

UDC - 316.334.5:504.03

**ASSESSING THE IMPORTANCE OF ENVIRONMENTAL AND SOCIAL  
STANDARDS FOR THE ARTIK RESERVOIR RECONSTRUCTION  
PROJECT IN THE SHIRAK REGION OF ARMENIA**

**Arevik R. Mkrtchyan**

Institute of Water Problems and Hydro-Engineering  
Named After I.V. Yeghiazarov,  
125, Armenakyan St. 0011, Yerevan  
[vickmkrtyan@gmail.com](mailto:vickmkrtyan@gmail.com)  
ORCID iD: 0009-0003-5046-8138  
Republic of Armenia

**Armen R. Babayan**

Institute of Water Problems and Hydro-Engineering  
Named After I.V. Yeghiazarov  
125 A.Armenakyan St., 0011, Yerevan  
[armenbabayan1959@gmail.com](mailto:armenbabayan1959@gmail.com)  
ORCID iD: 0000-0003-3927-6402  
Republic of Armenia

**Albert Ya. Margaryan**

Institute of Water Problems and Hydro-Engineering  
Named After I.V. Yeghiazarov,  
125, Armenakyan St., 0011, Yerevan  
[albertmargaryan39@gmail.com](mailto:albertmargaryan39@gmail.com)  
ORCID iD: 0000-0002-3846-0657  
Republic of Armenia

**Samvel H. Mkrtchyan**

Institute of Water Problems and Hydro-Engineering  
Named After I.V. Yeghiazarov,  
125, Armenakyan St. 0011, Yerevan  
[msamvel904@gmail.com](mailto:msamvel904@gmail.com)  
ORCID iD: 0000-0002-5885-6763  
Republic of Armenia

<https://doi.org/10.56243/18294898-2023.4-82>

**Abstract**

The Artik Reservoir, located in Shirak region within the Karangu River basin, is poised for reconstruction beginning in 2023. This initiative is spearheaded by a consortium consisting of the Institute of Water Problems and HydroEngineering after Academician I.V. Yeghiazarov CJSC and the Shushi Technological University Foundation, commissioned by the Water Committee of RA MAIE. The reservoir, essential for irrigating agricultural lands in

five villages, namely Nor Kyank, Panik, Vardakar, Anushavan and Meghrashen, faces reconstruction due to a dam failure during floods in 1994. The affected communities, integral to the Artik expanded community, are primarily engaged in agriculture, facing income constraints & labor migration due to water scarcity. Despite this, the region boasts historical and cultural monuments, presenting an opportunity for diverse forms of tourism. The region is also diverse in flora & fauna representatives with a significant number red listed since 2010. The article emphasizes the importance of adhering to environmental and social standards within the framework of the project, as well as seeks to contribute valuable insights to the ongoing discourse surrounding the project, highlighting the critical role of sustained environmental and social studies throughout its development. The primary objective is to assess the expected benefits and risks associated with the Artik Reservoir Reconstruction Project, with a particular focus on its environmental and social aspects, ultimately striving for a balanced and sustainable outcome.

**Keywords:** reservoir, dam, environmental impact assessment, social conditions, impacted community, stakeholders.

### Introduction

The Artik Reservoir is situated in the Artik Region of Shirak Marz, within the Karangu River basin and positioned northwest of Artik City, along the Artikjur River. Starting from 2023, the reservoir dam is set for reconstruction with the project's documents developed by the consortium of the Institute of Water Problems and HydroEngineering after Academician I.V. Yeghiazarov CJSC and the Shushi Technological University Foundation and commissioned by the Water Committee of RA MAIE.

The Artik Reservoir is designed to irrigate the agricultural lands of five villages within the region, situated approximately 6-8 km from the reservoir. These villages include Nor Kyank, Panik, Vardakar, Anushavan and Meghrashen, collectively covering a land area of 2612 hectares. The five impacted communities are part of Artik expanded community, which is also the regional center and the main economical hub of the Artik settlement.

The initial social survey revealed that the residents of both the expanded community and the impacted communities are predominantly involved in agricultural activities, including the cultivation of wheat, barley, potatoes, vegetables and animal husbandry. In the privately owned and leased agricultural lands of the community, the residents mainly sow grain crops such as wheat and barley. In addition, the land's favorable conditions make it suitable for cultivating grain crops, growing potatoes and raising livestock. However, as shown by assessment results, the lack of water in the area hinders the community's ability to generate significant income. There are limited large agricultural farms within the community, thus in general each household unit utilizes its own production locally. Community residents also cultivate vegetable crops and fruits, such as apples, plums, pears, and cherries in small plots or orchards near their houses. Although grain crop production and animal husbandry are essential for the economic development of the Artik community, their current progress is quite moderate.

Further assessment revealed that both the expanded Artik community and the impacted communities boast a wealth of historical and cultural monuments in their territory,

as well as picturesque locations. These assets can contribute to the development of various forms of tourism (including but not limited to historical tourism, agritourism, ethnotourism) and facilitate recreational activities both for the local population and other visitors. The residents are also known for their handy & household crafts passed through generations. In addition, beekeeping traditions are another important occupation for the community residents. The affected communities feature churches, castles, cemeteries, and old settlements of local and national significance, spanning chronologically from the 3rd millennium BC to the second half of the 20th century, therefore it's crucial to ensure the protection of the mentioned assets during the reconstruction stage of the reservoir dam, as well as put an emphasis on the potential development of touristic routes in the region. It is noteworthy that the construction of the Artik Reservoir initially took place between 1988 and 1992, following the design plans created by the "Glkhhayrshin" organization and the "Volgogradshin" design institute. Unfortunately, on May 31, 1994, during floods in the Karangu River basin, the dam of the Artik Reservoir experienced a failure, resulting in the loss of its water regulating capabilities leaving the irrigation potential of at least 420.0 hectares of agricultural land in Nor Kyank, Vardakar, Panik, Meghrashen and Anushavan villages under question to date.

### **Conflict Setting**

The purpose of this article is to underscore the significance of adhering to environmental and social standards in the context of the Artik Reservoir Reconstruction Project in the Shirak Region of Armenia, as well as contribute insights to the discourse on the Artik Reservoir Reconstruction Project, emphasizing the crucial role of continuing the environmental and social studies throughout the project development in achieving a balanced and sustainable outcome, with the main task being to evaluate the anticipated benefits and risks associated with the Artik Reservoir Reconstruction Project in the light of environmental and social aspects.

**Materials and Methods:** The research method involves a multi-faceted approach, incorporating data collection methods such as site visits, document analysis, desktop assessment and a review of pertinent literature to ensure a comprehensive evaluation. Special attention is given to monitoring the potential impacts on biodiversity, water quality, cultural heritage, tourism potential and community well-being.

### **Research Results**

The Artik Reservoir is located to the northwest of Artik city in Shirak region, along the left-bank Artikjur tributary of the Karkachun or so called Karangu river. The hydro-economic assessments to determine the reservoir volume were conducted based on factors such as the 50% and 75% monthly supply flows from the left bank culverts of the Artikjur River and the Karkachun River, monthly irrigation water demand for 420.0 hectares, reservoir losses (evaporation and filtration), and monthly environmental discharges. Thorough reassessment of the morphometric data for the Artikjur River and the data from the two canyons on the left bank of the Karkachun River was conducted related with the dam collapse of the Artik Reservoir. These canyons are intended for transporting water to the reservoir. Recalculations

of all hydrological characteristics were performed based on these adjustments. All activities adhered to respective regulatory documents. The Artik Reservoir is designated for irrigating 420.0 hectares of agricultural land in Nor Kyank, Vardakar, Panik, Meghrashen, and Anushavan communities of the region. According to the information obtained from the enlarged Artik community, the irrigated land areas for each community, categorized by crop composition, are detailed below in Tab. 1.

Table 1

Actual lands utilized for agricultural (irrigated) crops (ha)

Name of the community	Autumn wheat	Vegetables/Greens	Potato	Orchards	Total
Nor Kyank	5	75	85	2	167
Vardakar	5	40	60	5	110
Panik	3	24	27	-	54
Meghrashen	5	20	29	-	54
Anushavan	3	14	18	-	35
Total	21	173	219	7	420

According to the information provided by the Artik community administration, the current irrigated land areas in 2023 stand at 420.0 hectares, designated as follows:

- 5.0% for autumn wheat,
- 41.2% for vegetables,
- 52.1% for potatoes,
- 1.7% for orchards.

Considering the crop composition, the geographical location of the agricultural lands, and the soil-climatic conditions, the designated area aligns with & requires Irrigation Regime No. 19, as outlined in the Manual on the norms and regimes of crop irrigation for the irrigated lands of the Republic of Armenia (2007). Using this data, a hydromodule graph was constructed, from which the annual water demand in the case of a 50% supply was derived, amounting to 1.6 million cubic meters. According to hydrological calculations, the annual environmental discharges are 0.638 million cubic meters.

According to the preliminary calculations based on the above, to meet 50% of the irrigation water demand for 420.0 hectares, it is necessary to reconstruct a reservoir with an earthen dam featuring a sandy clay screen. The dam's specifications should include a height of minimum 15.5 meters, a channel width of 6.0 meters, a dam length of 610.0 meters, and a volume of 1,817 million cubic meters, with a useful volume of 1,687 million cubic meters.

### *Environmental Overview.*

**Climatic Conditions of the area:** The topography of the area is characterized by temporary water-bearing canyons with rugged terrain. The landscapes consist of mountain-meadow light brown soils, reaching elevations of 2800-3000 meters, frequently interspersed with bedrock or shingles. The average annual temperature in the region is 5.8°C, with the highest temperatures observed during the months of July and August, reaching up to 34°C. The average annual precipitation in mountainous areas is 600mm. Precipitation varies

considerably, with approximately 40-45% occurring during the average annual temperatures and 40-45% during the winter months. The average monthly wind speed in the region ranges from 2 to 6 meters per second. The relative humidity of the air averages 66% annually. The freezing depth of the ground is 1 meter. The area experiences a temperate mountainous climate characterized by a prolonged, cold winter with a continuous snow cover. Strong winds, frequent fogs and blizzards are common occurrences. The prevailing wind directions are predominantly from the north and northeast, maintaining a consistent flow. The highest wind speed for 1% coverage can reach up to 27 m/s, for 2% coverage it is 25 m/s, at 5% it is 23 m/s, and for 20% coverage, it is 20m/s [10].

Table 2

List of flora in need of conservation [4]

N	Species name (plants)		Conservation status as per the RA Red Book
	Common	Lat.	
Asteraceae			
1	Tragopogon armeniacus	Tragopogon armeniacus Kuth.-	EN B 1 ab(i,ii,iii) + 2 ab(i,ii,iii)
Alliaceae			
Malvaceae			
2	Alcea sophiae	Alcea sophiae Iljin	EN B 1 ab(iii) + 2 ab(iii)
3	Alcea karsiana	Alcea karsiana (Bordz.) Litv.-	EN B 1 ab(iii) + 2 ab(iii)
Fabaceae			
4	Hedysarum elegans	Hedysarum elegans Boiss. et Huet	EN B 1 ab(iii) + 2 ab(iii)
Iridaceae			
5	Gladiolus dzhavakheticus	Gladiolus dzhavakheticus Eristavi	- EN B 1 ab(iii) + 2 ab(iii)
Lamiaceae			
6	Teucrium canum	Teucrium canum Fisch. et C.A.Mey.	CR B 1 ab(iii) + 2 ab(iii)
Rubiaceae			
7	Asperula affinis	Asperula affinis Boiss. et Huet	- EN B 1 ab(iii) + 2 ab(iii)
Valerianaceae			
8	Valeriana eriophylla	Valeriana eriophylla (Ledeb.) Utkin	EN B 1 ab(iii) + 2 ab(iii)

**Water Resources of the area:** The primary water body in the project area is the Karangu River, with a length of 55.0 km, serving as one of the tributaries to the Akhuryan River. The river network exhibits a density coefficient of 0.62 km/km<sup>2</sup> and a flow coefficient of 0.42. The surface waters in the region are classified under the hydrocarbon category based on their chemical composition. These surface waters have low mineral content, with ion levels ranging from 100-200 mg/l. The water hardness is categorized as soft, with a calcium and magnesium ion content of 1.5 mg-3.0 eq/l, and a low degree of aggressiveness (bicarbonate ion content not exceeding 0.7 mg-eq/l). According to RA Hydrometeorology and Monitoring

Center's summary document, the surface water flows in the requested area fall within the jurisdiction of the Akhuryan Water Basin management area.

Table 3

## List of fauna in need of conservation [4]

N	Species name		Conservation status as per RA Red Book
	Common	Lat.	
INSECTA			
1	Gomphocerus armeniacus	Gomphocerus armeniacus (Uvarov, 1931) Orthoptera – Acrididae	VU
REPTILIA			
2	Darevskia unisexualis	Darevskia unisexualis, Darevsky, 1966	VU B1a
AVES			
3	Gypaetus barbatus	Gypaetus barbatus Linnaeus, 1758, Falconiformes- Accipitridae	VU D1
4	Neophron percnopterus	Neophron percnopterus Linnaeus, 1758, Falconiformes- Accipitridae	EN A2bcde+3bcde+4bcde
5	Gyps fulvus	Gyps fulvus (Hablizl, 1783) , Falconiformes- Accipitridae	VU D1
6	Aquila clanga	Aquila clanga, Pallas, 1811 Falconiformes- Accipitridae	VU C2a(ii)
7	Aquila nipalensis	Aquila nipalensis orientalis Hodgson, 1833, Falconiformes- Accipitridae	VU C2a(i); D
8	Aquila chrysaetos	Aquila chrysaetos (Linnaeus, 1758), Falconiformes- Accipitridae	VU D1
9	Coracias garrulus garrulus	Coracias garrulus (Linnaeus, 1758, Coraciiformes- Coraciidae	VU B1ab(iii) VU
10	Tichodroma muraria	Tichodroma muraria, Linnaeus, 1766 Passeriformes - Sittidae	DD
MAMMALS			
11	Spermophilus xanthoprymnus	Spermophilus xanthoprymnus, Bennet 1835	EN B2ab (ii, iii, iv)
12	Microtus (Sumeriomys) schidlovskii	Microtus (Sumeriomys) schidlovskii , Argyropulo, 1933	EN B1ab (ii, iii, v)
13	Vormela peregusna peregusna	Vormela peregusna (Guldenstaedt, 1770) Carnivora- Mustelidae	VU A2c+B1 b(iii)

**Biodiversity of the Area. Flora:** The Shirak region in general boasts diverse vegetation, influenced by the distinct natural conditions of the area. Forests account for only 3.5% of the river basin area, comprising mainly insular plantations of pines and poplars. The planned project area in the Artik region lies within the middle mountain steppe landscape zone, featuring a warm moderately dry climate and primarily occupied by agricultural lands, including arable land, gardens, mines and pits. Some areas exhibit cereal and cereal-grass steppes with various plant species such as *Festuca valesiaca*, *Koeleria albovii*, *Stipa capillata*, and others. The vegetation period spans 40-165 days. The necessary data regarding rare and endangered plant species in the Artik area is sourced from the Red Book of RA as

presented in Tab. 2. The presented data also indicates the conservation status of each plant species according to the Red Book category classification (Critically Endangered (CR), Endangered Species (EN), Vulnerable Species (VU)).

There are no endemic plant species registered in the Red Book of the Republic of Armenia in the area immediately adjacent to Nor Kyank community, intended for the construction of the Artik Reservoir.

**Fauna:** The necessary information on rare and endangered animal species in the Artik area is also sourced from the Red Book of RA, presented in Tab. 3. The presented table also indicates the conservation status of each species according to the Red Book classification (Extinct Species (EX), Regionally Extinct Species (RE), Critically Endangered Species (CR), Endangered Species (EN), Vulnerable Species (VU), Data Deficiency (DD)).

There are no endemic animal species registered in the Red Book of the Republic of Armenia in the area immediately adjacent to Nor Kyank community, intended for the construction of the Artik Reservoir. However, given the number of red listed species of flora (8) and fauna (13) present in the potential area of reconstruction, it is necessary to continue the studies on the presence and distribution of mentioned species to evaluate the potential impact on the species during the construction phase, following the international environmental standards used largely for such works.

**Historical & Cultural Assets:** The list of monuments of history and culture of Shirak Marz of RA was approved on September 9, 2004 according to the decision N 1270-N "On approving the state list of immovable monuments of history and culture of Shirak Marz of the Republic of Armenia". According to the abovementioned decision, only 21 monuments (42 units) are included in the list of immovable monuments of history and culture of Artik city [2,9]. Tab. 4 summarizes the cultural units present in impacted communities, the full list of which can be found under the abovementioned GoA decision.

**Table 4**

**The number of existing cultural assets per impacted community**

Name of the community	Monument N	N of cultural & historical units
Nor Kyank	8	11
Vardakar	7	9
Meghrashen	8	11
Panik	6	13
Anushavan	8	20

Upon inspecting the sites of historical and cultural monuments, it is evident that the reservoir bed reconstruction poses no threat to the historical and cultural values in the area as the main asserts are located at a minimum 3-6km far from the planned construction area. However, during the actual construction works, there is a possibility of encountering items of archaeological significance, buildings, burial grounds, historical monuments and other artifacts. In such instances, work in that specific part of the reservoir must be halted immediately, and specialists should be summoned to assess the situation. Construction may resume only after obtaining the necessary professional opinion, in accordance with the

relevant legislation of the Republic of Armenia. Nevertheless, given that the project suggests a reconstruction of a new hydro-junction, creating a reservoir with a dam, and constructing flood and irrigation water structures throughout the construction and operation of the reservoir, certain adverse effects on different environment components may arise (earthworks, construction activity, heavy traffic, storage facilities, etc). To address this, environmental assessment checklist should be developed upon acquired experience and tracked throughout the construction phase utilizing best practices and research methods.

### **Social Overview.**

As of February 25, 2022, the Police and Passport and Visa Department of the Republic of Armenia reports a current community population of 53,206 people in Artik region [3]. This includes 26,661 males (50.2%) and 26,545 females (49.8% ).

A breakdown of the community's population reveals that 97% of all population are Armenians, while the remaining 3% are ethnic minorities, including Russians, Yezidis, Kurds, Ukrainians and Greeks [6].

The Artik Reservoir is designed to irrigate the agricultural lands of five communities within the region, situated approximately 6-8 km from the reservoir. These communities, as mentioned earlier, include Nor Kyank, Panik, Vardakar, Anushavan and Megrashen, collectively covering a land area of 2612 hectares. The permanent population in the communities affected by the project is 8,975 people, with the current population standing at 8,581 individuals [11].

This represents approximately **16-17%** of the total population. Tab. 5 provides an overview of the population's summary data for the five impacted communities, including gender segregation, as below:

**Table 5**

**Resident number in impacted communities [6]**

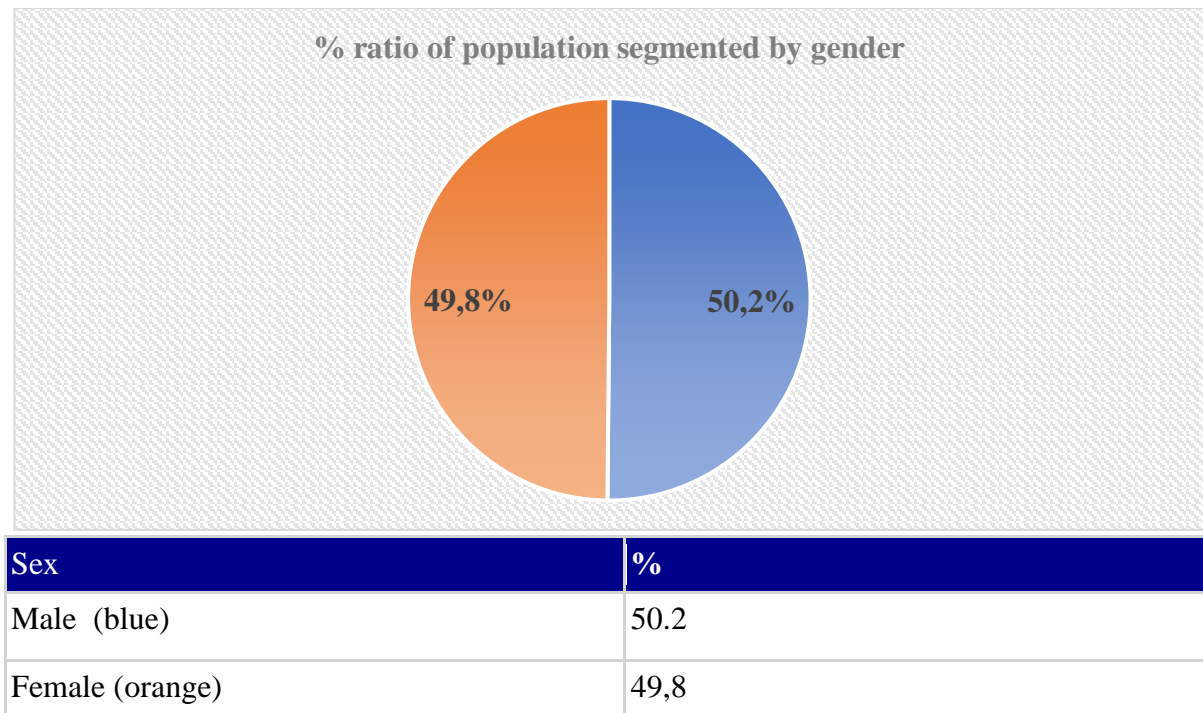
<b>Community name</b>	<b>N of permanent residents/persons</b>	<b>Factual N of residents /person</b>	<b>Including women</b>
Nor Kyank	1859	1562	995
Vardakar	725	696	352
Panik	3136	2927	1590
Anushavan	1983	2148	937
Megrashen	1272	1248	612
Total	8975	8581	4486

It is obvious from the Table 6, that in the impacted communities the number of women is higher than the number of men, comprising **52%** of the population, based on factual residents, which is another data showing that migration rate amongst men in these communities is relatively higher.



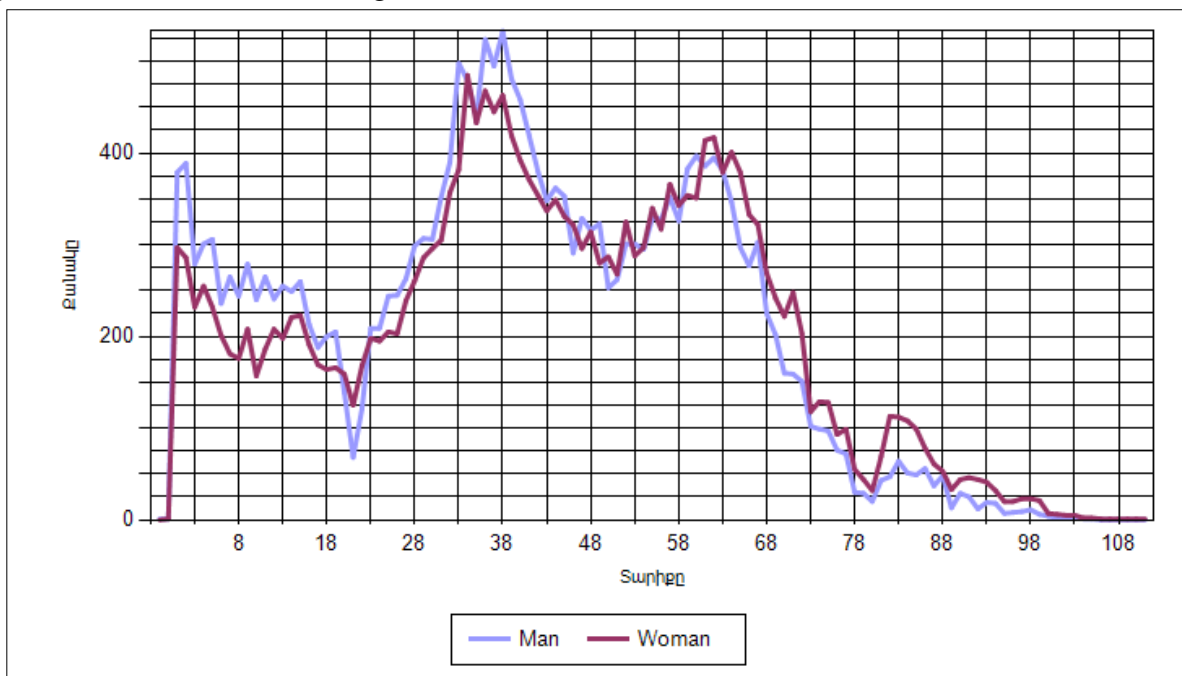
A.R. Mkrtyan, A.R. Babayan, A.Ya. Margaryan, S.H. Mkrtyan

ASSESSING THE IMPORTANCE OF ENVIRONMENTAL AND SOCIAL STANDARDS FOR THE ARTIK RESERVOIR RECONSTRUCTION PROJECT IN THE SHIRAK REGION OF ARMENIA



**Fig. 1. The % of population ratio by gender in Artik expanded community**

Further data on percentage distribution of the population in expanded Artik region by gender is also visualized in Fig. 1.



**Fig. 2 The sex-age graphical representation of Artik expanded community.**

Within the frames of the initial assessment, it was also important to assess the occupation of the local population by the economy sector, and thus respective data has been collected and analyzed to reflect the existing situation in the expanded settlement of Artik.

The Tab. 6 clearly indicates that a significant portion of the employed population is engaged in agriculture, hunting and forestry, with particular emphasis on irrigated agriculture. Moreover, given that these communities are marked by the active labor migration of working-age males abroad, this leads to women taking on agricultural responsibilities in their farms.

However, the lack of water in the area hinders the community's ability to generate significant income. The land's favorable conditions make it suitable for cultivating grain crops, growing potatoes and raising livestock.

Although grain crop production and animal husbandry are essential for the economic development of the Artik community, their current progress is moderate. This is primarily attributed to the sectors' low level of capitalization and the absence of processing technologies.

**Table 6**

**Employment profile by economic sectors in Artik expanded community in 2022 [6]**

N	Indicator	Sector	Quantity/man
1.	Number of employed residents	Total	15 373
2.	Number of employed residents by sector	3.1 Agriculture, hunting and forestry	11 155
		3.2 Fishing and Aquaculture	-
		3.3 Mining industry	15/225
		3.4 Manufacturing industry, including processing of raw materials	5/35
		3.5 Production and distribution of electricity, gas, water	3/21
		3.6 Construction	7/30
		3.7 Trade, repair of automobiles, household goods and personal items	405/1550
		3.8 Provision of agricultural services	3/30
		3.9 Hotel and restaurant services	9/33
		3.10 Transportation and Communication	10/50
		3.11 Employees in local self-government bodies	1/156
		3.12 Education, including preschool education	16/237
		3.13 Health and Social Care	29/250
		3.14 Utilities and Personal Services	2/37
		3.15 Employees of SNCO's	18/268
		3.16 Employees in government agencies	42/1280
		3.17 Employees in public organizations	8/16

Tab. 7 summarizes the volumes of farm products & agricultural production by communities below, clearly showing that the five impacted communities are pioneers in agricultural production among all the communities of the Artik settlement.

Table 7

## Volumes of farm products &amp; agricultural production by communities in 2022 [6, 11,12]

N	Name of the community	Cereals		Potatoes		Vegetables		Fruits & berries	
		Sowing area (ha)	Gross yield (ton)	Sowing area (ha)	Gross yield (ton)	Sowing area (ha)	Gross yield (ton)	Sowing area (ha)	Gross yield (ton)
1	Artik	250	535	8	20	12	15	23	20
2	Lusakert	95	209	7	15	3	12	0	-
3	Spandarian	220	484	35	20	20	3	3	2
4	Harich	150,5	331,1	35	15	18	2	3	1
5	Pemzashen	15	35	7	10	1	0,7	5	3,2
6	Getup	170	374	5	60	5	7	5,2	38,5
7	Great Mantash	246	541,2	80	20	64	1	-	-
8	Hovtashen	105	231	4	80	2	2	6	9
9	Panik	280	616	11	8,3	6	4	14	4
10	Hayrenats	470	1034	0,5	7	0,5	0,06	0,5	2
11	Tufaschen	251	552,2	0	0	0	-	1	1,5
12	Horom	360	792	20	15	2	13	2	1,5
13	Arevshat	350	770	60	25	40	20	1	0,7
14	Saralanj	250	550	22	12	11	1	0	0
15	Saratak	380	836	25	20	8	1	0,3	0,05
16	Lernakert	100	220	25	15	0	0	0	0
17	Nor Kyank	415	913	7	10	1	0,7	5,1	3,2
18	Nahapetavan	50	110	22	15	19	2	3	1,5
19	Meghrashen	450	990	10	5	5	2	10	300
20	Little Mantash	160	352	20	20	30	2	1	3
21	Vardakar	310	682	5	15	2	2	8	2
22	Haykasar:	239	525,8	5	25	0	0	0	0
23	Geghanist:	280	616	8	10	5	2	1	0,07
24	Anushavan	350	770	10	15	5	2	1	0,7
	Total	5946.5	13069.3	436,5	457.3	259,5	94,46	88,1	393,92

This change will not only enhance crop yield and diversify the range of crops but also impact the cost of the irrigation water tariff. Furthermore, the reconstruction of the reservoir bed does not necessitate acquisition/allocation of new lands or territories for the Phase 1, and thus is devoid of any adverse social implications, as there are no issues related to displacement and resettlement of the local population within the project area or flooding in the community area.

It is obvious that the implementation of the project and reconstruction of the reservoir will lead to a shift from the mechanical irrigation method to a gravity system irrigation.

### **Conclusion**

Based on the obtained data analysis, it is obvious that the significant portion of the employed population is engaged in agriculture & forestry activities, with particular emphasis on irrigated agriculture. The project's implementation will lead to the irrigation of approximately 420 hectares of agricultural lands, positively impacting the socio-economic conditions of the local population. The reservoir reconstruction and enhancement of irrigation water supply are expected to elevate living standards in the area, thereby contributing to a reduction in poverty rates among the local residents, without resettlement or displacement requirements.

Moreover, the communities possess favorable conditions to evolve into a touristic destination due to its geographical location and rich historical, cultural and ethnographic features. There are substantial foundations for the growth of historical tourism and other forms of tourism, such as agritourism, ecotourism & others. Nevertheless, the community has yet to fully leverage its tourism potential, and the following impediments to sector development warrant consideration:

(a) Absence of a proficient online platform for effectively promoting Artik, an inbound tourism agency within the community, and the lack of maps available in foreign languages.

(b) Insufficient infrastructures, including traditional-style guesthouses, walking paths, and geological and ethnographic museums.

(c) Despite the abundance of architectural monuments in the community, the absence of specialized guides hinders the community's recognition both within the republic and beyond.

To guarantee the future stability of the Artik reservoir's operation, it is crucial to conduct ongoing social studies throughout the construction stage and a specific period after operation. This involves collecting and analyzing data on the anthropogenic load & the impact it has for the economic and industrial wellbeing of the community (whether it continues to be positive or negative and to what scale). Simultaneously, it is imperative to conduct comprehensive qualitative surveys to assess the attitudes and opinions of key representatives & focus groups within the affected community. In summary, it can be concluded that the reconstructed reservoir will enhance the recreational amenities in the region and has the potential to foster the growth of tourism in addition to enhancing the living standards of the community residents at large.

### **References**

1. Armenian Water Project Institute CJSC «Technical and economic feasibility study for the construction of new irrigation reservoirs», Book 2,3.
2. BSC - Business Support Center Report, 2017 «Baseline study of Artik region of Shirak marz, RA».
3. Data from RA Police Passport and Visa Department of the Republic of Armenia, 2022.
4. Data from Armenian Red Book on Animals & Plants, 2010 .
5. Folke, C. Resilience: The emergence of a perspective for socio-ecological systems analyses. *Global Environmental Change* 16, 2006, pp. 253-267.

6. Five-year development plans of Artik community (2017-2022, 2022-2026).
7. Henri Boyé and Michel de Vivo, «The environmental and social acceptability of Dams», Field Actions Science Reports, 2016, Special Issue 14, pp. 1-5.
8. The decisions of the Council of Elders of Artik Community of Shirak Marz, RA. 2022
9. RA Government Decision No. 1270 of September 9, 2004 «On approving the state list of immovable monuments of history and culture of Shirak region».
10. Data from RA Hydrometeorology and Monitoring Center on Artik meteorological station, 2022, <https://www.armmonitoring.am>
11. Official website of Artik community ([www.artik.am](http://www.artik.am))
12. Official website of Shirak regional administration (<http://shirak.mtad.am/>)

### References

1. «Հայջրնախագիծ ինստիտուտ» ՓԲԸ Ոռոգման նոր ջրամբարների կառուցման նպատակով տեխնիկական և տնտեսական հիմնավորվածության ուսումնասիրություն (գիրք 2,3):
2. ՀՀ Շիրակի մարզի Արթիկ տարածաշրջանի ելակետային ուսումնասիրություն: Բի Էս Սի» Բիզնեսի աջակցման կենտրոնի հաշվետվություն, 2017թ.:
3. ՀՀ Ոստիկանության Անձնագրային և վիզաների վարչության տվյալներ, 2022թ.:
4. ՀՀ Կենդանիների և Բույսերի Կարմիր գիրք, 2010թ.:
5. Folke, C. Resilience: The emergence of a perspective for socio-ecological systems analyses. Global Environmental Change 16, 2006, pp. 253-267.
6. Արթիկ համայնքի հնգամյա զարգացման պլաններ (2017 -2022, 2022-2026թթ.)
7. Henri Boyé and Michel de Vivo, «The environmental and social acceptability of dams», Field Actions Science Reports, 2016, Special Issue 14, pp. 1-5.
8. ՀՀ Շիրակի մարզի Արթիկ համայնքի ավագանու 2022թ. որոշումներ:
9. ՀՀ Կառավարության 9 սեպտեմբերի 2004 թվականի N 1270-Ն որոշում Շիրակի մարզի պատմության և մշակույթի անշարժ հուշարձանների պետական ցուցակը հաստատելու մասին
10. ՀՀ ՇՄՆ «Հիդրոոդերետութաբանության և մոնիթորինգի կենտրոն» ՊՈԱԿ-ի տվյալներ, 2022թ. <https://www.armmonitoring.am>
11. ՀՀ Շիրակի մարզի Արթիկ խոշորացված համայնքի պաշտոնական վեբկայք [www.artik.am](http://www.artik.am)
12. ՀՀ Շիրակի մարզի պաշտոնական վեբկայք <http://shirak.mtad.am/>

### ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅԱՆ ՇԻՐԱԿԻ ՄԱՐԶԻ ԱՐԹԻԿԻ ՋՐԱՄԲԱՐԻ ՎԵՐԱԿԱՌՈՒՑՄԱՆ ԾՐԱԳՐԻ ԲՆԱՊԱՀՊԱՆԱԿԱՆ ԵՎ ՍՈՑԻԱԼԱԿԱՆ ՉԱՓԱՆԻՇՆԵՐԻ ԿԱՐԵՎՈՐՈՒԹՅԱՆ ԳՆԱՀԱՏՈՒՄԸ

Մկրտչյան Ա.Ռ., Բաբայան Ա.Ռ., Մարգարյան Ա.Յա., Մկրտչյան Ս.Հ.

Ակադեմիկոս Ի.Վ. Եղիազարովի անվան Ջրային հիմնահարցերի և հիդրոտեխնիկայի ինստիտուտ

Արթիկի ջրամբարը գտնվում է ՀՀ Շիրակի մարզում՝ Կարանգու գետի ավազանում, որի վերակառուցման նախագծանախահաշվային աշխատանքները

մեկնարկել են 2023թ.-ին: Այս նախաձեռնությունը ղեկավարվում է Ակադեմիկոս Ի.Վ. Եղիազարովի անվան Ջրային հիմնահարցերի և հիդրոտեխնիկայի ինստիտուտն ու Շուշիի տեխնոլոգիական համալսարան հիմնադրամը՝ ՀՀ ՏԿԵՆ Ջրային կոմիտեի պատվերով: Գյուղատնտեսական նշանակության հողերի ոռոգման համար անհրաժեշտ ջրամբարն առաջին անգամ է վերակառուցման ենթարկվում 1994թ. պատվարի փլուզումից հետո նպատակ ունենալով ապահովել Արթիկ խոշորացված բնակավայրի թվով 5 ազդակիր համայնքների Նոր Կյանք, Փանիկ, Վարդաքար, Անուշավան և Մեղրաշեն, ոռոգելի գյուղատնտեսության զարգացումը: Արթիկ խոշորացված բնակավայրի բոլոր համայնքները հիմնականում ներգրավված են գյուղատնտեսության մեջ, սակայն ջրի սակավության և անհասանելիության պատճառով համայնքում գյուղատնտեսական գործունեությունից ստացվող եկամուտը մեծ չէ, իսկ աշխատանքային միգրացիան տարեցտարի աճում է:

Տարածաշրջանը հարուստ է նաև ՀՀ Կարմիր Գրքում գրանցված բուսական և կենդանական աշխարհի ներկայացուցիչներով և պատմամշակութային հուշարձաններով, ինչը հնարավորություն է տալիս համայնքում զարգացնել նաև զբոսաշրջության տարբեր ձևեր: Հողվածում ընդգծվում է ծրագրի շրջանակներում բնապահպանական և սոցիալական չափանիշների կիրառման կարևորությունը՝ հիմնվելով կատարված բնապահպանական և սոցիալ-տնտեսական վերլուծությունների և տվյալների վրա: Կարևորվում է կայուն բնապահպանական և սոցիալական հետազոտությունների դերը նախագծի իրականացման բոլոր փուլերում: Առաջնային նպատակն է գնահատել Արթիկի ջրամբարի վերակառուցման ծրագրի հետ կապված ակնկալվող օգուտներն ու ռիսկերը՝ հատուկ ուշադրություն դարձնելով դրա բնապահպանական և սոցիալական բաղադրիչներին՝ ապագայում համայնքի կայուն զարգացումն ապահովելու նպատակով:

**Բանալի բաներ.** ջրամբար, պատվար, ազդեցության գնահատում, ազդակիր համայնք, շահառուներ, սոցիալ-տնտեսական պայմաններ

## ОЦЕНКА ЗНАЧИМОСТИ ЭКОЛОГИЧЕСКИХ И СОЦИАЛЬНЫХ СТАНДАРТОВ ДЛЯ ПРОЕКТА РЕКОНСТРУКЦИИ АРТИКСКОГО ВОДОХРАНИЛИЩА В ШИРАКСКОЙ ОБЛАСТИ АРМЕНИИ

**Մկրտչյան Ա.Ր., Բաբայան Ա.Ր., Մարգարյան Ա.Կ., Մկրտչյան Ս.Գ.**

*Институт водных проблем и гидротехники имени академика И.В. Егиазарова*

Артикское водохранилище, расположенное в Ширакском районе в бассейне реки Карангу, планируется реконструировать начиная с 2023 года. Эту инициативу возглавляет консорциум, в состав которого входят Институт водных проблем и гидротехники имени академика И.В. Егиазарова и Фондом Шушинского технологического университета по заказу Водного комитета РА.

Водоохранилище, необходимое для орошения сельскохозяйственных земель, будет впервые реконструировано после после обрушения плотины в 1994г., с целью

обеспечения развития орошаемого земледелия в 5 пострадавших населенных пунктах укрупненного поселения Артик: Нор Кянк, Паник, Вардакар, Анушаван и Меграшен. Все общины расширенного поселения Артик в основном занимаются сельским хозяйством, но из-за дефицита и недоступности воды доходы от сельскохозяйственной деятельности в общине невелики, а трудовая миграция увеличивается с каждым годом.

Регион также богат представителями флоры и фауны, занесенными в Красную книгу РА, а также памятниками истории и культуры, что дает возможность развивать в общине различные виды туризма.

В статье подчеркивается важность соблюдения экологических и социальных стандартов в рамках проекта, а также делается попытка внести ценную информацию в продолжающийся дискурс вокруг проекта, подчеркивая решающую роль устойчивых экологических и социальных исследований на протяжении всего его развития. Основная цель – оценить ожидаемые выгоды и риски, связанные с проектом реконструкции Артикского водохранилища, уделяя особое внимание его экологическим и социальным аспектам, стремясь в конечном итоге к сбалансированному и устойчивому результату.

**Ключевые слова:** водохранилище, плотина, оценка воздействия на окружающую среду, социальные условия, община, заинтересованные стороны.

Submitted on 18.01.2023

Sent for review on 26.01.2023

Guaranteed for printing on 01.12.2023