



CATALOG

Lessons from the Nagorno-Karabakh 2020 Conflict

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Introduction

On 27 September 2020, the dispute between Azerbaijan and Armenia over the Nagorno-Karabakh region (known as Artsakh in Armenia) erupted into full-scale war when Azerbaijan initiated offensive operations. The two countries had faced off against each other since 1994 in defensive positions along a 200km line of contact. Azerbaijan changed that dynamic by overpowering Armenian forces with the use of advanced unmanned aerial systems (UAS) and special operations forces to identify targets along the depth of the Armenian defense for attack by artillery, missiles, and loitering munitions. The Armenians were unprepared and unable to stop Azerbaijani forces. Full-motion video of the fighting recorded the methodical destruction of Armenian forces and used in social media to demoralize the Armenian soldiers and civilian population. The fighting ended on 10 November through a Russian-brokered cease-fire agreement that included the introduction of 2,000 Russian peacekeeping forces into the area. Azerbaijan won a decisive victory, which reclaimed much of the disputed territory it lost in 1994.

Background

Armenia and Azerbaijan are located in the South Caucasus region with different religious and ethnic identities. Armenians are primarily Christian while the Azerbaijanis are Muslim. A major point of contention in the region was the Armenian genocide from 1915 to 1916 that saw the systemic killing and deportation of Armenians by the Turks of the Ottoman Empire during World War I. The exact number is not known but historians have estimated between 800,000 to one million Armenians were killed. ¹The Union of Soviet Socialist Republics (USSR) established Armenia and Azerbaijan as separate republics when they took control of the area in 1922. Nagorno-Karabakh was an ethnic Armenian area recognized by the USSR as an autonomous region within Azerbaijan in 1923. Fighting erupted in 1988 when Soviet influence began to weaken in the region and escalated into a full-blown war in 1991-1994 when Nagorno-Karabakh wished to formally join with Armenia. Russia brokered a cease-fire agreement in 1994 where the Armenians maintained control over much of the contested region and a large area of land that linked it to Armenia. The United States, France, and Russia are co-chairs of the Organization for Security and Cooperation in Europe (OSCE) Minsk Group, which oversees efforts to find a peaceful resolution of conflict.

The Republic of Artsakh was established as a separate government body but is dependent on political, economic, and military relations with Armenia. The opposing forces maintained a heavily fortified tunnel and trench network along a 200km line of contact with regular infractions of the cease-fire agreement. The most violent eruption before November occurred in April 2016 resulting in serious casualties on both sides and a gain of a small amount of territory by Azerbaijan.

The terrain in Nagorno-Karabakh is mountainous with periods of cold, rain, and fog. Average temperatures are 72 degrees Fahrenheit in July and 30 degrees Fahrenheit in January. Severe thunderstorms are common in the spring and summer. Forests cover 36% of the area. The foothills and mid-mountain areas are grassy. Large areas of steep and difficult terrain and a limited road network restrict maneuver by mechanized and armored forces and slows movement on foot. The mountains favor the defense with long lines of sight over the valleys and protection on the reverse slope from observation and direct and indirect fire. The terrain also inhibits the ability to engage targets with tank main guns due to maximum elevation and depression limits.

Armenia has about 45,000 active troops with their equipment primarily from Russia or the Soviet era. Its military expenditures in 2019 were \$673 million USD.² In contrast to Azerbaijan, Armenia's economy is hindered by its land-locked position between two adversarial neighbors and lack of oil and gas revenues. Its only open trade borders are Iran to the south and Georgia in the north. Armenia sees Turkey also as a potential adversary, not only from a historical perspective, but because of the close relationship between Turkey and Azerbaijan.

Azerbaijan maintains a well-equipped active force of 65,000 troops financed through oil and gas revenues. Military expenditures in 2019 were well over that of Armenia at \$1.8 billion USD.³ Its equipment is mostly Russian or from the Soviet era with smaller amounts from Turkey and Israel.⁴ Azerbaijan invested in unmanned aerial vehicles (UAV) from Turkey and Israel with sophisticated sensors, full-motion video, and loitering munitions. Turkish advisors shared their experience from Syria and Libya using UAS and electronic warfare systems. Their main systems are the Turkish Bayraktar TB2, which is a medium-altitude, long-endurance vehicle with an infrared camera, and laser designation modules and the Israeli Skystriker and Harop UAV loitering munitions.

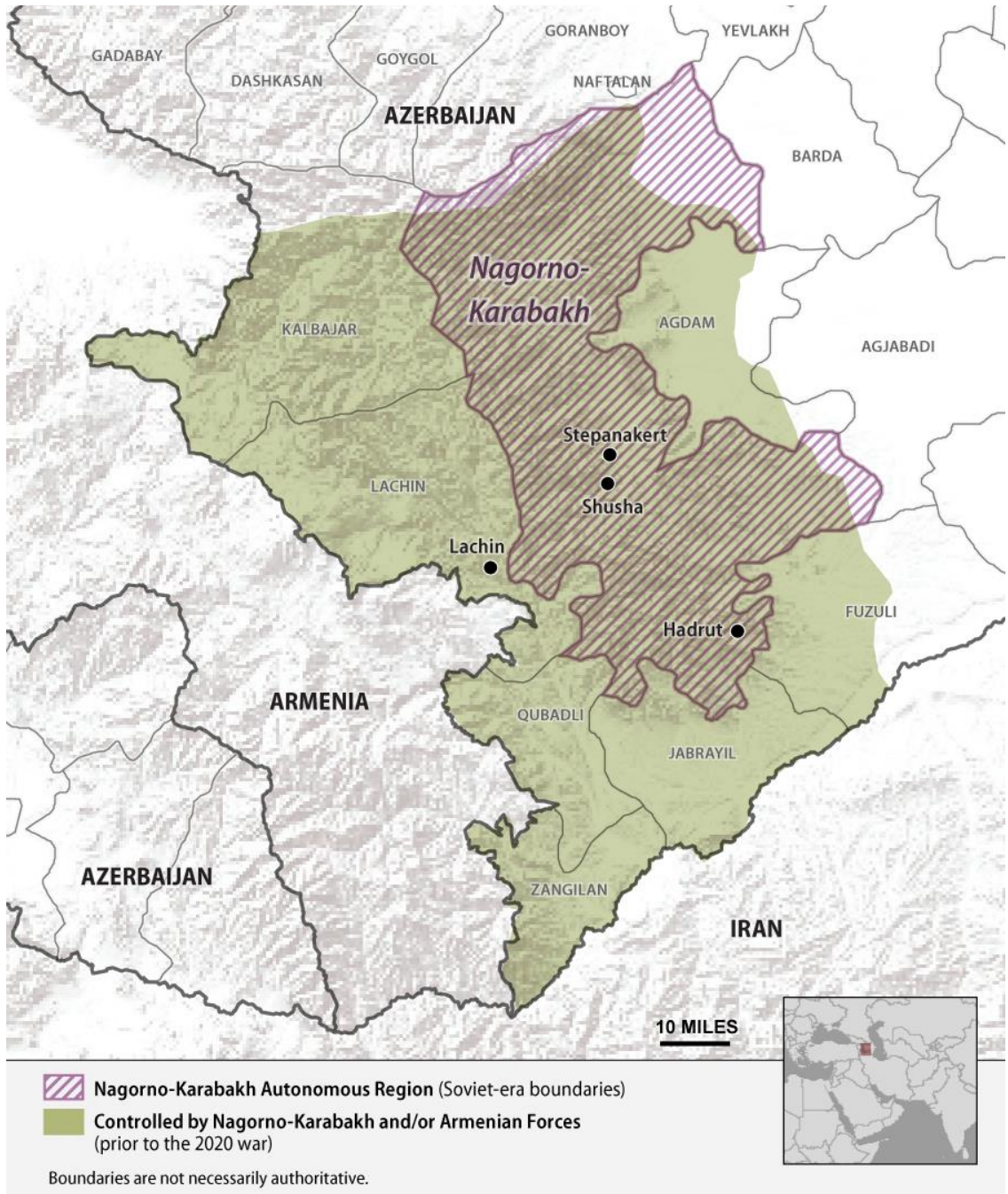


Figure 1. Nagorno Karabakh Conflict Zone (line of control prior to the 2020 war)
 Source: Congressional Research Service, using data from the U.S. Department of State, ESRI, Garmin, and ArcWorld.

Air Campaign

Azerbaijan initiated the fighting in October 2020 by targeting Armenian air defense systems. Remotely piloted Soviet-era AN-2 biplanes flew at low altitudes as decoys to force the Armenians to respond against the perceived threat. This allowed the Bayraktar TB2 UASs flying above the biplanes to target the Armenian radars and missile launchers for engagement by loitering

munitions and indirect fire. The Armenian air defense systems consisted mostly of Soviet-era equipment designed for manned aircraft that could not detect and intercept the TB2s at the higher altitude.⁵ Armenia deployed a limited number of more advanced Buk and Tor-M2MK air defense missile systems that are effective against UAS but did so later in the conflict and were vulnerable to attack themselves. The indigenously produced Armenian UAS are smaller and generally less capable than those used by Azerbaijan. There were reports of the Russian Orlan-10 UAS used in an intelligence, surveillance, and reconnaissance role towards the end of the conflict.⁶ The Armenians used Russian Polye-21 electronic warfare (EW) systems to disrupt the UASs for four days but were subject to attack themselves.⁷

Ground Campaign

The Azerbaijanis established local air superiority within a few days then shifted their attention to tanks, artillery, and personnel throughout the depth of the Armenian defense. This allowed special operations teams to infiltrate behind Armenian lines and seize observation points along the planned route of attack to provide intelligence, target coordinates, and battle damage assessments. Also targeted were lines of communication to slow Armenian reinforcements and supplies reaching the front. Azerbaijan ground forces alternated between conducting deliberate attacks and consolidation on the objective, then preparation for the next advance while fires and EW continued to weaken Armenian forces. The effective use of UAS and SOF with indirect and precision fires minimized contact by maneuver forces until conditions were set for a successful attack on Armenian defensive positions.

Azerbaijani UAS were able to detect Armenian units in camouflaged positions with the use of electro optical and thermal cameras. The Armenians displayed a lack of tactical proficiency with many of the videos showing clusters of vehicles and personnel that were not maneuvering in a tactical manner. Those in defensive positions sometimes lacked camouflage or hardened overhead cover.

The use of UAS by Azerbaijan negated the Armenian advantage of the mountainous terrain concealing forces from observation and indirect fire attack. The Armenian forces hidden by terrain features and along the ground lines of communication were being observed and attacked from above by loitering munitions. Azerbaijani casualties mainly came from mines, anti-tank guided missiles (ATGMs), and indirect fire. The lack of effective air defense against the UAS threat allowed Azerbaijani forces to detect and attack Armenian reserve units moving to reinforce front lines or into counterattack positions.

Information Campaign

Both sides waged a propaganda campaign on social media that showed the destruction of enemy equipment and personnel. Azerbaijan was particularly effective with the daily release of full-motion video showing the effectiveness of the precision weapons. Numerous social media platforms showed vehicles and soldiers in their final moments before disappearing in a fiery explosion. Armenia's efforts were mostly still images of destroyed Azeri equipment and Armenian soldiers on the front lines.

Cease Fire

A cease-fire signed on 9 November 2020 halted the fighting. Both sides agreed to exchange prisoners and the bodies of those killed in action. Azerbaijan would hold onto the areas it had captured in the fighting and Armenia agreed to withdraw from the occupied territories surrounding Nagorno-Karabakh. Russia deployed a contingent of 2,000 soldiers to oversee the peace agreement.

Insights for Unified Land Operations

Azerbaijan effectively used UAS and SOF to locate high-value targets and destroy them with precision weapons and indirect fire. This set the conditions for maneuver forces to penetrate the Armenian defensive line and force the Armenians to retreat. Azerbaijan's investment in modern UAS along with the help of Turkish advisors turned the tide against the Armenians who lacked the training and equipment to counter Azerbaijan's capabilities. There are a number of lessons to take away from the conflict.

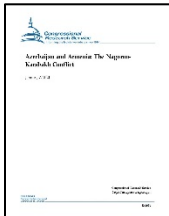
- **Expect adversaries to expand the use of UAS.** The conflict brings to light the proliferation of UAS as a relatively cheap way to flood the battlefield with sensors and precision munitions. The successful use of UAS in Iraq, Afghanistan, Syria, and Libya has prompted an increasing number of states and non-state actors to develop their own or purchase them through the international arms market. A United Nations report revealed that as of 2020 at least 120 nations have acquired military UAS with 40 more looking to purchase them.⁸ In addition, 23 non-state actors have purchased or modified commercial UAS for surveillance and attack capabilities.⁹ Having a UAS fleet offers small- and medium-sized countries the advantages of airpower, advanced sensors, and precision weapons without the cost of purchasing and maintaining manned aircraft. These systems may have the ability to gain short periods of local air superiority against an unprepared force. Expect peer and near-peer competitors to integrate UAS into existing capabilities as part of a manned-unmanned team.
- **Air defense systems must include the ability to detect and defeat a wide variety of UAS.** Air defense systems must share a common air picture with a network of joint and coalition partners layered along the depth of the battlefield. Units should have organic kinetic and non-kinetic capabilities to defend themselves from low-signature UAS and loitering munitions. Consider ground-control stations and launch sites as high-value targets for identification and attack. An active protection system to counter incoming loitering munitions similar to what the Israeli Trophy system does for ATGMs would help protect vehicles from top attack.
- **Master the fundamentals.** Armed forces are vulnerable to detection and attack by modern UAS integrated into a sensor-to-shooter network. Units must be proficient in applying combat power through combined arms operations to be able to survive and fight in the current environment. Camouflage and masking of forces from observation must be routine. Dispersing forces will stretch the enemy's sensor coverage and reduce damage to personnel and equipment. Active and passive measures must be able to disrupt and

jam the sensors to make units more difficult to detect and attack. ¹⁰ Integrate the use of multispectral decoys into operations.

- **Aggressive information operations.** Social media can quickly disseminate information directly to a worldwide audience. Video of weapons effects may go viral and get picked up for use by traditional media. Social media postings should utilize appropriate hash tags and be of sufficient number to maintain interest and build followers. Synchronize social media with other information-related capabilities to gain an advantage over adversaries and counter disinformation.

Articles on the Nagorno-Karabakh 2020 Conflict

Azerbaijan and Armenia: The Nagorno-Karabakh Conflict



Cory Welt, Andrew S. Bowen, Congressional Research Service, 7 January 2021

An overview of the conflict and attempts to find resolution, the role of Turkey and Russian in the fighting, and the U.S. response as a Minsk Group co-chair.

Available at <https://crsreports.congress.gov/product/pdf/R/R46651>

The First War Won Primarily with Unmanned Systems Ten Lessons from the Second Nagorno-Karabakh War



John Antal, 2021

Ten lessons from Azerbaijan's use of Turkish and Israeli UAS, precision fires, and electronic warfare to dominate the fight and the considerations for future conflicts.

Available at <https://johnantal.academia.edu/research#papers>

Death from Above - How Secure Tactical Video Transmission Impacted the Second Nagorno-Karabakh War



John Antal, January 2021

Describes Azerbaijani use of UAS to identify and destroy the Armenian air defense and command and control networks. They then targeted Armenian tanks, artillery and infantry units that were helpless against top attacks by precision guided munitions. Full-motion video captured this successful tactic and was used in the information war to demoralize the Armenian forces and population.

Available at <https://johnantal.academia.edu/research#papers>

What the United States Military Can Learn from the Nagorno-Karabakh War



By Nicole Thomas, LTC Matt Jamison, CAPT(P) Kendall Gamber, and Derek Walton, Small Wars Journal, 4 April 2021

Article published online in the Small Wars Journal that provides a short history of the conflict and description of methods used by Azerbaijan to defeat the Armenian forces. Some general lessons are identified and the implications for the U.S. Department of Defense C-UAS strategy.

Available at <https://smallwarsjournal.com/jrnl/art/what-united-states-military-can-learn-nagorno-karabakh-war>

The Air and Missile War in Nagorno-Karabakh: Lessons for the Future of Strike and Defense



Shaan Shaikh, Center for Strategic and International Studies, 8 December 2020
An overview of Armenian and Azerbaijani missiles, UAS, and rocket systems and their use in the conflict. The lessons identified include the importance of a full-spectrum air defense, dispersion, and using camouflage and masking techniques to hide from airborne sensors.

Available at <https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense>

Hard Fighting in the Caucasus: The Azerbaijani Armed Forces' Combat Performance and Military Strategy in the 2020 Nagorno-Karabakh War, SAM Papers No-18



Dr. Can Kasapoglu, Center for Strategic Research, February 2021

The Center for Strategic Research is a think-tank and a research center within the Ministry of Foreign Affairs of the Republic of Turkey. This paper provides a comprehensive analysis of the history of the Nagorno-Karabakh conflict, the weapons and tactics used by both sides, and key findings on their application in future wars.

Available at <http://sam.gov.tr/pdf/sam-papers/SAM-Papers-No.-18.pdf>

A Look at the Military Lessons of the Nagorno-Karabakh Conflict



Michael Kofman, 14 December 2020

Relatively cheap UAS offers small countries advantages in terms of airpower, sensors, and precision-guided weapons compared to more expensive and resource-intensive manned aviation. The conflict demonstrates the necessity of integrating modern air defense systems in sufficient numbers to counter enemy use of UAS and precision-guided munitions. Past success in fighting Azerbaijan blinded Armenian leaders while their forces suffered from a quantitative and qualitative disadvantage in equipment and tactics.

Available at <https://www.russiamatters.org/analysis/look-military-lessons-nagorno-karabakh-conflict>

U.S. Army TRADOC Mad Scientist Laboratory



The Mad Scientist Laboratory blog hosted by the U.S. Army Training and Doctrine Command G-2 has two posts devoted to the conflict in Nagorno-Karabakh. The posts, excerpts from the OE Watch and published by the Foreign Military Studies Office, provide an overview and links to open source information from Russian, Armenian, Turkish, and Azerbaijani sources.

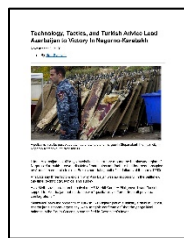
Insights from the Nagorno-Karabakh Conflict in 2020

Available at <https://madsciblog.tradoc.army.mil/303-insights-from-the-nagorno-karabakh-conflict-in-2020/>

Insights from the Nagorno-Karabakh Conflict in 2020 (Part II)

Available at <https://madsciblog.tradoc.army.mil/316-insights-from-the-nagorno-karabakh-conflict-in-2020-part-ii/>

Technology, Tactics, and Turkish Advice Lead Azerbaijan to Victory in Nagorno-Karabakh



Ron Synovitz, Radio Free Europe/Radio Liberty, accessed 14 April 2021

The author highlights the tactics, weapons systems, and Turkish assistance used by Azerbaijan to overwhelm Armenian forces. Turkey successfully used similar weapons and tactics against Russian air defense systems in Libya and Syria. Azerbaijan also used commando teams to infiltrate behind Armenian lines to identify and designate targets along the path of advance.

Available at <https://www.rferl.org/a/technology-tactics-and-turkish-advice-lead-azerbaijan-to-victory-in-nagorno-karabakh/30949158.html>

The Key to Armenia's Tank Losses: The Sensors, Not the Shooters

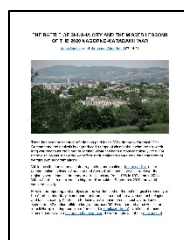


Jack Watling, RUSI Defence Systems, 6 October 2020

This article highlights the importance of sensors on the battlefield and the necessity to mask forces from the wide-range of thermal and infrared imaging systems. Formations must employ short-range air defenses, deception, and electronic warfare systems to degrade the enemy's sensors and allow friendly forces to maneuver.

Available at <https://rusi.org/publication/rusi-defence-systems/key-armenia-tank-losses-sensors-not-shooters>

The Battle of Shusha City and the Missed Lessons of the 2020 Nagorno-Karabakh War



John Spencer and Harshana Ghoorhoo, Modern War Institute, 14 July 2021

This article covers the importance of Shusha as key terrain in the Nagorno-Karabakh region and how it provides a strategic advantage to its occupier. The authors provide several lessons that describe the importance of cities as operational and strategic objectives and how leaders must be prepared to employ combined arms to seize and hold urban terrain.

Available at <https://mwi.usma.edu/the-battle-of-shusha-city-and-the-missed-lessons-of-the-2020-nagorno-karabakh-war/>

Counter-UAS Resources

Army Techniques Publication (ATP) 3-01.81 Counter-Unmanned Aircraft System Techniques

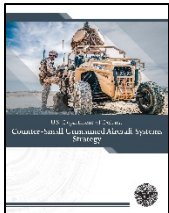


U.S. Army doctrine that describes the operational environment along with chapters on planning considerations and actions at brigade and below. An appendix provides a C-UAS training strategy to help with collective and individual skills.

Available at

https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN3099_ATP%203-01x81%20FINAL%20WEB.pdf

U.S. Department of Defense Counter-Small Unmanned Aircraft Systems Strategy. 7 January 2021



The framework for the DOD strategy on addressing small UAS (sUAS) in the homeland and overseas contingencies.

Available at <https://media.defense.gov/2021/Jan/07/2002561080/-1/-1/1/DEPARTMENT-OF-DEFENSE-COUNTER-SMALL-UNMANNED-AIRCRAFT-SYSTEMS-STRATEGY.PDF>

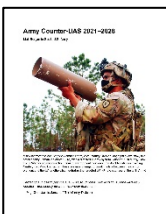
News from the CTC: OPFOR vs RTU Small Unmanned Aircraft Systems at the JMRC



LTC Matthew T. Archambault, CPT Franklin G. Peachey, CPT Sean D. Hayball, SSG Drew D. Lincoln

This article was reprinted from Military Intelligence Professional Bulletin, April-June 2017. The authors explain how the JMRC OPFOR, 1st Battalion, 4th Infantry Regiment (1-4 IN), replicates the threat of sUAS against rotational training units. Available at <https://call2.army.mil/toc.aspx?document=17492> (CAC required)

Army Counter-UAS 2021–2028

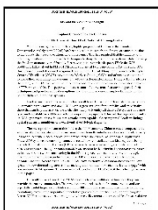


Major Benjamin Scott; Military Review, March-April 2021

Insights on how the 25th ID used the deliberate targeting process during Warfighter Exercise 20-03 in the C-UAS fight.

Available at <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/March-April-2021/Scott-Counter-UAS/>

Electronic Warfare and the Counter UAS Fight

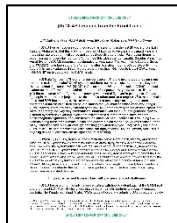


Captain (P) Ian D. Bolser, Senior Electronic Warfare OC/T, National Training Center

The author discusses the threat of sUAS and how units may mitigate their use on the battlefield.

Available at <https://call2.army.mil/toc.aspx?document=18060> (CAC required)

Counter-Unmanned Aerial Systems Lessons from the Front Lines



LTC Anthony Kurz, MAJ Kyle Brown, MAJ Craig Robertson, and MAJ Skip Owens.

This article covers the emergence of sUAS and provides lessons and training resources for units to counter the threat.

Available at <https://call2.army.mil/toc.aspx?document=18037> (CAC required)

Threat from Above: Defending Against Small Unmanned Aircraft Systems



MAJ Matthew G. Easley, Aviation Digest, April-June 2021

This article provides insights for how tactical formations C-sUAS in their area of operations.

Available at

https://home.army.mil/rucker/application/files/8016/2497/3111/AD_Apr-June_2021-WEB.pdf

¹ Genocide Studies Program, Yale University, accessed 2 August 2021, <https://gsp.yale.edu/case-studies/armenian-genocide>.

² Military expenditure (current USD) – Armenia, World Bank, accessed 12 July 2021, <https://data.worldbank.org/indicator/MS.MIL.XPND.CD?locations=AM>.

³ Military expenditure (current USD) – Azerbaijan, World Bank, accessed 12 July 2021, <https://data.worldbank.org/indicator/MS.MIL.XPND.CD?locations=AZ>.

⁴ CIA World Factbook, Azerbaijan, accessed 20 April 2021, <https://www.cia.gov/the-world-factbook/countries/azerbaijan/#military-and-security>.

⁵ Shaik, Shaan, The Air and Missile War in Nagorno-Karabakh: Lessons for the Future of Strike and Defense, CSIS, <https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense>, accessed 20 April 2021.

⁶ Shaan Shaikh, The Air and Missile War in Nagorno-Karabakh: Lessons for the Future of Strike and Defense, CSIS, <https://www.csis.org/analysis/air-and-missile-war-nagorno-karabakh-lessons-future-strike-and-defense>, accessed 20 April 2021.

⁷ EVN Report, Arms Supplies to Armenia and Azerbaijan, accessed 10 May 2021, <https://www.evnreport.com/spotlight-karabakh/arms-supplies-to-armenia-and-azerbaijan>.

⁸ Use of Armed Drones for Targeting Killings, United Nations, accessed 9 May 2021, <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G20/211/32/PDF/G2021132.pdf?OpenElement>.

⁹ Non-State Actors with Drone Capabilities, New America, accessed 10 May 2021, <https://www.newamerica.org/international-security/reports/world-drones/non-state-actors-with-drone-capabilities>.

¹⁰ Antal, John, The First War Won Primarily with Unmanned Systems Ten Lessons from the Second Nagorno-Karabakh War, page 4, 2021.