

Environmental Problems of Improving the Water Supply of the Population in Azerbaijan

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Abstract

As we know, the river systems of Azerbaijan belong to the Caspian Sea basin. There are 8359 rivers in the republic, of which 8188 rivers are up to 25 km long, 107 rivers are 51-100 km long, and 22 rivers are more than 101-500 km long. 5141 of the rivers 1177 belong to the Kura basin, including the Araz basin. There are 3218 rivers and their tributaries that flow directly into the Caspian Sea.

Among the rivers directly flowing into the Caspian Sea, there is 1 river with a length of more than 200 km, and 6 rivers with a length of 200-100 km.

The hydrographic network of Azerbaijan corresponds to the stretching directions of the Greater and Lesser Caucasus and Talish mountain systems.

The uneven distribution of rainfall throughout the year in the territory of the Republic of Azerbaijan, which is located in the arid climate zone, has created a problem of water shortage in individual regions due to climatic conditions.

The water resources of Azerbaijani rivers are about 30.9 km³. 20.6 km³ of it enters our republic from neighboring territories. The flow formed in Azerbaijan itself is 10.3 km³ (S.H. Rustamov, R.M. Qashgai, 1989), of which 3.13 km³ is due to the annual flow of rivers directly flowing into the Caspian Sea. The rivers of the southern and southeastern slopes of the Greater Caucasus also play a big role in improving the water supply in Azerbaijan and meeting the water needs of the republic's population. The Talysh mountains in the south of our republic also have a sufficient supply of drinking water. its waters have also started to be used.

Keywords: Caspian Sea, river length, arid climate, Kura, Araz, slope, etc.

Introduction

Azerbaijan, located in the arid climate zone of the Caucasus, is poorly provided with local water resources compared to neighboring countries.

While the exploitable reserves of underground freshwater are 129 m³/s, their actual usage level is 17 m³/s, of which 21% is used through the centralized water pipeline. In the republic, there is a great

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need for the population to treat the water used in household and economic areas sparingly, put a price on it and protect it.

The State Statistics Committee of the Republic of Azerbaijan has developed the program and methodological rules for implementing water supply for all sectors of the country's population and economy following the Food Program of the European Commission in Azerbaijan.

The general situation of water supply for the population, agricultural fields, orchards, and vineyards, as well as livestock in all urban and rural settlements and 14,000 households of 3,381 rural municipalities, except for the settlements occupied by the armed forces of Armenia. was analyzed. As can be seen from tables 18 and 19, the level of the water supply of the country's urban and rural population, as well as economic regions, is very low. Thus, there are some difficulties in providing water to 1.6 million people in 110 urban settlements and 1.8 million people in 1650 rural settlements. The water supply for 130,000 people in 15 urban areas and 450,000 people in 485 villages is inadequate. People living in these areas suffer from water shortage, and the quality of water does not meet the permitted sanitary norms. If 39-58% of the country's population and 35-41% of settlements have a good water supply, the situation of the majority of the rest is not encouraging in this regard.

Table 1: State of water supply in the Republic of Azerbaijan (2018, in %)

Residential areas	Good		Medium		Bad	
	population	Industry and agriculture	population	Industry and agriculture	population	Industry and agriculture
Şəhər City	56,6	41,4	40,3	59,0	3,1	6,6
Kənd Village	36,9	38,4	50,8	48,5	12,3	13,1

Table 2: Water supply of the population by economic regions

№	Regions	Good		Medium		Bad	
		City population	Village population	City population	Village population	City population	Village population
1	Absheron	76,3	40,7	22,5	54,9	1,2	4,4
2	Ganja-Kazakh	40,7	41,8	53,6	48,0	5,7	10,1
3	Middle Kur	34,5	43,1	61,9	40,1	3,6	16,8
4	Along Araz and lower parts of Kur	11,1	31,9	87,8	61,9	11,1	6,2
5	Guba-Khachmaz	46,7	39,4	27,6	53,4	25,7	7,2

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6	Mountainous Shirvan	8,1	24,1	62,1	44,7	29,8	31,2
7	Sheki-Zagatala	0,5	24,6	62,1	44,7	29,8	31,2
8	Upper Karabakh	14,6	35,2	85,4	49,8	0,2	15,0
9	Lankaran-Astara	88,4	42,8	11,6	49,2	0,0	8,0
10	Nakhchivan	2,7	30,4	97,3	50,7	0,0	18,9
11	Total for the Republic	56,6	36,9	40,3	50,7	3,1	12,4

Table 2

As can be seen from the 1st 2nd table, the level of water supply to the population of Mountains-Shirvan, Sheki-Zagatala, Kura-Araz, and Nakhchivan economic regions is quite low. Among the economic regions where the urban population is well supplied with water, Lankaran-Astara, Absheron and Guba- Khachmaz, Aran, Lankaran-Astara, and Ganja-Gazakh are selected in terms of supply of the rural population.

The centralized water supply is relatively good. In regions that do not have such water sources, there are problems with water supply (table 3).

Depending on the natural and climatic conditions of the republic, we have divided and analyzed the land suitable for rural agriculture into three groups according to water supply:

1. Irrigated and irrigated farms;
2. Farms with irrigated lands;
3. Farms with paddy fields;

256,000 hectares of irrigated and 439,000 hectares of land suitable for agriculture of the 908 residential areas surveyed. The agricultural areas of 1,520 settlements (1,182,000 hectares) are irrigated and 629,000 hectares of 1,100 settlements are dry lands. 1,056,000 hectares of arable land (from 2,386 settlements) are irrigated, and 351,000 hectares (from 1,664 settlements) are dry lands. 77,000 hectares of orchards and vineyards are irrigated (in 1,720 locations), 29,000 hectares (in 836 locations) are fallow, 315,000 hectares of meadows and pastures are irrigated (in 1,317 locations), and 687,000 hectares (in 1,698 locations) are fallow areas. In 26% of the settlements of the country, irrigated and semi-arid lands are used, and in 43% irrigated and semi-arid lands are used. In agriculture, 58% of the areas that need irrigation are used. Level of water supply by economic regions (2018).

Table 3

№	Regions	Good		Medium		Bad	
		Min ha	%-with	Min ha	%-with	Min ha	%-with
1	Absheron	13,8	51,5	12,0	48,2	0,1	0,3
2	Guba-Khachmaz	38,1	30,4	73,8	59,0	13,3	10,6
3	Mountainous - Shirvan	6,5	13,1	30,6	61,9	12,4	25,1
4	Sheki-Zagatala	19,2	19,0	61,8	61,0	20,3	20,0
5	Along Araz and the lower part of Kur	44,3	13,1	251,5	74,0	43,8	12,9
6	Middle Kur	161,3	33,7	247,6	51,8	69,3	14,5
7	Ganja-Kazakh	41,0	23,0	103,6	57,9	34,1	19,1
8	Upper Karabakh	20,0	30,0	32,6	48,9	14,0	21,1
9	Nakhchivan	5,9	11,9	29,3	59,3	14,2	28,8
10	Lankaran-Astara	15,4	48,0	15,1	47,2	1,5	4,8
11	Total for the Republic	365,5	25,3	858,8	59,3	223,1	15,4

According to the information of the municipal authorities of the republic, 93 thousand hectares of arable land are not cultivated due to lack of water. Due to lack of water, the areas that are not planted are Goy-chay, Ujar, Salyan (14 thousand hectares or 19%), Kurdamir (9 thousand hectares or 16%), Zardab (4 thousand hectares or 12%), Agdash (4 thousand hectares and or 10%), Gusar (2 thousand hectares or 16%), Tovuz (3 thousand hectares or 14%), Shamkir (7 thousand hectares or 15%), Khanlar (1 thousand hectares or 14%) and regions more in the area. The farms operating in the regions where the research work is carried out normally provide water to only 25% of the total irrigated land areas, and the vast majority of the rest have to face various difficulties. If measures are not taken to provide water to the population and the economy of the republic, difficulties may arise in the country's food supply.

The study of the material and technical base of the Republican irrigation and melioration system shows that most of the existing canals and the hydro-technical facilities on them are old and unusable.

44 thousand km of the existing 46 thousand km long canals in the irrigation system are suitable for irrigation.

The condition of irrigation works is not at the proper level. In recent years, the volume of water from natural and underground water sources has decreased significantly, and water loss has increased.

It is necessary to implement some countermeasures to reduce the specific gravity of clean water used in irrigation and the amount of wastewater.

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A special program should be prepared for the improvement of water supply in urban and rural areas of the republic and creation of international organizations should be used.

Organization of irrigation and reclamation work, digging of artesian and subartesian wells, expansion of their repair works, and mineral water sources should be used effectively. 58% of the country's agricultural areas are irrigated, and 15% of the land needs reclamation services. 33% of inter-farm irrigation canals and 62% of their collector-drainage systems, 47% of domestic irrigation canals, and 72% of their collector-drainage part are in a completely unusable state, so it is important to reconstruct them. the part needs to be reconstructed and restored.

The first source is the Shollar aqueduct, built in 1917. At the end of 1930, as a result of technical measures, the capacity of the Shollar aqueduct, which has a daily productivity of 16 thousand m³ and a length of 187 km, was increased to 109 thousand m³.

The second source is the Khachmaz-Baku water pipeline, which was built from underground water sources of the Khachmaz region from 1938-1953. Its productivity was 228 thousand m³ per day, its length is 175 km.

The water demand of the Absheron valley is met by 4 sources that are currently in use

Table 4

№	Water pipes	Date of use	Power, m ³ /sec	
			Project	Actually
	I Baku water pipeline (Shollar)	1917	1,27	1,271
	II Baku water pipeline (Khachmaz)	1956	2,73	2,75
	Geyranbatan reservoir, including technical, drinking	1958	12,65 5,15 7,50	9,67 2,39 7,25
	Kura water pipelines (Talış village-2 lines together), including I water pipeline	1970	11,92	9,50
	II-aqueduct	1998	8.00	It is fluid
	Oguz-Baku	2010	2005	It is fluid
	Total capacity of water pipelines		28,57	23,16 (730374 min m ³ /year)
	Centralized water supply system of Baku.			14,77 (465906,2 min m ³ il)
	a) Including domestic water			7,37 (232394 min m ³ /year)
	b) water used in production			7,09 (223634 min m ³ /year)
	c) Loss			0,31 (9878,2 min m ³ /year)

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The third source is the Jeyranbatan reservoir, created in 1956-1959. This reservoir is fed by the Samur-Absheron canal drawn from the Samur River, located 200 km north of Baku. Its volume is 186 million cubic meters. The maximum flow rate is 25 m³ per second. Part of the water is used for irrigation purposes in Absheron. At present, the productivity of Jeyranbatan water pipelines is 9.5 m³ per second, and the daily production capacity is 1106.9 thousand m³.

The Jeyranbatan water reservoir was created based on previously existing saline lakes and is intended for drinking water and the domestic needs of the population.

The fourth source is the Kur-Absheron water pipeline, which was commissioned in two stages. In 1970-1971, the first stage of the pipeline was put into operation in two stages. The second stage was commissioned in three stages - in 1984, 1986, and 1988. is 9.5 m³ per second? The combined productivity of the Shollar and Khachmaz water pipelines (109,000-228,000 m³) is 337,000 cubic meters per day (4.87 times more than the combined productivity of the Shollar and Khachmaz pipelines).

According to the information of "The Azersu" Joint Stock Company, there is no need to clean it (technically, biologically, and chemically) since the water of the Shollar and Khachmaz aquifers meets the standard requirements of drinking water in terms of quality. The Khachmaz and Shollar aquifers together provide approximately 4 cubic meters of water per second. about 1.2 cubic meters per second is used by cities and villages located along the pipeline. As a result, the volume of shoal water arriving in Baku is 2.8 cubic meters per second.

According to the latest information we have received, the Shollar-Khachmaz water reaches Baku residents in small quantities. Thus, the water brought by the first (Shollar) pipeline is sold in full to various companies (Coco-Cola, Pepsi-Cola, Baku-Kastel, etc.), elite the water supplied by the second pipeline (Khachmaz) is also directed to the needs of various foreign delegations, elite settlements, villas, hotels, and business centers in the capital.

On the initiative of the President of the Republic of Azerbaijan, Ilham Aliyev, in 2010, a self-flowing water line with a diameter of 2000 mm and a length of 262.5 km was built from Oguz to Baku.

The amount of water brought to Absheron from all sources is 27 m³ per second. Of this, 1.25 m³/s or 4.8% is the share of the Shollar water pipeline. The Jeyranbatan reservoir is fed mainly through the Samur-Absheron canal.

Currently, the level of water mineralization in the Jeyranbatan reservoir is 310 mg/l, sulfates are 76.2 mg/l, chlorides are 22.5 mg/l, and alkalinity is 2.75 mg/l. The main feeder of the Jeyranbatan reservoir is the Samur-Absheron canal.

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The water supply of industry for the city of Baku is 1980-2000 thousand m³ per day, and 330 l/day per person.

During the day, 558.7 thousand m³ of water is used for household purposes in Baku.

The Araz River, the largest tributary of the Kur, is polluted by the radioactive waste of the Metsamor NPP in Armenia. Radioactive isotopes mix with the highly polluted water of the Araz in the Kur.

Fully rinsed water in Yenikand, Shamkir, and Mingachevir reservoirs are supplied to the population of Mingachevir as drinking water.

After strengthening the economic potential of Azerbaijan, the use of the Kura River as a source of drinking water should be abandoned. The population needs to use the underground waters of the southern and northeastern slopes of the Greater Caucasus and the quality artesian waters of different regions of the country.

The rich underground waters of the Lesser Caucasus freed from occupation and the water resources of mountain rivers (Hakara, Tartar, etc.) that are less affected by anthropogenic influence have also been used.

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