DEFENCE AND DIPLOMACY

IN PURSUIT OF NATIONAL SECURITY

VOL. 13 NO. 4 ISSN 2347 - 3703 JULY-SEPTEMBER 2024

Special Issue: Extremism, Radicalisation and Terrorism

JOURNAL OF THE CENTRE FOR AIR POWER STUDIES

UNMANNED AERIAL SYSTEMS IN COUNTER-TERRORISM OPERATIONS

DINESH KUMAR PANDEY

The threat of terrorism has been around in the world for quite some time now. However, the methods and potency of terrorism over the years have been ever-changing. Essentially, terrorism might be considered an irrational act primarily motivated by ideological goals. Terrorism today has become the key strategy adopted and employed by radical groups to advance their political as well as non-political agendas.

Some of the essential tools and tactics employed by terrorist groups in the last couple of years have remained uncertain. However, with the help of various new technologies, terrorists are often known to be using refined 'bitter' measures. Attacks on vital locations, unusual acts targeting aircraft, etc are being used by terrorists to force their demands on the political system.

There have been well-known examples of counter-terrorism operations, notably in terms of carrying out preventive assaults, monitoring certain locations, and eliminating risks. Terrorism can include a variety of unlawful acts, including the hijacking of an aeroplane, the destruction of an aeroplane, damage to an airliner

Professor **Dinesh Kumar Pandey** is a Senior Fellow at the Centre for Air Power Studies, New Delhi.

or airport lounges, gunning down of passengers at airports, and use of aeroplanes as guided missiles to attack financial or governmental facilities. The terrorist attack on the World Trade Centre (WTC) in the United States of America (USA) on September 11, 2001, was a significant act of terrorism that took place through the medium of air. Terrorists could employ small aircraft that are difficult to detect by any radar network. These small aircraft could include gliders, toy aircraft, and Unmanned Aerial Vehicles (UAVs) or drones.[1]

EARLY DEVELOPMENT AND DEPLOYMENT

Unmanned systems, a cornerstone of military operations since World War I, took on a new role in the late 20th century when Unmanned Aerial Systems (UAS) became an effective tool in counter-terrorism. A pivotal moment in UAS operations was observed in the Balkans, where the Predator drone was first deployed in the 1990s. The Predator aerial platform, with its superior reconnaissance capabilities, offered significant strategic information that was instrumental in the success of the North Atlantic Treaty Organisation (NATO) operations.[2]

The tragic events of September 11, 2001, amplified the application and adoption of UAS utilisation. The USA declared the War on Terror, and drones became one of the significant tools of counter-terrorism in Afghanistan, Iraq and other states. Both the Predator and the newer variants of the Reaper were equipped with lethal Hellfire missiles. The precision is ensured by the laser designation. Therefore, the operators can launch the missiles for pinpoint hits on high-valued targets.[3]

1. Ajay Lele and Archana Mishra, "Aerial Terrorism and the Threat from Unmanned Aerial Vehicles", *Journal of Defence Studies*, vol 3, no 3, July 2009, https://idsa.in/system/files/jds_3_3_alele_amishra.pdf#:~:text=Aerial%20terrorism%20may%20include%20hijacking%20aircrafts%2C%20airplanes%20sabotage%2C,passenger%20hostage%20and%20turning%20aircrafts%20into%20guided%20missiles. Accessed on August 13, 2024.
2. Elizabeth Becker, "Crisis in the Balkans", *The New York Times*, June 3, 1999, https://www.nytimes.com/1999/06/03/world/crisis-balkans-drones-they-re-unmanned-they-fly-low-they-get-picture.html. Accessed on August 14, 2024.
3. Milena Sterio, "The United States' Use of Drones in the War on Terror", *Case Western Reserve Journal of International Law,* vol. 45, 2012, https://scholarlycommons.law.case.edu/cgi/viewcontent.cgi?article=1072&context=jil. Accessed on August 12, 2024.

For the last two decades, UAS have become an invaluable asset in counter-terrorism due to their accessibility in hazardous locations. Their surveillance and strike capacity enables the security forces to track and combat terrorist cells in regions that are remote, high-risk or politically volatile.

The USA was the pioneer and leading practitioner in the use of UAS to target and kill suspected terrorists overseas. Even as recently as ten years ago, drones were available only to a select few sophisticated industrialised countries. Military-grade UAS are now being manufactured and operated by dozens of countries, including Israel, China, Türkiye, and Iran. Simultaneously, the technology has become accessible to private consumers across the globe, thanks to the fast-expanding commercial drone business. Online customers can access hundreds of different models, ranging from 'nano' drones that are the size of a sparrow and can be operated from a smart phone to bigger aircraft that can carry modest payloads and cost thousands of dollars. Therefore, the armed forces face tactical challenges in the conduct of counter-terrorism operations, including the UAS threats from non-state actors.[4]

Year by year, drones have become increasingly more technologically advanced, potent and reliable with respect to endurance, resolution of their sensors, communication security, and armaments. Developed models such as the MQ-9 Reaper are capable of delivering accurate blows on terrorist compounds, training grounds, and even convoys, all in a bid to eliminate on-the-ground threats, with fewer chances of civilian casualties and the loss of pilots. This has thwarted attack plans and captured or killed the leading terrorists behind such strikes. UAS have also been deployed in counter-terrorism operations in unstable regions of the world, including Iraq, Syria, Somalia, Yemen and Libya.[5]

4. Joby Warrick, "Use of Weaponized Drones by ISIS Spurs Terrorism Fears," *The Washington Post*, February 21, 2017, https://www.washingtonpost.com/world/national-security/use-of-weaponized-drones-by-isis-spurs-terrorism-fears/2017/02/21/9d83d51e-f382-11e6-8d72-263470bf0401_story.html. Accessed on August 12, 2024.
5. "From Targeted To Targeters: The Future of Unmanned Aerial System (UAS) Proliferation by Terrorist Groups", *National Intelligence University Report*, July 17, 2021, https://www.dni.gov/files/documents/FOIA/DF-2023-00291-From-Targeted-to-Targeters.pdf. Accessed on August 12, 2024.

ROLE OF UAS

Presently, UAS are still used for intelligence, surveillance, and reconnaissance to identify and locate terrorist organisations, follow specific suspects, and provide support to special operations teams against them. The organised terrorist groups' infrastructural disruption through targeted attacks limits their convening, exercising, and plotting. Miniature and micro drones assist counter-terrorism in urban areas and hostage operations by providing an aerial view that examines buildings of interest casually.

SIGNIFICANT COUNTER-TERRORISM OPERATIONS

In view of the emerging technologies, there is mounting concern on the global level regarding the illegal abuse of this technology. The United Nations Office of Counter-Terrorism (UNOCT) mentioned in a UN conference that in recent years, there has been a rise in the number of terrorist organisations that have acquired UAS software, hardware, and components, as well as weaponised and deployed these UAS. This trend has been observed across a number of UN member states.[6]

The United Nations Global Counter-Terrorism Strategy (A/RES/60/288) is a measure with global reach, aimed at supporting efforts to prevent terrorism on national, regional, and international levels. Its primary goal is to stimulate actions that deter terrorism. In 2006, UN member nations agreed on a joint strategic and operational analysis of how to combat terrorism, with the ratification of the United Nations Charter as the means to achieve this specific aim.[7]

A resolution and the plan of action (A/RES/60/288) comprise the comprehensive and robust Global Counter-Terrorism Strategy of the United Nations. This strategy has four pillars, which are as follows:[8]

6. United Nations, "Preventing and Countering Terrorist Use of Unmanned Aircraft Systems: Good Practices and Trends in the Acquisition, Weaponization, and Deployment of UAS", 2023, https://www.un.org/counterterrorism /events/ preventing-and-countering-terrorist-use-unmanned-aircraft-systems-good-practices-and-trends. Accessed on August 12, 2024.
7. C. Carter, "UAS Weapons", Chapter 11 in *Unmanned Aircraft Systems in the Cyber Domain*, Centre for the Advancement of Digital Scholarship", 2019, https://www.un.org/counterterrorism/un-global-counter-terrorism-strategy. Accessed on August 12. 2024.
8. n.6.

- Taking action to address the situations that are favourable to the spread of terrorist organisations.
- Measures to prevent and defeat terrorism.
- Measures that would significantly enhance the role of the United Nations system in the prevention and combatting of terrorism, as well as measures to build the ability of states to prevent and defeat terrorism, are at the core of the strategy.
- Embedded in the centre of the strategy, the rule of law is advocated as the essence of the fight against terrorism. The strategy remains single-mindedly focussed on safeguarding the human rights of all people, so as to give them a 'safe' feeling.

The strategy assigns a special, significant role to member states in bringing the United Nations Global Counter-Terrorism Strategy into action through ratification of the provisions. They are called upon to perform the task of not only prevention and combatting of the acts of terrorism but also checking the use of violence that may lead to terrorism, hence, tasking them with a vital role in the maintenance of international security.

DISRUPTION OF TERRORIST NETWORKS

UAS have proven to be exceptionally effective in disrupting terrorist networks to neutralise the significant assets of such groups, including the leadership and communication networks. For instance, consistent employment of the method of constant surveillance of UAVs in Pakistan's tribal zones significantly disrupted the operations capabilities of groups like the Taliban and Al Qaeda. The major counter-terrorism operations were:

On September 30, 2011, the American drone strike in Yemen led to the death of Anwar al-Awlaki and Samir Khan, prominent members of Al Qaeda. Al-Awlaki was infamous at the time in the business of motivating and recruiting terrorists around the world.[9]

The leader of the Islamic State of Syria and Iraq (ISIS), Abu Bakr al-Baghdadi, the 48-year-old known for his brutality, was hunted,

9. "The War in Yemen", *New America*, 2024, https://www.newamerica.org/future-security/reports/americas-counterterrorism-wars/the-war-in-yemen/. Accessed on August 12, 2024.

and ultimately neutralised, in a US Special Forces Operation in 2019 aided immensely by UAS reconnaissance.[10]

EFFECTIVENESS

Counter-terrorism operations conducted with the help of UAS been effective, with the stipulated results being accomplished. The salient capabilities of UAS which enable counter-terrorism operations are:

Intelligence Collection: The collection of invaluable intelligence through the use of drones has been an essential factor in counter-terrorism operations because it has led to the prevention of numerous terrorist attacks. Terrorists hold some areas for considerable periods for their preparation of nefarious activities, and this facilitates the constant monitoring of their activities, movements, and communications.

Consistent Tracking: UAS are capable of enduring in the air for long periods to provide sustainable and real-time surveillance that decreases the likelihood of a surprise attack. This has been critical in the surveillance of terrorist hideouts and movements throughout their operations.

Rapid Action: The limited lag time for the smart and agile drones, enables them to respond promptly to emerging threats, providing real-time data and response time capability. Such a rapid response system has been especially vital in the high-profile and dynamic war against terrorism, where terrorists can quickly switch from one position to the another location.

Cost-Effectiveness: With regard to operations and maintenance, UAS are comparatively cheaper than manned aircraft. This affordability allows for a longer duration of operations while not incurring the financial burden that is associated with the conduct of normal air operations.

Minimised Potential Risk: UAS operations increase the safety index of operating teams, as they are not exposed to vulnerable

10. Rukmini Callimachi and Falih Hassan, "Abu Bakr al-Baghdadi, ISIS Leader Known for His Brutality, is Dead at 48", *The New York Times*, October 27, 2019, https://www.nytimes.com/2019/10/27/world/middleeast/al-baghdadi-dead.html. Accessed on August 12, 2024.

situations. This is especially important in situations and contexts that may be risky for human beings.

UAS WITH TERRORISTS

Drones and other similar devices, which are collectively referred to as Autonomous and Remotely Operated Systems (AROS), constitute a new type of terrorist danger. Commercial quadcopters and other types of drones can be bought by the terrorists, allowing them to plan, organise, and carry out a series of assaults that may be hazardous and potentially disruptive to civilians, soft targets, and essential infrastructure. In the last two decades, non-state actors have been the only ones to use aerial drones in their activities. As a result of the advancements that have been achieved in drone technology, it is anticipated that the AROS will become the strategy of choice for terroristic attacks in the future.[11]

UAS have experienced a phenomenal surge in terms of their use for various purposes over the past decade. They can be advantageous if employed for constructive purposes. However, there is a need to evaluate and determine the risks that terrorists can bring if they get hold of UAS. One significant aspect is that UAS are reasonably cheap, readily available in the market to anyone in the society regardless of social class. These emergent threats from UAS, civil or military, are of concern today as they can be used by an adversary country or terrorist groups.[12]

On the same point, drones and other AROS have the potential to be used as weapons in anti-terrorism operations. The Global Counter-Terrorism Programme on Autonomous and Remotely Operated Systems (AROS Programme) was established in 2021 with the purpose of providing assistance to member governments in their fight against the threat posed by drones, UAS, and other AROS.[13]

A new generation of compact and miniature UAS is now easily accessible for acquisition in the consumer market. The flexibility with which UAS are available raises concerns about the dangers that

11. United Nations, "Autonomous and Remotely Operated Systems", June 29, 2021, https://www.un.org/counterterrorism/autonomous-and-remotely-operated-systems. Accessed on August 12, 2024.
12. Carter, n.7, ch.3.
13. n.11.

these devices could pose. Apart from the strictly military use of the UAS for countering terrorists, terrorists could use UAS for malicious objectives. Therefore, UAS may pose several potential threats to national security. These threats may include the following:[14]

- Striking strategic installations.
- Clandestine and unauthorised observation and surveillance.
- Smuggling.
- Targeted intelligence gathering.
- Mid-air crashes.
- Electronic eavesdropping.
- Support to organised crime.

Terrorists Attacks with UAS: A number of terrorist operations, either planned or attempted, were carried out with the use of aerial drones in the previous decades. Some of these are appended below:

- In the year 1994, Aum Shinrikyo made an effort to spray Sarin gas using a helicopter that was controlled remotely, but its attempts were unsuccessful since the helicopter crashed.[15]
- During the year 2013, local law enforcement was able to foil an assault that was planned to be carried out by Al Qaeda, utilising numerous drones, in Pakistan.[16]
- During military operations in Iraq and Syria, the Islamic State (IS) began employing commercial off-the-shelf and home-made aerial drones in 2014.[17]
- In August 2018, two Global Positioning System (GPS)-guided drones that were loaded with explosives were deployed in an attempt to kill Venezuelan President Maduro, but the effort was unsuccessful.[18]

14. Ashok Vajravelu, N. Ashok Kumar, Swagata Sarkar and Sheshang Degadwala, "Security Threats of Unmanned Aerial Vehicles", *Springer Links*, pp 133–164, August 24, 2023, https://link.springer.com/chapter/10.1007/978-3-031-33631-7_5. Accessed on August 12, 2024.
15. Robert J. Bunker, "Terrorist and Insurgent Unmanned Aerial Vehicles: Use, Potentials, and Military Implications", US Army War College, August 1, 2015, https://press.armywarcollege.edu/monographs/445/. Accessed on August 12, 2024.
16. Ibid.
17. Warrick, n.4.
18. Katy Watson, "Venezuela President Maduro Survives 'Drone Assassination Attempt,'" BBC, August 5, 2018, https://www.bbc.com/news/world-latin-america-45073385. Accessed on August 12, 2024.

- A swarm of 13 home-made armed drones was launched to attack two Russian military locations in Syria in January 2018.[19]

LIMITATIONS

Even though UAS are capable of flying for long periods on pre-planned missions, they are not fully autonomous and require human intervention for control, programming, and decision-making on the use of force. This reduces the possibility of conducting day and night counter-terror operations in some situations. There are several potential limitations of using UAS for counter-terrorism operations. A few of these are:

Legal and Ethical Considerations: The application of drones in assassination missions (targeted killings) has raised many issues concerning the legitimacy of the act. Some of the challenges that are associated with the operations of drones include sovereignty, concerns over the UAS' capacity to cause harm to the civilian population and, lastly, lack of transparency.

Technological Vulnerabilities: Drones can be easily hacked, jammed, or subjected to other forms of disruption by electronic warfare. Therefore, smart players out there may possess state-of-the-art technologies with which they can attack or disrupt UAS.

Relying on Intelligence: Accurate intelligence is very important when planning a mission using UAS. Lack of proper intelligence can lead to the production of sub-standard work, which, in a military situation, may lead to collateral damage, for instance, civilian casualties, or missing of the designated targets due to wrong identification of locations.

Restricted Payload Capacity: The smaller the drone, the lower its payload. This means that, depending on their size, smaller drones can only carry a limited weight and size of payload, most often a bomb. This constraint can severely affect the effectivity of the various missions. Specifically, the rate of the UAS' capability for attacks on well-defended installations and structures will have an impact.

19. David Reid, "A Swarm of Armed Drones Attacked a Russian Military Base in Syria," *CNBC*, January 11, 2018, https://www.cnbc.com/2018/01/11/swarm-of-armed-diy-drones-attacks-russian-military-base-in-syria.html. Accessed on August 12, 2024.

Geographical Range Limitations: It is important to note that most military and intelligence agency drones do not have global range. They may not be able to follow or constantly track terrorists in areas that are geographically isolated. Bases and aircraft carriers are required within operational ranges.

Threats to Air Defence Systems: UAS are fundamentally aircraft, and may, therefore, be taken out by enemy surface-to-air missile systems or air forces, which limits counter-terror choices in these instances.

Like in any other counter-terrorism strategy, these and other UAS disadvantages must be balanced against their advantages when deciding on the use of force. Strategies that work tend to draw on multiple approaches and the use of drones is just one avenue.

WAY AHEAD

As for the prospects, the new autonomous functions and Artificial Intelligence (AI) could help decrease the load on operators while providing better recognition of targets in a complex environment. However, social attitudes or policy measures might restrict governmental use of UAS. The terrorists' attempts to hack or jam drone signals is a continuing threat. However, UAS will always be valuable assets against an intelligent, ever-changing opponent.

The emerging technologies are going to make UAS operations more effective as well as cost-effective. The potential evolution of UAS may be influenced by factors as appended below:

Artificial Intelligence (AI): By incorporating AI with UAS, the automation of their operations can be achieved, hence, improving the efficiency of surveillance and targeting capabilities. AI, in particular, can process a great deal of information at once in real-time, which, in turn, provides better decision-making and less probability of errors.

Swarm Technology: Coordinated operations with multiple drones, referred to as drone swarms, are powerful against defences and can provide extensive coverage. They can also enhance the longevity of UAS operations as a particular task of the mission, may be distributed individually to numerous UAS, using swarm technology.

Enhanced Counter-Measures: Innovations in counter-UAS technologies are likely to play a significant role in countering the prospect of drone misuse by terrorist organisations. Stringent procedures are employed for the prevention and detection of unauthorised drones that can be a danger to the armed forces and their assets as well as to civilians on the ground.

Global Cooperation: Greater international cooperation in its design as well as regulations, is the key to addressing the legal and ethical issues associated with using UAS. This increases the demand for creating appropriate rules and regulations, which will help to mitigate the risks observed and ensure that drone technology is used appropriately.

Advanced Sensors and Payloads: Future drones will feature innovative sensors and payloads that expand their versatility and effectiveness in various operational scenarios. Other features, such as surveillance, communication, and weaponry, will lead to diverse use of UAS in counter-terrorism operations.

CONCLUSION

The technology has become accessible to private consumers across the globe, thanks to the fast-expanding commercial drone business. Online customers can access hundreds of different models, ranging from 'nano' drones that can be operated from a smart-phone to bigger aircraft that can carry modest payloads and cost thousands of dollars. Easily accessible drones have created the platform for a new age of technical innovation and convenience, but they have also created significant security issues. Illicit activities, such as espionage, smuggling, and acts of terrorism are increasingly being carried out with the assistance of UAS. However, the domain of counter-drone warfare has also undergone fast development as a means of addressing this newly emerging threat. Therefore, the armed forces may face tactical challenges during the conduct of counter-terrorism operation, including the UAS threats.

UAS have revolutionised the counter-terrorism operations, with extreme reconnaissance and tactical strike capabilities. They have proved highly effective; nonetheless, their usage also creates significant challenges and limitations. The use of UAS in counter-

terrorism will be evolving further as per developments of new technologies, counter-measures and cooperation in dealing with legal and ethical issues.

India's use of UAS in counter-terrorism is an evolving landscape. The country's investments in technology and its strategic priorities suggest a growing role for UAS in safeguarding national security.