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Post-Soviet Infrastructure: Potable Water and Sanitation Struggles in Armenia and Azerbaijan

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Abstract

This article examines the lack of access to clean water and adequate sanitation in Armenia and Azerbaijan, as both countries struggle to establish stable post-Soviet infrastructure systems. This topic is both important and relevant to explore, as the Nagorno-Karabakh conflict continues to permeate between the two countries and military action from that conflict has degraded or destroyed already crumbling infrastructure. Rural communities in Armenia, specifically schools, contend with water shortages and a lack of adequate sewage systems, with no substantial financial resources or government support to remedy these problems. In Azerbaijan, the water supply system is more robust, yet still faces challenges as facilities built during Soviet rule start to age. This article analyzes post-Soviet sanitation and water infrastructure in Armenia and Azerbaijan from the 1990s to the present day and seeks to show how both countries have addressed these issues amidst ongoing ethnic and territorial conflicts. Although both countries may have been outfitted with similar infrastructure initially, their foreign alliances and access to international aid today could decide how they maintain their infrastructure moving forward.

I. Introduction

As of 2025, more than 82 million people in Central and Western Asia struggled with water insecurity.[1] This water insecurity has cascading effects that can impact on the health of a community and reflect negatively upon larger infrastructure systems. Lack of access to clean water and sanitation often goes ignored in countries like Armenia and Azerbaijan, which both border the shrinking Kura-Araks Basin. Both countries have had to redefine their infrastructure and political systems since separating from the Soviet Union and engaging in an ethnic conflict.

This article explores and compares the water and sanitation systems of each country and what these nations have done to try and improve their water infrastructure, both in a water policy-based sense and in an ethical and human rights focused sense. By analyzing previous scholarly work, the main facts and some ethical lenses, this article intends to explore and answer the question of why there is a disparity in water access between the two countries and how they can move forward to

[1] Atlantic Council (2025).

improving their water infrastructure systems, particularly as the Kura-Araks basin continues to diminish as a water source.

Following this introduction, the article explores different scholarly opinions and research on the issue in a literature review before moving onto a third section which examines the socioeconomic background of each country. The fourth section analyzes the water and sanitation services in Armenia and Azerbaijan and explains why access differs between the two countries. The fifth section applies an ethical and human rights-based lens to the issue by examining how ethical approaches apply to the water policy programs each country has launched. The article ends with a concluding section that summarizes the article's contents and asks what can be done moving forward.

II. Literature Review

Substantial research has been done on the lack of safe water and sanitation in Armenia and Azerbaijan and the causes for the differences in infrastructure between these two countries due to long standing ethnic conflicts and international ties. Poghosyan et al. (2023) and Jafari Berenji and Voss (2021) cover Armenia's water systems, while Puri (2009) focuses specifically on Azerbaijan. In addition to these country-specific publications, Campana, Vener and Lee (2013), Ewing (2012), and Hoffman (2006) trace the roots of the water disparities and conflict between the two neighboring countries or the whole Central Asian region.

- Poghosyan et al. (2023) examines studies conducted to measure the number of surfactants, which are used in product production and can have negative effects on human health in low concentrations, in the water in Armenia. The article concludes that Armenia has an abnormally high level of surfactants in their drinking water, and this is due to lack of sufficient water treatment facilities, must of which have dated technology and crumbling infrastructure. The study researchers conducted found that there were increased skin diseases and diseases in the digestive system for Armenians who were supplied drinking water from the Kotayk province. The article notes that groundwater supplied to customers in Armenia is only treated with chlorine, which does not remove the presence of surfactants.
- Jafari Berenji and Voss (2021) conducted a vulnerability report focusing on the effects and severity of the COVID-19 pandemic in Armenia. The report dissects different systems in Armenia that may have allowed COVID-19 to spread faster, and it finds that only 13 percent of the population could access drinking water from an improved and renovated drinking source. The report finds that there are not notable differences in this access between rural and urban areas in Armenia. The report also notes that single households across Armenia do not have access to basic sanitation facilities, and the facilities that are present are not equipped with modern sanitary equipment.
- Puri (2009) analyzed the water infrastructure system of 51 towns in Azerbaijan and found that after separating from the Soviet Union Azerbaijan joined post-Soviet countries in setting higher water supply standards. The article finds that water supply systems were prioritized before sanitation, causing long term challenges with providing adequate sanitation. The article finds that if Azerbaijan continues with its original water sanitation plans the country will not be able to adequately keep up with processing raw water and will need to update deteriorating distribution networks. Instead, the article

suggests that Azerbaijan and other former Soviet countries adopt a "modest-investment-rapid implementation" model to achieve its water sanitation goals.

- Campana, Vener and Lee (2013) investigates the political aspects of the Kura-Araks Basin, which supplies water to both Armenia and Azerbaijan. The article analyzes the impact of the South Caucasus River Monitoring Project, which ended in 2009, and how this collaboration between Georgia, Armenia, and Azerbaijan affected their respective water infrastructure. The article finds that despite international collaboration, the basin remains highly polluted due primarily to the lack of treatment for urban wastewater in all three countries. The article concludes that while Armenia receives enough water from the basin, they do not have the adequate infrastructure to treat it, while Azerbaijan does not have enough access to water in general.
- Ewing (2012) focuses their research on the Kura-Araks Basin and the differences in water infrastructure between the countries that border it. The article finds that Azerbaijan is facing a compounded loss of water due to outdated irrigation systems, while Armenia faces challenges in treating the ample groundwater it has. The article also found that since separating from the Soviet Union, both countries have struggled to update their sanitation infrastructure since 1992, and facilities have been found to be in disrepair. The impact of the faulty facilities has been the substantial discharge of polluted water into the shared basin.
- Hoffman (2006) takes an ethical and human rights-based approach to the water infrastructure struggles in Eastern Europe and Central Asia as a whole. The article finds that the most prevalent childhood deaths from poor water come from Eastern Europe and Central Asia, which includes Azerbaijan and Armenia. Through a convention with over 40 countries on the right to water, the article concludes that although Armenia does use a monitoring system to implement more equitable access to water, the quality of municipal water has still deteriorated due to failing sanitation networks.

III. Socioeconomic Background

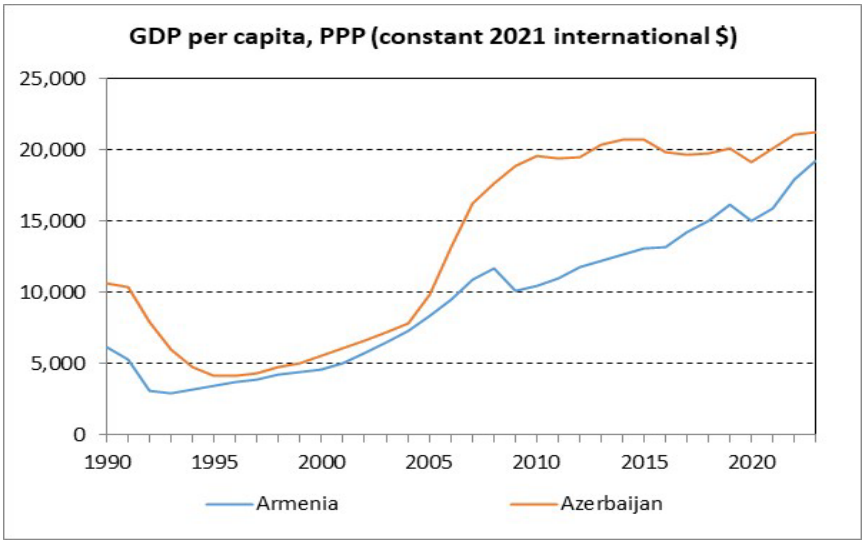
Although Azerbaijan and Armenia are situated in a similar geographic region and surround the Kura-Araks basin, they have experienced ethnic and economic strife causing socioeconomic differences to foment between the two. Three useful indicators to illustrate these differences are purchasing power parity (PPP)-adjusted Gross Domestic Product (GDP) per capita, life expectancy and literacy. These measurements of socioeconomic background shed some initial light on why and how Armenia and Azerbaijan are at differing points in their development of water sanitation, distribution and filtering infrastructure.

As shown in Figure 1, both countries suffered drastic losses in their GDP per capita after the collapse of the Soviet Union in 1991, and the intensification of the Nagorno-Karabakh ethnic conflict, which involved the attempted military removal of ethnic Armenians from the Nagorno-Karabakh region in Azerbaijan, to which the Armenians responded by launching attacks to capture the region back.[2] Armenia and Azerbaijan had similar GDP per capita levels during the 1990s and early 2000s. Azerbaijan's GDP per capita rose then rose sharply from $7,818 in 2004 to 19,621 in 2010, at which level it broadly remained until 2021. Armenia's GDP per capita grew less

[2] Council on Foreign Relations (2025).

drastically but overall, more consistently since 1993, excluding two sharp declines in 2009 and 2020. As of 2023, Armenia's GDP per capita (PPP-adjusted, in constant 2021 international $) stood at $19,230, while Azerbaijan's was $21,262.

Figure 1: PPP-adjusted GDP per capita (constant 2021 international $), 1990–2023



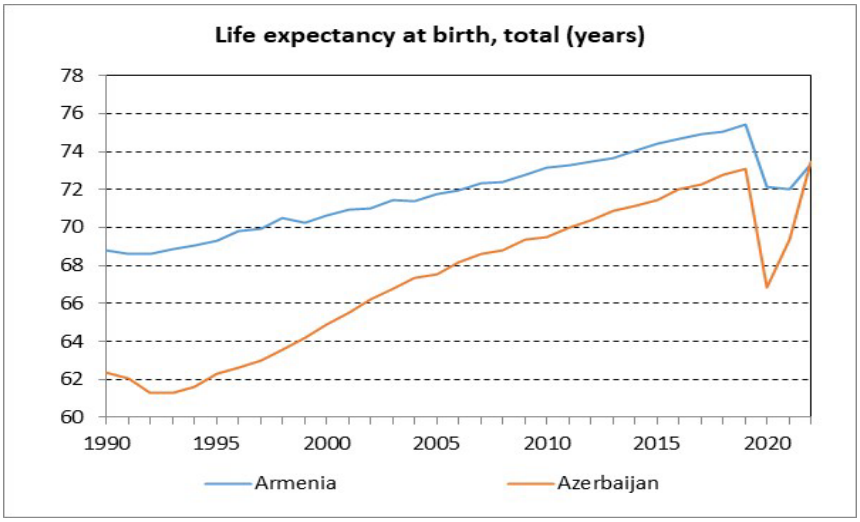
Source: Created by author based on World Bank (2025a).

In 2005 a split between the two countries GDP per capita begins to occur, as Azerbaijan's GDP per capita begins to grow rapidly and outpace Armenia's. This exponential growth is due to the large-scale oil and gas exports that Azerbaijan was sending to the rest of the world, as the government invested heavily in advanced oil and gas extraction technologies.[3] Although Armenia also saw some growth in this period, mainly due to agricultural investment and production, Armenia was still heavily scarred by the Nagorno-Karabakh conflict, and hence, struggled to keep up with Azerbaijan's growth. Although these countries are situated next to one another, Azerbaijan has a higher amount of natural resources such as oil and gas that it can export with higher profits than any kind of agricultural good that Armenia produces. As of 2023, Armenia has made significant strides in catching up to Azerbaijan's economic growth but still lags behind after both countries experienced a sharp drop in GDP due to the COVID-19 pandemic.

As shown in Figure 2, life expectancy in both Armenia and Azerbaijan is relatively high considering their status as developing countries. Unlike GDP per capita though, Armenia slightly outranks Azerbaijan in terms of life expectancy. Armenia spends more of its GDP on healthcare than any other country in the surrounding area, explaining why it has a slightly higher life expectancy than Azerbaijan.[4] Both countries had a stable life expectancy through the Nagorno-Karabakh conflict, showing that the scale of the conflict in comparison to the total population of both nations was relatively low, as they seemed to not have experienced high enough losses of life to lower their general life expectancy. However, both countries have a dip in their life expectancy during the COVID-19 pandemic, although Azerbaijan's drop is slightly sharper than Armenia's.

[3] International Energy Agency (2023).
[4] Poghosyan et al. (2023).

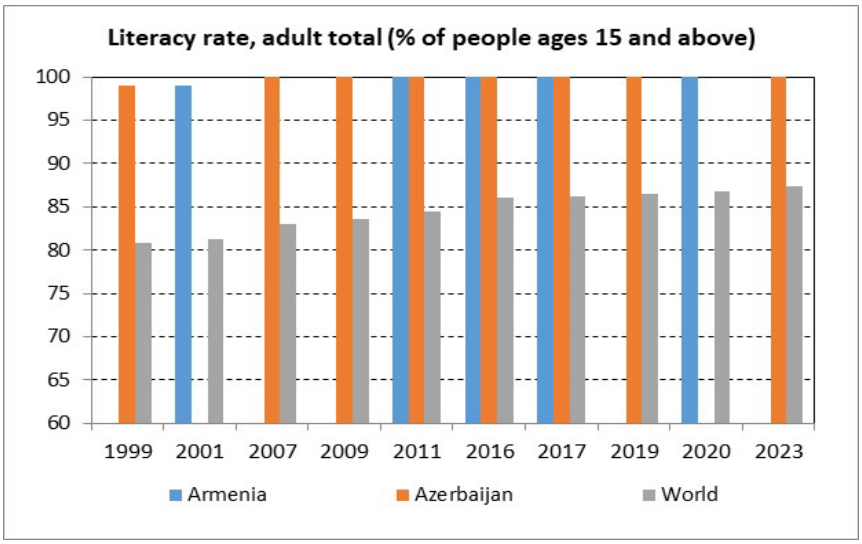
Figure 2: Life Expectancy at Birth (for women and men, in years), 1990–2022



Source: Created by author based on World Bank (2025a).

Among the three main indicators for socioeconomic development, Armenia and Azerbaijan are the most similar in terms of overall adult literacy rates. Although there are several years with missing data, Figure 3 shows that for the years such data is available, both countries have consistently maintained an adult literacy rate of 100 percent, except in 1999 and 2001, when adult literacy rate stood at 99 percent for Azerbaijan and Armenia, respectively. As also shown in Figure 3, both countries are consistently and considerably above the world average literacy, which increased from 80.8 percent in 1999 to 87.4 percent in 2023.

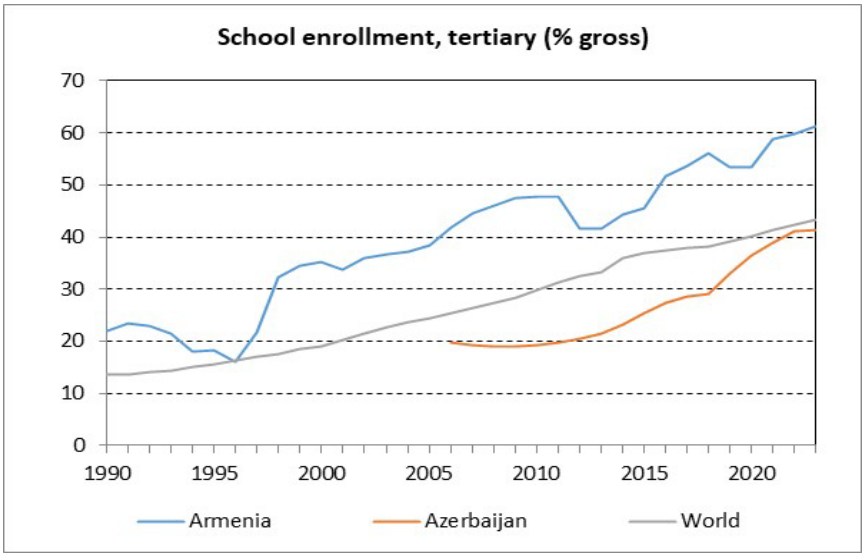
Figure 3: Adult Literacy Rates in Armenia and Azerbaijan, all years available



Source: Created by author based on World Bank (2025a).

However, based on the World Bank's (2025b) Human Capital Index (HCI), which ranges between a minimum of 0.29 for the Central African Republic and a maximum of 0.88 for Singapore, both countries are, with an HCI of 0.58, only slightly above the world average HCI of 0.56. Looking at gross tertiary school enrollment, shown in Figure 4, we can see that with exception of one year (1996), Armenia always had a higher gross tertiary school enrollment than the world average, while Azerbaijan always was below the world average. Based on gross tertiary school enrollment, Armenia has a significantly higher educated population than Azerbaijan.

Figure 4: Gross Tertiary School Enrollment (percent), 1990–2022



Source: Created by author based on World Bank (2025a).

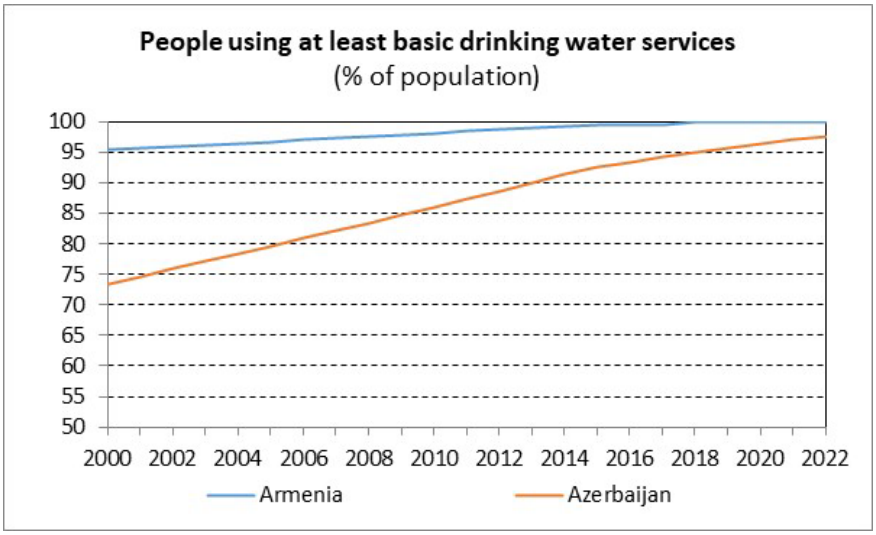
IV. Analysis of Facts on Access to Safe Drinking Water and Sanitation

This section is divided into two subsections; subsection IV.1 compares access to safe drinking water overtime between Armenia and Azerbaijan, while subsection IV.2 examines the access to sanitation facilities in the two countries.

IV.1. Access to Safe Drinking Water

One of the most basic and necessary indicators of water infrastructure analysis is the access of the population to basic water services. Both Armenia and Azerbaijan hold relatively high access to basic services, but this access has changed overtime as seen in Figure 5. In the early 2000s Azerbaijan was behind Armenia in terms of access to basic drinking water, with 77 percent of the population able to access such water, while Armenia had a percentage of 98 percent. Although there is no World Bank Data for both countries' access to drinking water services prior to the 2000s it can be assumed that both countries increased their ability to provide such services after the Nagorno-Karabakh conflict partially ended in a ceasefire in the late 1990s, allowing for both countries to rebuild their infrastructure, population, and GDP. Since the conflict technically occurred in Azerbaijan's borders, that can explain why Azerbaijan has struggled to provide its citizens with basic drinking water services more so than Armenia.

Figure 5: Access to Basic Drinking Water Services (percent of population), 2000–2022



Source: Created by author based on World Bank (2025a).

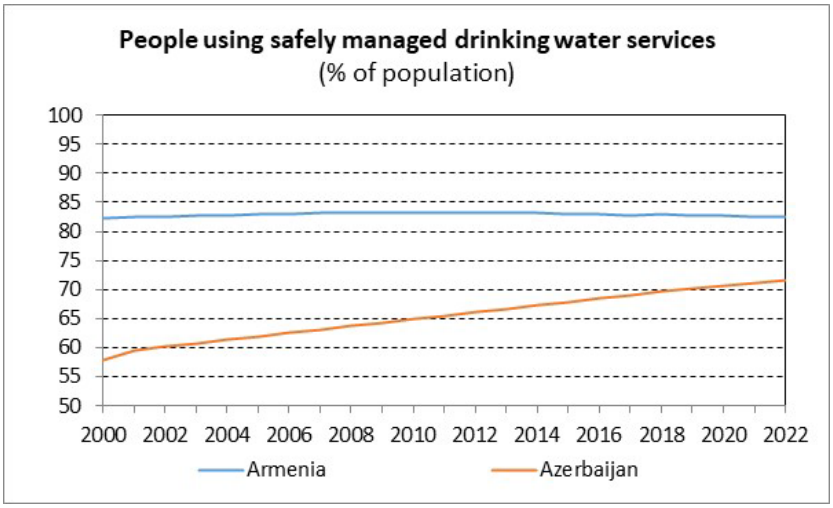
Additionally, due to Azerbaijan's arid climate and location in the Kura-Araks Basin, they have considerably less access to drinking water than Armenia, causing disparities between rural and urban populations in their access to water, which is becomingly increasingly scare as the planet warms.[5] Following Azerbaijan's trend, it can be seen that they have gradually increased their population's access to basic water services overtime with a slight leveling off in 2015, when the country reached 85 percent total access to basic drinking water. Overtime though Azerbaijan has caught up with Armenia and now both countries, as of 2022, supply almost their entire population with drinking water services at 100 percent for Armenia and 97.6 percent for Azerbaijan.

Armenia and Azerbaijan tend to follow a similar trend when it comes to access to water, but a more specific lens can be applied to the access of safely managed drinking water which can be defined as drinking water that has been processed in a facility before being guided through household or public pipelines. As seen in Figure 6, Armenia starts off with relatively high levels of access to drinking water, as 82.4 percent of the population had access to safely managed drinking water as of the year 2000. In contrast, in Azerbaijan only 57.7 percent of the population had access to safely managed drinking water in 2000. It is interesting to point out that Azerbaijan had a lower percentage of the population having access to safely managed drinking water despite Azerbaijan having a significant higher GDP per capita than Armenia in 2000.

One factor that Figure 6 does not consider is the high level of surfactants in Armenia's drinking water.[6] These surfactants, which come from cleaning supplies and manufactured chemicals, are not removed by Armenia's current cleaning process and have been shown to cause skin and lung irritation amongst those consuming high amounts of water. In any case, as shown in Figure 6, Azerbaijan's access to safely managed water has increased by 13.9 percentage point from 2000 to 2022, reflecting improvements in water infrastructure that came in tandem with the oil extraction and refinement boom of the early 2000s.

[5] Campana, Vener and Lee (2013).
[6] Poghosyan et al. (2023).

Figure 6: Access to Safely Managed Drinking Water Services (percent of population), 2000–2020



Source: Created by author based on World Bank (2025a).

Although Azerbaijan has not fully caught up to Armenia in terms of access to safely managed water services, it is trending upwards, while Armenia's access to these services overall remained at the same level in 2022 (82.4 percent) as it was in 2000 (82.4 percent), with a slightly declining trend during the last decade. As post-Soviet water infrastructure in Armenia continues to crumble, it could be plausible to assume that access to safe drinking water in the nation may continue to decrease unless they focus more on rebuilding the crumbling water infrastructure. Currently though, based on the data that is available, Armenia's overall population has far greater access to safely managed drinking water services than Azerbaijan.

IV.2. Access to Sanitation Services

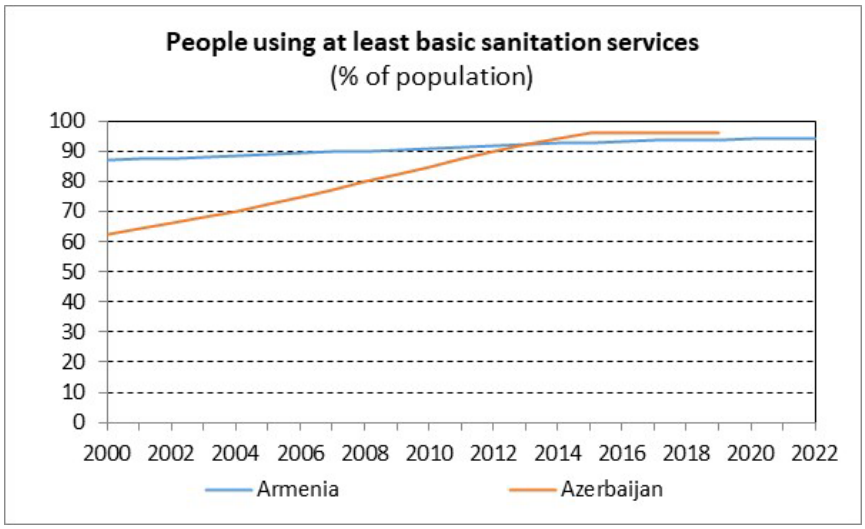
While access to water, both basic and safely managed, is relatively high for both Armenia and Azerbaijan, when it comes to sanitation both countries struggle and there is also a clear difference in access to sanitation between the two countries. Figure 7 shows how Azerbaijan has outpaced Armenia in the percent of its population with access to at least basic sanitation services by 2013. Basic sanitation services are defined as those that are not shared with other homes and have at least some kind of sewage system.

In 2000, Armenia started off with about 87.0 percent of their population having access to at least basic sanitation services. Over the subsequent two decades, access has increased only marginally in Armenia, reaching 94.0 percent in 2022. In contrast, Azerbaijan started the 2000s with only 62.3 percent of their population having access to at least basic sanitation services. This can be explained partially due to the infrastructure losses Azerbaijan suffered during to the Nagorno-Karabakh conflict.[7] But overtime, Azerbaijan has significantly improved their basic sanitation services, increasing access by almost 20 percentage points, reaching 96.1 percent in 2019, which is the last year such data is available for Azerbaijan. Hence, the percent of Azerbaijan's population with

[7] Ewing (2012).

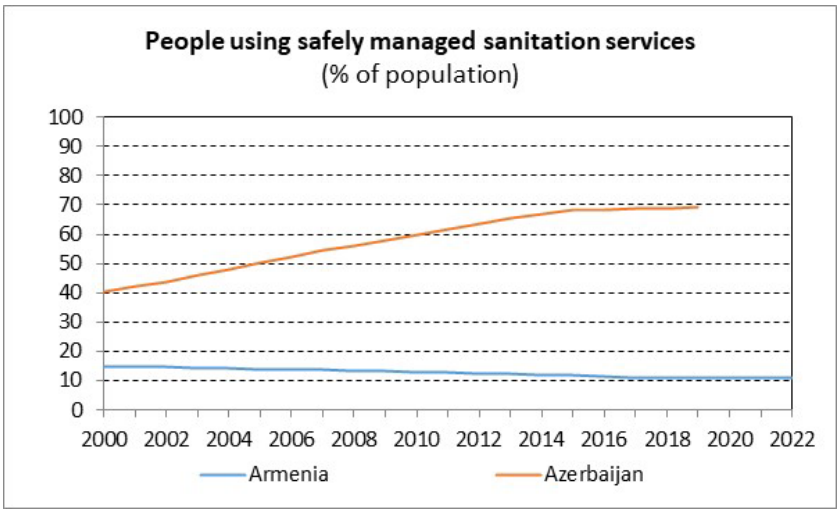
access to at least basic sanitation services is about 2 percentage points higher than that of Armenia's.

Figure 7: People Using Basic Sanitation Services (percent), 2000–2022



Source: Created by author based on World Bank (2025a).

Figure 8: People Using Safely Managed Sanitation Services (percent), 2000–2022



Source: Created by author based on World Bank (2025a).

The divide between Armenia and Azerbaijan is even higher when looking at safely managed sanitation services, which includes flushable toilets, septic systems, and piped sewer systems. As Figure 8 shows, Armenia continues to have a large gap in their nation's access to safely managed sanitation services compared Azerbaijan. In more details, Figure 8 shows that in 2000, Armenia started out with 14.8 percent of their population having access to safe sanitation systems, while Azerbaijan already had 40.4 percent of their population able to access the same services. Overtime, the gap between the two countries continued to grow as Armenia's sanitation infrastructure started

to degrade. Between 2000 and 2022, Armenia experienced a 4.1 percentage point decrease in their population's access to safe sanitation, while Azerbaijan experienced a 28.6 percentage point increase from 2000 to 2019, clearly showing a stark difference in the approaches to sanitation infrastructure that both countries took. One factor that can explain this difference is Azerbaijan's implementation of a "rapid-implementation plan" that updated its sanitation facilities from older Soviet-era models in the early to mid-2000s.[8] Azerbaijan used international funding to improve its sanitation services and found modern ways to reuse its significantly smaller portion of water compared to Armenia.

The decreasing access to safe sanitation has had deadly consequences for Armenia. During the COVID-19 pandemic, Armenia's failing sanitation networks allowed the virus to spread rapidly and resulted in a higher number of cases and deaths in Armenia than in surrounding countries, including Azerbaijan.[9] Many single households in Armenia are not equipped with proper sanitation and sewage services, so civilians were forced to use public facilities where they came in contact with those infected, making social distancing and quarantine a rarity even during the height of the pandemic. The difference in Armenia's sanitation access versus its drinking water access showcases why it is paramount to examine multiple aspects of water infrastructure and equality, as oftentimes one data set does not tell the whole story.

V. Ethical Analysis of Water and Sanitation Access

This section is split into two subsections. The first subsection examines water and sanitation programs in Armenia and Azerbaijan while the second subsection explores the ethical lenses of these programs in terms of ensuring equal access to safe drinking water and sanitation for all.

V.1. Ethical Perspectives of Water and Sanitation Programs

Approaches to improving water access and sanitation in both Armenia and Azerbaijan is not necessarily a linear process. As referenced by Sabine Hoffman in European Solidarity for Water Week Review, humans regardless of their social or economic status have a right to both drinking and sanitation-based water, and this right is missing from multiple nations' constitutions in Central and Western Asia and Eastern Europe. The fact that water is both non-substitutional and life-giving makes it an immediately necessary human right that demands to be incorporated into the public policy of every nation, regardless of GDP.[10]

Additionally, Risse (2014) refers to the fact that water is not created or owned by any human entity and therefore belongs to all humans and should be accessible equally. In 2010, these ideas were codified by the United Nations (UN) General Assembly, which declared access to clean water and sanitation a human right. This recognition of water as a human right creates an ethical and moral imperative for countries to implement sufficient and sustainable infrastructure to provide their populations with clean water, although they must enforce these standards on their own because the UN does not have any international enforcement mechanism for such rights.

In Armenia, as shown through the data in Section IV, the implementation of adequate sanitation programs has been lacking in comparison to the implementation of water distribution services. Armenia has implemented a system to monitor its distribution of water supplies in the past 10

[8] Puri (2009).
[9] Jafari Berenji and Voss (2021).
[10] Risse (2014).

years which has helped to decrease the inequality in water access between rural and urban communities.[11] In Armenia the right to water is not concentrated at the national level, but instead at the local level. Hence, this monitoring system has helped to identify where there are gaps in rural villages that may not have the same access to clean water as others. This monitoring system was first put into place as a byproduct of poverty reduction strategies sponsored by the World Bank. These strategies included the granting of international loans from the World Bank to Armenia, with the specific purpose of improving its water and sanitation systems.

Despite international intervention, Armenia still struggles to adequately treat its supply of ground water and cannot afford to properly chlorinate all of its water supplies as the cost of such mechanisms continues to grow. According to a comprehensive review done by the nation's Ministry of Health, Armenia's pipelines are still in poor condition despite international loans, and raw sewage has seeped into sanitation networks causing region-specific, and sometimes nationwide, contamination. Armenia's failure to improve its sanitation and water infrastructure shows that monetary funding alone is not enough to address an issue that is systemic in nature.

In comparison to Armenia, Azerbaijan addressed its water and sanitation crisis through a complete overhaul of its previous water systems. Azerbaijan first conducted a system wide investigation of its current water and sanitation services in the early 2000s.[12] It then conducted a second system wide review and rehabilitation of its water facilities in 2019.[13] Instead of spot treating and monitoring specific parts of their water supply system as Armenia did, Azerbaijan completely overhauled its water and sanitation system from the Soviet era.

To ensure that this reconstruction was sustainable, the Azerbaijan government also appointed a Training and Innovation Center, which provides substantial job training and updated accountability requirements for water treatment centers. According to the World Bank (2020), this approach resulted in 98 percent of the population in the project area gaining access to water 24 hours a day. This $642 million project was funded through two World Bank loans (one concessional loan by the International Development Association in the amount of US$30 million, and one non-concessional loan by the International Bank for Reconstruction and Development in the amount of US$380 million), and a Government of Azerbaijan contribution of about $232 million. [14] This markedly collaborative approach made a difference in efficiency and effectiveness between the Azerbaijan improvement of sanitation systems and the Armenian attempt at improvement.

V.2. Ethical Lenses of Water and Sanitation Programs

Any ethical decision can be approached through six distinct ethical lenses or approaches: the rights, justice, utilitarian, common good, virtue, and care value lenses.[15] The two lenses that are arguably the most relevant lenses for providing access to water and sanitation are the rights lens and the utilitarian lenses. As established previously, since water is an essential human right, the most ethical approach is to protect and secure this right through building and updating infrastructure systems to provide clean water to all. Some scholars have found that a values approach could also be an effective way of going about analyzing and constructing ethics-based water policy. The

[11] Hoffman (2006).
[12] Puri (2009).
[13] World Bank (2020).
[14] World Bank (2020).
[15] Markkula Center for Applied Ethics (2021).

values lens can help to incorporate competing values systems into the way that the government proceeds with decision making, particularly as it applies to water rights and access.[16]

In Armenia's case, the rights lens, which establishes that the most ethical action is the one that protects the rights of the individual, was used to create and define the water distribution monitoring system. The Ministry of Health in Armenia used this lens to justify more village-based monitoring instead of a comprehensive review of nationwide sanitation systems. By seeing water as an individual right as opposed to a public responsibility, Armenia relegated much of the World Bank funding to private rather than government systems, causing a disconnect between intent in approaches and results of the monitoring system. Despite this approach, Armenia does not have water listed as a human right in any national government documentation rendering its approach to infrastructure improvements as hyperlocal and less effective than a complete restructuring and rebuilding of older infrastructure. If only partly adopted, the rights lens is not an effective lens as it gives access to water to only some. This selectivity prevents a nation's government considering it its full responsibility to provide adequate infrastructure to all its citizens.

In comparison to Armenia, Azerbaijan implemented the utilitarian lens, which is defined as the ethical approach of prioritizing the system that produces the most good over harm. This more community-based approach meant that despite the initial cost Azerbaijan's government had to spend to overhaul its entire sanitation and water infrastructure system, this approach ended up providing more good to Azerbaijan's population than harm (in terms of costs).

This framework can also help explain why Azerbaijan, which has shown isolationist tendencies in the past, decided to collaborate heavily with the World Bank to not only fund, but rethink its water and sanitation systems. By prioritizing the public good, Azerbaijan ultimately profited off its initial costs. Although Armenia took the relatively inexpensive route in trying to improve its sanitation systems, Azerbaijan was overall better able to improve and sustain its water and sanitation systems through putting more resources into initially costly projects.

VI. Conclusion

Both Armenia and Azerbaijan have faced challenges to their water infrastructure, including the departure from the Soviet Union and the need to replace depleted facilities from that era. Despite facing similar challenges, the two countries have had vastly different responses and results in their lack of water security. Armenia, with greater access to groundwater than Azerbaijan, has focused on building up their clean drinking water systems, although a high level of surfactants is still present in their water supply. In contrast, Azerbaijan has prioritized water treatment and sanitation plants, resulting in a sharp divide between the two countries with Azerbaijan outpacing Armenia in access to safely managed sanitation services.

Although these nations neighbor one another they have differing approaches to multilateral cooperation, which has also affected their subsequent response to water and sanitation policy. Armenia has been significantly more isolationist than Azerbaijan and relies primarily on its own water resources and programs, accepting outside help only in terms of funding rather than system restructuring. In contrast, Azerbaijan partnered with the World Bank to overhaul its old water system and implement a new one that can better handle droughts and general water insecurity that Azerbaijan has faced in the past. By applying international aid in a localized fashion, Azerbaijan

[16] Groenfeldt and Schmidt (2013).

has seen more progress with its water sanitation systems. Although Azerbaijan's access to water is still below that of Armenia (as was shown in Figure 5), Azerbaijan has made substantial improvements in their overall water and sanitation policy, which is mostly lacking in Armenia.

To make these changes Armenia and Azerbaijan should first consult one another, as working through past ethnic conflicts may help both countries to establish stronger infrastructure as well as relations overall, which could also help in sharing increasingly limited water resources. Secondly, both countries should create and publish systemic infrastructure plans that are shared with both local governments and civilians. These plans should optimize existing infrastructure and contain requirements for analysis of infrastructure for both drinking water and sanitation regularly. By implementing these changes both countries can make more sustainable and ethical progress towards water access for all their citizens.

References

Atlantic Council (2025). Report Launch: Water Insecurity in Central Asia, Atlantic Council, internet resource of February 7, 2025; available at: www.atlanticcouncil.org/event/report-launch-water-insecurity-in-central-asia/#:~:text=Water%20insecurity%20in%20Central%20Asia%20threatens%20more%20than%2082%20million,the%20largely%20arid%20region%20home.

Campana, Michael E.; Berrin Basak Vener; and Baek Soo Lee (2013). Hydrostrategy, Hydropolitics, and Security in the Kura-Araks Basin of the South Caucasus. *Journal of Contemporary Water Research & Education*, Vol. 149, No. 1, pp. 22–32. https://doi.org/10.1111/j.1936-704X.2012.03124.x.

Council on Foreign Relations (2025). Nagorno-Karabakh Conflict. Council on Foreign Relations, Global Conflict Tracker; available at: https://www.cfr.org/global-conflict-tracker/conflict/nagorno-karabakh-conflict.

Ewing, Amy (2010). Water Quality and Public Health Monitoring of Surface Waters in the Kura-Araks River Basin of Armenia, Azerbaijan, and Georgia. University of New Mexico (UNM), UNM Digital Depository; available at: https://digitalrepository.unm.edu/wr_sp/144.

Gahramanova, Aytan (2010). Paradigms of Political Mythologies and Perspectives of Reconciliation in the Case of the Nagorno-Karabakh Conflict. *International Negotiation*, Vol. 15, No. 1, pp. 133–152; available at: https://doi.org/10.1163/157180610X488218.

Groenfeldt, David and Jeremy J. Schmidt (2013). Ethics and Water Governance. *Ecology and Society*, Vol. 18, No. 1, Article 14; available at: https://ecologyandsociety.org/vol18/iss1/art14/.

Hoffmann, Sabine (2006). The Implementation of the Right to Water and Sanitation in Central and Eastern Europe. Strasbourg, France: Solidarité Eau Europe, March 2006; available at: https://awhhe.am/wp-content/uploads/2014/02/Paper-english.pdf.

International Energy Agency (2023). Azerbaijan Energy Profile. Paris, France: International Energy Agency, internet resource of August 2023; available at: https://iea.blob.core.windows.net/assets/0528affc-d2ba-49c9-ac25-17fc4e8724f7/AzerbaijanEnergyProfile_2023.pdf.

Jafari Berenji, Parisa and Martin Voss (2021). Vulnerability Profile Armenia: Assessment of SARS-CoV-2 Pandemic Vulnerabilities. Berlin, Germany: Akademie der Katastrophenforschungsstelle (AKFS) / Academy of the Disaster Research Unit (ADRU), ADRU Report Nr. 5; available at: https://coronasys.a-kfs.de/wp-content/uploads/2021/05/Vulnerability-Profile-Armenia_AKFS-2021_5.pdf.

Markkula Center for Applied Ethics, The (2021). A Framework for Ethical Decision Making. Santa Clara, California: Santa Clara University, The Markkula Center for Applied Ethics, internet resource of November 8, 2021; available at: https://www.scu.edu/ethics/ethicsresources/a-framework-for-ethical-decision-making/.

Poghosyan, Susanna B.; Susanna A. Muradyan; Bavakan G. Khachatryan; Siranush H. Ter-Zaqaryan; Ashot N. Tshantshapanyan; Anna A. Keshishyan; and Natalya S. Tadevosyan (2023). Synthetic Surfactants in Drinking and Surface Waters in Armenia and Apparent Non-association with some Diseases. *Journal of Environmental Science & Health. Part A. Toxic/Hazardous Substances & Environmental Engineering*, Vol. 58, No. 1, pp. 24–30; available at: https://doi.org/10.1080/10934529.2023.2172263.

Puri, Shammy (2009). Rehabilitation of Dilapidated Water Supply & Integration of New Sanitation Services: Lessons from a Sector Analysis in Azerbaijan. Social Science Research Network, internet resource of March 8, 2009; available at: http://dx.doi.org/10.2139/ssrn.1355522.

World Bank (2020). Bringing Safe, Reliable and Sustainable Water Supply and Sanitation to Azerbaijan: Azerbaijan's Second Water Supply and Sanitation Project. Washington, DC: World Bank, Results Brief of October 15, 2020; available at: https://www.worldbank.org/en/results/2020/10/15/bringing-safe-reliable-and-sustainable-water-supply-and-sanitation-to-azerbaijan-azerbaijans-second-water-supply-and-sanitation-project.

World Bank (2025a). *World Development Indicators database* (Washington, DC: The World Bank); as posted on the World Bank website: https://datacatalog.worldbank.org/home.

World Bank (2025b). Human Capital Index. Washington, DC: World Bank, Data 360, internet resource; available at: https://data360.worldbank.org/en/indicator/WB_HCI_HCI?view=trend&average=global.