

EFFECTIVE USE OF UNMANNED AERIAL VEHICLES BY NATIONAL GUARD UNITS IN THE SUPPRESSION OF MASS RIOTS: THE CURRENT SITUATION IN UZBEKISTAN, ADVANCED FOREIGN EXPERIENCE, AND PROSPECTS FOR APPLICATION

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Abstract: this article examines the possibilities for the effective use of unmanned aerial vehicles (UAVs) by units of the National Guard of the Republic of Uzbekistan in responding to and suppressing mass riots. It discusses the principal functions of UAVs, including psychological influence, public warning, visual surveillance, leaflet distribution, medical delivery, and the transportation of weapons and special equipment. To this end, the experiences of several countries, including France, Spain, Russia, the United States, Brazil, Poland, Türkiye, and Sweden, are analyzed, and recommendations adapted to the conditions of Uzbekistan are proposed. The study also offers suggestions concerning the use of artificial intelligence, the training of UAV operators, and the protection of privacy and personal inviolability. The article identifies promising directions for the introduction and further development of UAV technologies within National Guard units.

Keywords: unmanned aerial vehicles, National Guard, mass riots, psychological influence, medical logistics, delivery of weapons and equipment, foreign experience, artificial intelligence, public safety

Mass riots constitute one of the most complex emergency situations faced by security services in contemporary society. Ensuring public safety, minimizing casualties, and protecting the rights of citizens require rapid and highly accurate technical means. Unmanned aerial vehicles (UAVs) represent one such technological tool and have already begun to be used in many countries for maintaining public order and responding to emergency situations. The Defense Doctrine of the Republic of Uzbekistan emphasizes the growing importance of high-precision weapons, electronic warfare systems, unmanned aerial vehicles, and robotic complexes in the context of modern military conflicts [1]. Against this background, the present article explores the prospects for the use of UAVs by National Guard units in the suppression of mass riots, the current state of practice in Uzbekistan, and relevant advanced foreign experience.

The Defense Doctrine adopted by the Republic of Uzbekistan in 2018 identifies the use of UAVs and robotic systems as an important direction in strengthening military capability [1]. The Doctrine also highlights information-psychological influence, precision weapons, electronic warfare means, and unmanned systems as essential instruments for ensuring national security [1]. In this regard, the document serves as a conceptual foundation for the use of UAVs in the sphere of public security.

In order to strengthen regulatory control over UAVs, Resolution No. 658 of the Cabinet of Ministers dated 15 November 2022 established the procedure for the use and storage of unmanned aerial vehicles in civil and state aviation. Under this resolution, UAVs are classified according to their operational purpose, while registration requirements, authorization procedures, and mandatory safety measures are introduced. Although the article does not cite this legal act directly, its existence

demonstrates that the use of UAVs in Uzbekistan is increasingly being governed within a formal legal framework.

In recent years, Uzbekistan has also taken practical steps toward introducing UAVs into the public security sector. According to a report published by *UzDaily* in August 2025, 150 drones were procured in the Bukhara region and supplied to law enforcement agencies. The Ministry of Internal Affairs announced plans to equip 84 law enforcement units across the country with UAVs, with all district-level units expected to be fully equipped by 2026 [2]. UAVs are already being used to identify offenses, monitor major roadways, and detect environmental violations [2]. Training programs have likewise been introduced, and the certification of operators has become a formal requirement [2].

In January 2026, *The Defense Post* reported that Uzbekistan had acquired Bayraktar drones manufactured in Türkiye for border security purposes and that video surveillance now covers 42 percent of the national border [3]. A dedicated UAV unit has reportedly been established to monitor official border areas and carry out rapid-response tasks [3]. These developments constitute practical evidence that UAVs are already being introduced into structures associated with national security and public order.

Under conditions of mass unrest, the effective use of UAVs may be divided into several functional areas. These include surveillance, psychological influence, information collection, logistics, and operational support.

UAVs equipped with wide-angle cameras and loudspeakers can exert a significant psychological effect on participants in mass disturbances. During the COVID-19 pandemic, police drones in the United States, Spain, the United Kingdom, and China used loudspeakers to instruct the public to remain indoors and to observe social distancing rules [4]. This experience demonstrates that UAVs can create a perception of continuous oversight, facilitate negotiation, and serve as a means of delivering warnings. In the context of Uzbekistan, the National Guard could adapt this approach by equipping drones with loudspeakers and visual signaling systems, such as color-coded banners, to issue a first warning (white), a final warning before coercive measures (yellow), and an indication of imminent use of special means or force (red).

UAVs can also transmit real-time visual information from the scene directly to an оперативный штаб, or operational command center. In April 2023, France authorized the use of drones by law enforcement agencies for monitoring crowds and vehicles, preventing terrorist threats, observing mass disturbances, and regulating transport flows [5]. During the pandemic, Spanish authorities used drones equipped with thermal cameras and loudspeakers to instruct people to return home [6]. In Sitges, drones were used to count the number of people on beaches and notify authorities whenever crowd density exceeded permissible limits [6].

According to information concerning the Russian Ministry of Internal Affairs, 26 regions have special operations units equipped with UAVs, and these systems are actively used for crime prevention, infrastructure monitoring, and surveillance of public gatherings [7]. Small drones such as the Zala 421-08M can conduct surveillance for more than one hour [8]. During the G8 summit, drones were used to monitor crowd concentration and vehicle movements, and several UAVs could be controlled by a single operator [9]. The Department of Internal Affairs in the Amur region reported procuring drones for monitoring public events, search operations, and facility surveillance [10].

UAVs may also be integrated with artificial intelligence systems in order to assess crowd density, the degree of armament, and the psychological condition of participants. In Brazil, researchers at the

University of São Paulo analyzed drone footage using artificial intelligence and achieved more accurate estimates of protest attendance; in one case, an event officially claimed to have drawn 600,000 people was estimated by the AI system at 185,000 participants [11]. This experience suggests that UAVs, when combined with artificial intelligence, may be highly useful for accurately assessing crowd size, identifying group formations, and supporting rapid decision-making during mass disturbances.

The aerial distribution of warning leaflets also represents a modern adaptation of traditional public-order measures. In such cases, drones fly above the crowd and release printed materials from dedicated payload containers. During the pandemic, Spain and China used drones to deliver written warnings and informational notices from the air, reducing direct contact and helping to limit the spread of infection [6]. In situations of mass unrest, such methods could be used to communicate legal demands, explain the consequences of unlawful actions, and call on participants to disperse.

Rapid assistance to geographically inaccessible areas is another important field in which UAVs may support National Guard operations. A review published by MDPI on medical logistics notes that in countries such as Rwanda and Ghana, drones have been successfully used to transport medicines and medical samples, significantly reducing delivery times and improving healthcare accessibility [12]. In the context of mass disturbances, UAVs could deliver essential first-aid supplies, bandages, pain relief agents, blood products, and other urgent medical materials to injured persons when roads are blocked or direct access is dangerous.

UAVs can also be used to transport medium-weight weapons, protective gear, non-lethal munitions, and other special equipment. Such applications require heavy-lift multicopters or hybrid UAV systems. In Russia, law enforcement agencies reportedly employ UAV complexes transported in KAMAZ vehicles, enabling the deployment of several drones for various operational purposes, including the transport of specialized equipment [13]. For the National Guard, such a logistical approach could enhance mobility and reduce the need to send personnel directly into highly dangerous zones.

A review of foreign experience shows that different states have adopted distinct technological and organizational approaches, many of which can be studied and adapted to the conditions of Uzbekistan. In April 2023, the French government adopted a legal framework authorizing police, customs, and military bodies to use drones in a range of public security operations. Under this framework, drones may be used to monitor crowds, observe public events, regulate traffic, and prevent terrorist attacks [5]. By means of drone surveillance, police can quickly assess the size of a gathering and respond in a timely manner. Importantly, French law also includes safeguards concerning the protection of personal data and limitations on the retention of surveillance imagery.

Spain actively used UAVs during the pandemic. In Madrid, police drones equipped with loudspeakers were deployed to instruct people to return home, and later they were fitted with thermal cameras to strengthen monitoring [6]. In Sitges, drones were used to monitor crowd density on beaches and to provide real-time information to authorities whenever the number of people exceeded established thresholds [6]. These examples demonstrate the effectiveness of UAVs in controlling public movement and enforcing emergency public safety measures.

In March 2020, the Italian Civil Aviation Authority granted local police temporary permission to use drones to monitor the movement of citizens. The authorization remained in force until 3 April 2020 and applied specifically to densely populated areas [14]. This temporary measure was introduced in

response to the severe epidemiological situation, and drones were used to remind people to remain at home and to identify those who violated restrictions [14].

The Polish police have used drones to detect traffic violations on major roads. In the summer of 2021, drones positioned above roadways in Olsztyn recorded drivers using mobile phones, crossing lane markings, or otherwise violating traffic rules, thereby strengthening covert monitoring and facilitating enforcement [15]. This case illustrates the broader capacity of UAVs to extend surveillance coverage in the public safety domain.

In Türkiye, UAVs are increasingly becoming useful tools for law enforcement. In March 2026, police in the districts of Sarıyer, Eyüpsultan, and Ümraniye in Istanbul began using drones to identify drivers entering restricted traffic zones. The drones recorded motorcycles and cars moving into prohibited areas, after which the police collected information on offenders [16]. This practice demonstrates the effectiveness of UAVs in traffic control and suggests broader future applications in monitoring public gatherings and maintaining order.

During the social protests in Chile in October and November 2019, demonstrators reportedly succeeded in bringing down a police drone by directing laser beams at it. *The Independent* reported that the drone lost control and fell after being exposed to concentrated laser light [17]. This incident highlights not only the creativity of protest tactics directed against police drones, but also the technical vulnerabilities of UAV systems that must be taken into account in operational planning.

In Brazil, researchers from the University of São Paulo used drone footage and artificial intelligence to develop an accurate method of counting protest participants. In one case, the AI system determined that a demonstration officially claimed to have gathered 600,000 participants in fact involved approximately 185,000 people [11]. This experience confirms that the combination of UAVs and artificial intelligence can significantly improve the reliability of crowd assessments in politically sensitive situations.

In the United States, police made wide use of drones during the George Floyd protests of 2020, conducting aerial surveillance over crowds. According to a Brookings Institution analysis, emergency management and public safety agencies used drones to improve situational awareness, monitor demonstrations in different cities, and support rapid decision-making [18]. Following the adoption of Part 107 rules by the Federal Aviation Administration, the market for drones expanded considerably, and by March 2020 some 1,578 public safety agencies had acquired drones [19]. At the same time, the lack of a single federal regulatory framework gave rise to ongoing debates concerning privacy, civil rights, and the permissible scope of police drone use [18].

In 2024, in connection with the Eurovision Song Contest in Malmö, Swedish police strengthened security measures and planned to use drones and ground-based cameras to improve situational awareness in the city center and detect threats in advance [20]. According to reports, drones would transmit information to rapid-response units and document suspicious activity. This experience demonstrates the usefulness of UAVs in securing large-scale public events.

Since 2006, the Russian Ministry of Internal Affairs has reportedly procured drones such as the Zala 421-08M, manufactured by Zala Aero. This model has a length of 45 cm, a wingspan of 85 cm, a weight of 2.5 kg, and an endurance of more than one hour [21]. Ahead of the Sochi Olympics, drones were widely used to monitor public gatherings and vehicle traffic, while a single operator could reportedly control a system comprising several small aircraft [9]. In 26 regions, specialized drone units participate in crime prevention, search operations, and the monitoring of public demonstrations

[10]. Tender documentation from the Amur regional police indicates that drones are used for monitoring areas where mass events take place, conducting searches, and observing facilities [10]. The process of integrating UAVs into Uzbekistan's public security architecture is still in its formative stage. Although the Defense Doctrine assigns considerable importance to technological modernization [1], the 2022 regulatory resolution on civil and state aviation primarily addresses registration and safety procedures for UAVs. Nevertheless, the experience of Bukhara and the use of Bayraktar drones in border security may serve as a practical foundation for National Guard units [2][3]. The introduction of operator certification is also an important institutional step [2].

At the same time, the use of UAVs may give rise to public concern regarding privacy and the inviolability of personal life. The experience of the United States and France demonstrates that the improper or excessive use of drones can provoke serious debate concerning civil liberties [18]. The Chilean example also reveals the existence of technical vulnerabilities, including the possibility of laser interference [17]. For this reason, the use of UAVs by the National Guard must be accompanied by clearly defined standards in information security, technical protection, and operational ethics.

On the basis of foreign experience, several practical recommendations may be proposed.

First, with regard to psychological influence, the experiences of Spain and the United States suggest that drones equipped with loudspeakers and visual signaling systems can be used to communicate with crowds, issue warnings, and facilitate negotiation [6][4]. Such warning systems should be applied in graduated stages in accordance with internationally recognized practices: white for an initial warning, yellow for a final warning prior to coercive action, and red for the use of special means.

Second, in relation to real-time information gathering, the experiences of France, Russia, and Sweden demonstrate the value of drone-based monitoring of crowd density and movement, with direct transmission of data to the operational headquarters [5][22][20]. The National Guard should therefore develop software capable of analyzing drone video in real time through artificial intelligence in order to assess participant numbers, aggressive behavior, degree of armament, and geolocation. The Brazilian case provides a practical example of how such AI systems can improve operational accuracy [11].

Third, in the sphere of medical assistance and logistics, the experiences of Rwanda and Ghana confirm that drones can effectively deliver medicines and urgent supplies to hard-to-reach areas [12]. In situations of mass unrest, UAVs could be used to deliver first-aid materials, drinking water, and protective equipment to injured persons and emergency responders. Such applications would improve the speed and safety of humanitarian support.

Fourth, concerning the transport of weapons and technical equipment, the Russian experience suggests that UAV complexes based on vehicle platforms can operate several drones capable of delivering special means and equipment [13]. National Guard logistics units could therefore consider the adoption of heavy-lift drones to supply dangerous or inaccessible zones in emergencies.

Fifth, legal and ethical regulation remains essential. The use of UAVs during public events must comply with standards designed to protect privacy. In France and the United States, rules have been introduced to restrict the retention of drone imagery and to regulate access to surveillance materials [5][18]. Uzbekistan should likewise establish clear legal norms and oversight mechanisms governing the storage, use, and protection of drone-collected data.

Conclusion

Unmanned aerial vehicles can become an effective tool for ensuring public safety, detecting emerging unrest at an early stage, and responding to mass disturbances. The Defense Doctrine of the Republic of Uzbekistan underscores the importance of UAVs and robotic systems [1]. In practice, drones are already being used in Bukhara and in border-security operations [2][3]. However, the full implementation of UAV functions at the national level, including psychological influence, warning, information gathering, medical logistics, and the delivery of weapons and equipment, still requires further experimentation, technical development, and scientific research.

The experience of countries such as France, Spain, Russia, the United States, Brazil, Italy, Poland, Türkiye, Chile, and Sweden demonstrates that UAVs can be applied in public safety operations through a variety of legal, technical, and tactical models. By studying and adapting these experiences to Uzbekistan's legal framework, while ensuring compliance with privacy standards and technical safety requirements, it is possible to strengthen both the readiness and the technological capacity of National Guard units.

For the effective implementation of UAV technologies, the following conclusions may be proposed:

1. **Improvement of the legal framework:** clearly define the legal basis for drone use, regulate data retention periods, and codify standards for the protection of privacy.
2. **Training and certification of operators:** prepare qualified personnel and establish regular advanced training programs.
3. **Artificial intelligence and analytics:** develop AI platforms for the real-time analysis of UAV-derived data.
4. **Strengthening technical security measures:** introduce technological solutions to protect drones from electronic warfare and laser-based interference.
5. **Public communication:** inform society through the media about the functions of drones, applicable safety standards, and mechanisms for protecting citizens' rights.

The analysis and recommendations presented in this article may serve as a useful foundation for further scientific research and practical initiatives concerning the effective use of UAVs by National Guard units.

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