Neighbourhood	5870	7896	
	Giresun	Çamoluk	Çamoluk (DC)	567	701	4093
	Giresun		All Neighbourhood	2244	1654	
	Giresun	Şebinkarahisar	Şebinkarahisar (DC)	3389	2572	4792
	Giresun		All Neighbourhood	21620	24866	
	Ordu	Akkuş	Akkuş (DC)	659	743	1000
	Ordu		All Neighbourhood	7791	8638	5200



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Basin	Province	District	Town/Village Name	2016 Bovine	2016 Ovine	2016 Poultry
	Sivas	Gölova	Gölova (DC)	1516	140	770
	Sivas		All Neighbourhood	4501	1485	695
	Sivas	Akincilar	Akincilar (DC)	1522	1777	
	Sivas		All Neighbourhood	3865	940	240
	Sivas	Suşehri	Suşehri (DC)	3731	3137	
	Sivas		All Neighbourhood	24079	18382	1652
	Sivas	Koyulhisar	Koyulhisar (DC)	800	1168	
	Sivas		All Neighbourhood	12670	11009	344
	Sivas	Zara	Zara (DC)			
	Sivas		All Neighbourhood	28522	11577	1422
	Sivas	Doğanşar	Doğanşar (DC)	2142	100	
	Sivas		All Neighbourhood	2182	0	138
	Sivas	Hafik	Hafik (DC)			
	Sivas		All Neighbourhood	17576	11018	1833
	Sivas	Yildizeli	Yıldızeli (DC)			
	Sivas		All Neighbourhood	49922	77522	6052
	Tokat	Reşadiye	Reşadiye (DC)	457	281	
	Tokat		Baydarlı	823	3005	
	Tokat		Bereketli	2091	4766	
	Tokat		Bozçalı	2390	1687	
	Tokat		Cimitekke	1562	2561	
	Tokat		Hasanşeyh	1146	1196	
	Tokat		All Neighbourhood	12635	13223	
	Tokat					
	Tokat	Almus	Almus	468	1692	
	Tokat		Ataköy	976	1426	
	Tokat		Çevreli	2765	5012	
	Tokat		Gölgeli	486	0	
	Tokat		Kınık	1066	1074	
	Tokat	Başçiftlik	Başçiftlik	1846	2047	
	Tokat		Hatıpli	1250	1322	
	Tokat		Tüm Köyler	1364	1072	
	Tokat	Niksar	Niksar (DC)	4138	4282	
	Tokat		Gökçeli	788	1194	
	Tokat		Gürçeşme	2518	2715	
	Tokat		Serenli	883	904	
	Tokat		Yazıcık	636	1094	
	Tokat		Yolkonak	2292	626	
	Tokat		All Neighbourhood	29030	40992	
	Tokat	Erbaa	Erbaa (DC)	6068	10743	
	Tokat		Gököl	1532	533	
	Tokat		Karayaka	1357	12269	
	Tokat		Tanoba	1411	2032	
	Tokat		All Neighbourhood	20207	54824	
	Tokat	Dc	DC	3664	5359	
	Tokat		Çamlıbel	2157	4389	
	Tokat		Çat	2554	5948	
	Tokat		Emirseyt	2057	4755	
	Tokat		Güryıldız	1795	538	
	Tokat		All Neighbourhood	54579	81316	
	Tokat	Turhal	Turhal (DC)	15683	3482	
	Tokat		Şenyurt	2689	4163	



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Basin	Province	District	Town/Village Name	2016 Bovine	2016 Ovine	2016 Poultry
	Tokat		All Neighbourhood	34648	35132	
	Tokat	Pazar	Pazar (DC)	2596	1421	
	Tokat		Üzümlü	3328	2356	
	Tokat		All Neighbourhood	11065	6751	
	Tokat	Artova	Artova (DC)	2131	1786	
	Tokat		All Neighbourhood	13317	7595	
	Tokat	Yeşilyurt	Yeşilyurt (DC)	2626	955	
	Tokat		All Neighbourhood	10642	5822	
	Tokat	Sulusaray	Sulusaray (DC)	5293	610	
	Tokat		All Neighbourhood	8275	5490	
	Tokat	Zile	Zile (DC)	2975	3113	
	Tokat		All Neighbourhood	54795	39042	
	Yozgat	Kadışehri	Kadışehri Mun	1721	589	
	Yozgat		Halıköy Mun	1594	422	
	Yozgat		All Neighbourhood	11198	10907	60
	Yozgat	Çekerek	Çekerek Mun	5532	4620	1050
	Yozgat		Özükkavak Mun	1990	4407	
	Yozgat		All Neighbourhood	17021	20793	60000
	Yozgat	Aydincik	Aydincik Mun	1373	6383	
	Yozgat		Baydıgın Mun	34	869	
	Yozgat		All Neighbourhood	4543	7468	
	Yozgat	Akdağmadeni	Akdağmadeni Mun	1482	4981	266610
	Yozgat		Belekçehan Mun	565	650	
	Yozgat		Oluközü Mun	1664	69	
	Yozgat		Umutlu Mun	1477	710	
	Yozgat		All Neighbourhood	27136	32010	
	Yozgat	Saraykent	Saraykent Mun	2112	2378	
	Yozgat		Ozan Mun	511	1054	
	Yozgat		All Neighbourhood	5082	2675	
	Yozgat	Sorgun	Araplı Mun	1077	984	
	Yozgat		Eymir Mun	1800	149	
	Yozgat		Gülşehri Mun	2014	0	
	Yozgat		Yeniye Mun			
	Yozgat		All Neighbourhood	5551	5506	
	Yozgat	Central District	All Neighbourhood	3626	7807	
	Amasya	Merkez	Merkez (DC)	2108	34620	
	Amasya		All Neighbourhood	64588	61825	
	Amasya		Ziyaret	1121	1501	
	Amasya	Göynücek	Göynücek	1106	1112	
	Amasya		All Neighbourhood	20513	12954	
	Amasya	Gümüşhacıköy	Gümüşhacıköy	2914	6369	
	Amasya		All Neighbourhood	8382	4009	
	Amasya	Merzifon	Merzifon	1145	2337	
	Amasya		All Neighbourhood	30811	18202	
	Amasya	Hamamözü	Hamamözü			
	Amasya		All Neighbourhood	44	123	
	Amasya	Suluova	Suluova	35974	3234	
	Amasya		All Neighbourhood	21979	14447	
	Amasya	Taşova	Taşova	261	25246	
	Amasya		All Neighbourhood	21491	45629	
	Gümüşhane	Kelkit	Kelkit	9274	6624	



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Basin	Province	District	Town/Village Name	2016 Bovine	2016 Ovine	2016 Poultry
	Gümüşhane		All Neighbourhood	23142	14427	
	Gümüşhane		Deredolu	1466	45	
	Gümüşhane		Öbektaş	1485	490	
	Gümüşhane		Gümüşgöze	1558	457	
	Gümüşhane		Ünlüpınar	635		
	Gümüşhane	Köse	Köse	2298		
	Gümüşhane		All Neighbourhood	3934		
	Gümüşhane	Şiran	Şiran	2449		
	Gümüşhane		All Neighbourhood	12625	2823	
	Erzincan	Refahiye	Refahiye	416		
	Erzincan		All Neighbourhood	9766	6274	
	Bayburt	Demirözü	Kavaklı	418	933	

3.3. OTHER DEMANDS

The gross drinking water demands of the personnel in the military units and touristic facilities were included in the calculations under “other consumptions” category. These demands are summarised below on provincial basis:

Table 31. List of other demands for Yeşilirmak Basin. Source: Yeşilirmak Master Plan.

Province	District	Type	Number Of Emp.	l/c/d (water consumption per capita)	hm ³ /year
Samsun	Merkez	Number of Tourist	117300	200	2,815
Tokat	Merkez	Military Personnel	2500	100	0,091
Amasya	Merkez	Number of Tourist	41856	200	1,005



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