KILLZONE

How Russian Drones Are Devastating
the River Dnipro's Right Bank

TRUTH HOUNDS

Acknowledgments

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Executive Summary

This report has been prepared by Truth Hounds based on 39 in-depth interviews with survivors and witnesses of short-range drone attacks, three expert interviews with specialists in UAV technologies and alert systems, and analysis of open-source data and monitoring materials.

The study focuses on the use of short-range drones by Russian forces against civilians and civilian objects in the Lower Dnipro region of southern Ukraine. This area forms a roughly 400-kilometer section of the frontline where Ukrainian-controlled territory lies directly opposite Russian-occupied territory, separated by the Dnipro River and the Dnipro Estuary. Hostilities here are generally less intense than in other parts of the front, and between 20% to 50% of the pre-war population still resides in many settlements. At the same time, according to the UN Human Rights Monitoring Mission in Ukraine, this region records some of the highest numbers of civilian casualties from drone attacks in Ukraine.[1]

For example, in March 2025 alone, the city of Kherson was undergoing about 600-700 drone attacks per week,[2] and between March and May of the same year, at least 313 civilians, 135 vehicles (including emergency services vehicles), and 106 residential buildings in the city were affected by drone attacks.[3] In the Nikopol raion of Dnipropetrovsk oblast, the average number of attacks by kamikaze drones and munitions-drop drones recorded between September 2024 and March 2025 was 459 attacks a month.[4]

Despite the relative simplicity of short-range drones, their accuracy, maneuverability, and speed have turned them into a weapon capable of executing high-precision strikes. At the same time, the results of this study indicate that drones are increasingly used not for selective attacks on military targets but as a tool of arbitrary violence or intentional attacks on civilians.

For human rights defenders and investigators, such drones have created new challenges in proving the intentionality of attacks, as this requires knowledge of the technical features of UAVs with skills in identifying the behavior of drones during a controlled attack and during operator control loss. The report collects these indicators as practical guidelines for investigators and analysts; not as sufficient proof but rather as additional data helping to assess the intentionality of each specific attack more accurately. It also enabled Truth Hounds researchers to carry out additional analysis of recorded incidents and to improve their own approaches to documenting drone attacks.

The study has found that Russian attacks against civilians are systematic and have become a consistent element of Russian forces' tactics in this territory. The pattern of attacks, including regular attacks against civilians, strikes on civilian vehicles, first responders, medics, and volunteers, indicates that the Russian military disregards the principle of distinction and, in many cases, deliberately targets civilians and civilian facilities.

Analysis of messages from Russian Telegram channels, particularly those related to certain units and military personnel, confirms that such attacks are part of a practice legitimized in Russia's own military narrative. These channels have designated coastal areas about 2.5 km inland along the Dnipro, which is within the strike area of Russian drones, as a "red zone". Russian sources have repeatedly emphasized that any transport and individuals spotted by a drone in the red zone will be attacked. This insistence that any movement is perceived as a legitimate target, essentially justifies systematic violations of

international humanitarian law. This behavior indicates that the Russians are deliberately turning areas near the frontline into a space with no right to life, where the idea of protecting civilians has lost its force before the Russian military's imperative to attack without question everything within this territory.

The consequences of numerous attacks on energy facilities, rescue and medical teams, vehicles carrying food for the local population, volunteers, utility workers, public transport, the locals, and their property go beyond the lives of victims and material destruction. They intensify the atmosphere of fear, hinder access to basic services and vital resources, disrupt the logistics of humanitarian assistance, and make daily life unbearable. Ultimately, this causes forced migration and the gradual depletion of communities — the social and economic degradation of territories that are under constant threat.

The fact that the tactics of the Russian forces remain unchanged over a relatively long period despite the information available on massive civilian casualties leads us to the conclusion that these actions constitute a method of terrorizing the civilian population.

As discussed in Section 6, the attacks examined in the study constitute serious violations of international humanitarian law, including repeated violations of the principle of distinction and a failure to take adequate precautionary measures in attack. In addition, the attacks may potentially constitute war crimes, particularly deliberate attacks against civilians and civilian facilities (Art. 8(2)(b)(i-ii) of the Rome Statute) and the crime of terror, found in customary international law. Given their prolonged, systematic, and widespread nature, these actions also may potentially constitute crimes against humanity, including murder and the forcible transfer of population (Art. 7(1)(a) and (7)(1)(d) of the Rome Statute). Short-range drone operators' real-time control over and live visual feed from their weapons provides a strong indication of their intent in targeting. At the same time, public rhetoric and the inaction of the Russian command indicate that not only the direct perpetrators, but also their commanders should be brought to justice.

The report also examines how drone attacks have forced civilians and local authorities to develop practices to protect themselves from these threats. Many communities have gradually developed their own warning, shelter, and response systems, combining official measures with initiatives by residents themselves. Studying these practices could provide useful guidance for communities that are just beginning to face a similar threat in other armed conflicts where drone use is likely to become more widespread.

The increasing use of short-range drones against civilians requires an immediate response from the global community not only to IHL violations connected with the use of drones against civilians in Ukraine, but also to the very need to develop a technological, regulatory, and security response to the challenges that arise from the transformation of armed conflicts, where unmanned aerial systems have a growing impact on the nature of warfare and threat to the civilian population.

Introduction

Over the past hundred years, military drones have transformed from an experimental technology with limited functionality to one of the key tools of modern warfare. The idea of moving the pilot from the cockpit to a protected control station, or even making the aircraft autonomous, was a vision that drove the development of unmanned technologies throughout the 20th century. In the 1990s, drones became not only high-quality reconnaissance devices, but also high-precision tools designed to kill, although for a long time, they remained the prerogative of technologically advanced states.

The Russia-Ukraine war launched a new stage, with mass use of small, cheap, easy-to-produce unmanned aerial vehicles (UAVs). Looking for quick, effective methods to deter the Russian invasion, the Ukrainian military and engineers found a solution: radio-controlled short-range drones, capable of carrying light explosives, which usually cost a few hundred US dollars to produce. Soon, having observed the effectiveness of this technology, Russia adopted it and scaled up its own manufacturing. The use of drones by both sides has led to a dramatic change in the tactics and approaches to planning military operations.

In the third year of the mass use of short-range drones, with Ukraine and Russia producing over 100,000 drones every month, this weapon has become one of the primary means of destruction on the battlefield. Drones provide the operator with a high level of flight control and direct visual contact with the target. These characteristics can not only increase the accuracy of attacks but also improve the ability to differentiate between military and civilian targets, thus providing additional options to protect the lives of civilians.

However, as evidenced by Ukraine's experience, the emergence of drones did not actually make civilians' lives easier, but instead made them more vulnerable in frontline areas. There are hundreds of public videos with the same pattern: a drone striking civilian targets and civilians. This creates a paradox in which precision weapons have become a tool for targeted mass violence against civilians.

This contradiction begs the question: why is a weapon that is technologically capable of ensuring accurate, selective strikes increasingly used contrary to this principle?

To answer this question, this study focuses on the territory of the Lower Dnipro. This area forms a roughly 400-kilometer section of the frontline where Ukrainian-controlled territory lies directly opposite Russian-occupied territory, separated by the Dnipro River and the Dnipro Estuary.[5] Despite the relatively low intensity of hostilities in this area, drones are regularly used to strike civilian targets.

This area constitutes approximately a third of the total length of the frontline in Ukraine. The river significantly limits both sides' ability to advance, which reduces the presence of military personnel and heavy weapons along the frontline in this area. However, the lack of active hostilities also allows for careful planning of attacks and more accurate verification of targets.

Due to the relative stability of the frontline and the current nature of the hostilities, numerous civilians continue to live on the right bank of the Dnipro River and the Dnipro Estuary. Many set-

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[5] The territorial scope of this study covers the area from the city of Ochakiv, Mykolaiv oblast, to the village of Lysohirka, Zaporizhzhia oblast, 13 km south of the city of Zaporizhzhia. The territory under research includes coastal areas of Mykolaiv, Kherson, Dnipropetrovsk, and Zaporizhzhia oblasts of Ukraine. These areas are under the control of the Government of Ukraine and are separated from Russian-occupied territories by a river and an estuary.

tlements along the river and estuary still retain 20% to 50% of their pre-war population. Emergency services continue to operate, including the police, first responders, and medics, alongside journalists, humanitarian organizations, and volunteers. All these groups are regularly attacked by Russian drones. According to the UN Human Rights Monitoring Mission in Ukraine, the number of civilian casualties from drone attacks here is among the highest.[6]

In public discourse, this phenomenon has been called a "human safari" as a metaphor for the targeted hunting and killing of civilians with the use of drones. This phenomenon has already rung alarm bells with multiple organizations, including Human Rights Watch, the Center for Information Resilience, and the UN Independent International Commission of Inquiry on Ukraine.[7] However, their materials focused on the city of Kherson and its suburbs, while the big picture of drone attacks in other areas of the right bank of the Dnipro and the Dnipro Estuary went largely unnoticed.

This study aims to analyze the use of short-range drones by Russian forces against civilians and civilian facilities in the Lower Dnipro region of Ukraine, identify patterns, analyze the intentionality of such attacks, and assess their legality under the principles of international humanitarian law (IHL). Additionally, the study explores ways to mitigate the risks and consequences of drone strikes for civilians that have been developed by the locals in this region.

Northern Edge of the Great Meadow
Right Bank of the Dnipro River
Right/Northern Bank of the Dnipro Estuary

Methodology

In this study, "short-range drones" are various types of kamikaze, or suicide, drones ("guided munitions") and munitions-drop drones ("munition carriers"), which can be used mostly at a tactical depth (approximately up to 30–40 km).[8]

The Russian armed forces use a variety of these drones, including uncertified homemade products, products of private Russian defense businesses (e.g., VT-40, Piranha) and state enterprises (Lantset, Prince Vandal Novgorodsky), or imported drones (Autel, DJI).

This research makes use of a range of methods combining field documentation with quantitative analysis of monitoring data, content analysis, secondary source research, and others.

In-depth qualitative interviews

Truth Hounds documenters conducted 39 in-depth interviews with survivors and witnesses of drone attacks, as well as three expert interviews, two with UAV experts and one with a drone threat warning systems specialist. All interviews were conducted in accordance with the Truth Hounds documentation methodology and in compliance with the Code of Ethics for Documenters. Before the interview, respondents were informed about the purpose of the study, the option to maintain anonymity, and their right to determine how the team could use the information provided.

Interviews were conducted from January to July 2025 both remotely and during five field missions to Dnipropetrovsk, Kherson, and Mykolaiv oblasts. Communication with respondents took place in Ukrainian and Russian, after which the materials collected were analyzed and coded in line with TH internal standards.

Each interview served as the basis for a detailed study of specific incidents, enabling the researchers to recreate their circumstances, course, and aftermath. This evidence allowed for analysis of the impact of drone attacks on local communities' everyday lives and the formation of local strategies for adaptation, self-defense, and survival. The data obtained became an important empirical basis for further assessment of the intentional or unintentional nature of such attacks and their potential legal qualification under IHL.

Additionally, the expert interviews with UAV specialists helped the researchers to understand the technical features and operational principles of drones in more detail, to identify aspects relevant to determining the intentionality of drone attacks, and to better interpret drones' behavioral characteristics during a strike. The data received from the expert served as the basis for Sections 1 and 2 of this report and also contributed to adapting Truth Hounds' approach to documenting such incidents.

The interview with a specialist in drone threat warning systems helped understand the principles of operation of existing public warning mechanisms, as well as their influence on the formation of local practices for responding to the threat of drone attacks.

Open source monitoring

Since August 2024, the Truth Hounds monitoring team has been collecting information about drone attacks in the area covered by the study on a daily basis. The monitoring covered messages from local administrations, air threat alert channels, local media, pages on social networks and messengers, as well as publications by Ukrainian and Russian military bloggers and units.

[8] See Section 1.

Data collection was carried out in a way that minimized duplication of information about the same incident. The reports were checked for uniqueness, after which they were entered into the Truth Hounds monitoring database, indicating the date, time, geolocation (if possible), information about the affected individuals and facilities, as well as sources.

For the purpose of this study, the researchers worked with datasets containing all recorded incidents within Mykolaiv, Kherson, Dnipropetrovsk, and Zaporizhzhia oblasts, as well as separate samples from the cities of Kherson and Nikopol and from the Kutsurub community (Mykolaiv oblast) over March–May 2025, categorized by the type of affected property and by incidents involving harm to civilians.

The data obtained allowed for a statistical confirmation of the general patterns of attacks outlined in the study and for the demonstration of the difference in their intensity among different localities. This analysis also helped to track the changes in the number of attacks and victims over time, as well as the different types of damaged property.

Open-source data analysis

The analysis of open-source data served to identify patterns and context of attacks, the narratives that accompanied them, as well as possible perpetrators.

Special attention was paid to Russian Telegram channels, which are highly likely to be linked to specific Russian units or servicemen operating on the left bank of the Dnipro River and on the southern bank of the Dnipro Estuary. Analysis of these sources helped to identify the typical information narratives, particularly justifications of the attacks, rhetoric regarding the targets and victims, and changes in the presentation of information depending on the outcome of the strikes.

This was accompanied by content analysis of publicly available video and photo materials. This helped geolocate individual strikes, identify likely targets of operators, and identify possible signs of intent.

In addition, some Russian units acting on the left bank of the Dnipro and the Dnipro Estuary, which carried out the attacks within the territory of interest of this research, have been identified by means of OSINT analysis.

Information provided by local authorities

The study is partly based on official statistics obtained from four local authorities in response to Truth Hounds' inquiries. Information was provided by the Nikopol City Council, Zelenodolsk City Council, Novovorontsovka Town Military Administration, and Tiahynka Village Military Administration. The information provided concerned specific attacks, the number of casualties, and population changes, and helped to more accurately determine the scale and trends of drone strikes.

Limitations

First, the rapid development of UAV technologies and countermeasures, as well as changes in the tactics of their use, mean that these factors are constantly changing. Therefore, individual patterns and technical characteristics of drones as analyzed in this study may change or lose relevance over time.

The study covers an almost 400-kilometer stretch of the frontline, which includes dozens of localities in the Lower Dnipro region. Although the research team has analyzed attacks recorded along the entire stretch, there is inevitably an element of extrapolation, like in any study that encompasses a large area and therefore cannot verify each individual case comprehensively.

Furthermore, not all the attacks included in the report's statistics could be independently verified. This means that the actual number of attacks or affected individuals may slightly differ from the data obtained.

Another limitation is the lack of analysis of attacks in the occupied territories of Ukraine. Conducting field research there is currently impossible due to the lack of secure access, and the quantity and quality of open sources from these regions are extremely limited. However, according to both Truth Hounds' monitoring and the data of the UN Human Rights Monitoring Mission in Ukraine,[9] drone attacks on civilians in these areas, while they do occasionally occur, are not comparable in scope to attacks recorded on Ukrainian government-controlled territories.

The study also relies on accounts of survivors and eyewitnesses of drone attacks, which, while providing very valuable information about certain events, may not always be accurate due to gaps in the chronology or details of events caused by various factors. Finally, the experience and analytical assumptions of team members may have influenced data collection and interpretation.

Section 1. Short-Range Drones: Types, Operating Principles, and Behavior during Attacks

This section was prepared in close consultation with UAV experts "Hlib" and "Dzyga." Unless otherwise cited, the analysis is based on their experience.

1.1. Classification

There is an entire range of terminology used for modern unmanned aerial vehicles, which is due to the relative novelty of this type of weapon, the multitude of approaches to classification, and conceptual simplifications in the media, as the technically correct notions are often formal and inconvenient in everyday use.

In English-language literature, the UAVs that constitute the focus of this study are most commonly referred to as "short-range drones."[10] This definition, although understandable, is only one possible way to describe such drones.

The most accurate designations would be "guided munition" and "munition carrier." The first name applies to so-called kamikaze drones, that is, ones that hit the target directly by colliding with the object or detonating next to the object, essentially serving as a munition. The second name is applied to munitions-drop drones, including heavy bomber drones, which have special mounting systems to carry one or multiple munitions to a designated location, after which they drop them on the target and return to the operator.

In addition, there are other approaches to classification: by class (I, II, III), by type (fixed-wing, single-rotor (helicopter), multirotor), by intended use (combat, special), by the type of flight control system (autonomous, manually piloted, piloted through waypoints etc.).[11]

For the most part, the drones under consideration in this study are class I combat drones of the multirotor or, less commonly, fixed-wing type. However, for the reader's convenience, in the following sections we will primarily use the notions "short-range drone," "kamikaze drone," "munitions-drop drone," "UAV," or simply "drone."

The use of the term "short-range" requires clarification regarding what range is considered "short." The definition may vary depending on the interpretation and over time, but in the context of this report, we include drones that can operate within a radius of about 30–40 kilometers from the launch point. Among these, fixed-wing drones demonstrate the largest effective range of up to 40 km, kamikaze drones usually have an effective range of up to 30 km and munitions-drop drones—up to 20 km for heavier models and up to 8 km for light multirotor drones, specifically commonly used models like DJI Mavic or Autel.

1.2. Purpose

During Russia's full-scale invasion of Ukraine, short-range drones perform a variety of functions on the frontline. The development of drones has been ongoing, with varying degrees of success on both sides of the conflict, but the level of technological sophistication and functionality of UAVs is currently rather similar for both. Therefore, the drone functionality described in this study is characteristic of both Ukrainian and Russian forces.

The tasks that drones perform on the tactical level can be divided into three types: reconnaissance, logistics, and strikes. Reconnaissance officers launch drones to observe the situation on the battlefield and provide information on what is happening in the observation zone. In addition to obtaining a general understanding of the situation on the battlefield, drones allow for more precise reconnaissance tasks, such as observing targets, identifying targets, adjusting artillery strikes, and looking for the wounded and the KIA on the battlefield. For example, reconnaissance officers can use a drone to observe the target at which artillery is firing and report on the accuracy and status of the strikes to the artillery crew.

The use of drones for reconnaissance has another important advantage: it allows for saving the lives of soldiers, as before military units started using commercial drones for reconnaissance, soldiers had to move along the frontline by themselves and observe using optical devices from places with the necessary visibility range. This method of reconnaissance exposed soldiers to greater danger as compared with using a drone that can be operated several kilometers from the frontline. In addition, drone surveillance can provide for a better and more holistic idea of the situation on the battlefield compared to stationary observation from a single viewpoint.

The use of drones for logistics, namely to deliver equipment and provisions to the frontline, is

also valuable to preserve the lives of personnel. Due to the widespread use of reconnaissance and strike drones, delivering necessary resources to forward positions using military transport has become extremely dangerous, as equipment is quickly identified and destroyed by the other party. Therefore, the Ukrainian military began using drones, usually munitions-drop drones, to deliver munitions, water, food, medication, and other critical necessities to the forward positions in order to minimize the use of ground transportation.

For instance, in May 2024 a group of Ukrainian servicemen surrounded in the forest next to Chasiv Yar (Donetsk oblast) was able to hold their ground for 70 days by receiving munitions, food, and water from cargo drones. In early July, the soldiers were successfully escorted to the main Ukrainian line.[12]

Drones are also used for signal relay: the drone is equipped with signal receivers and transmitters, and is launched into the air to improve the radio communication quality in a certain area. This makes sense to provide a stable connection to strike drones if obstacles on the radio horizon weaken the signal, particularly when approaching the target, or to ensure communication between other radio equipment, e.g. radios on two positions at a distance from one another.

As industrial production of short-range drones for military use began, the strike function became their primary role on the battlefield. Kamikaze and munitions-drop drones are used to strike ground targets in real time. In addition, munitions-drop drones are also used for remote mining. There are also known cases of attaching small light arms to drones,[13] but such practices are not widespread and often have limited effectiveness and reliability.

Initially, short-range strike drones were used by both sides of the conflict to target military vehicles, including armored ones. However, as the number of military vehicles within their range sharply decreased and the frontline became increasingly saturated with drones, these strike UAVs began to be used against infantry and fortifications as well.

UAV attacks can also target sea and air targets: for example, boats crossing a body of water, enemy helicopters or reconnaissance drones. For instance, in August 2024, at the beginning of the Kursk operation, a Ukrainian kamikaze drone hit a Russian Mi-28 helicopter during its flight.[14]

In 2024, the Ukrainian military began the mass use of "anti-aircraft drones" — UAVs designed to intercept and destroy enemy strike drones. Later, Russian forces also began to use a similar practice. There is a variety of approaches used to destroy enemy drones: they include dropping a net on the enemy drone, which blocks its blades and causes it to fall, or direct strikes mid-air, which leads to the detonation of the explosive.[15]

1.3. Structural elements and controls

The components of short-range drones vary depending on the type and model of the drone, but key structural elements include: a supporting frame (fuselage in the case of fixed-wing drones), an engine and its speed regulators, propellers or wings, a flight controller, a video transmission system, an optical camera, a battery, a module for carrying and detonating the munition, and other elements. For example, fiber-optic drones must have a coil with a cord through which they are controlled.

Frames come in carbon, aluminum, or other materials, and this choice significantly affects the drone's properties. Recently, Russian drones have tended to use aluminum frames, since they are lightweight and cheaper in mass production. The quality of the frame is important not only for weight, but also for stability and vibration reduction, which directly affect the controllability of the drone.

Control and video transmission on modern strike drones are usually set up as two independent radio channels, one for control commands and the other for the video signal transmitted to goggles or a remote surveillance system. Each channel uses separate antennae, which differ in operating frequency, polarization, directivity, and gain, and these parameters determine connection quality and stability. This rule does not apply to fiber-optic drones, for which the transmission of video and control commands is carried out through a cable connecting the drone to the operator.

A particularly important element is the video communication system, which ensures the transmission of images from the drone camera to the operator. This system can be analog or digital: the former is simpler, cheaper, and provides minimal signal delay but is easily intercepted and jammed by electronic warfare (EW) equipment.[16] Digital video communication, on the other hand, provides higher image quality and can be encrypted, but is more expensive and more difficult to set up.

EW systems affect the control and video transmission channels by jamming or substituting signals within the frequency bands used by drones. When one or both of these channels are suppressed, the drone loses the ability to receive control commands from the operator, and/or the operator stops receiving live video from the drone's camera. In the event of a loss of control, a drone may either crash or continue movement along the last known vector or according to the initially set emergency profile, depending on the flight controller settings.

The camera is the central element of any strike or reconnaissance drone, as it is what provides the operator with the ability to aim at the target. On kamikaze drones, the camera is usually fixed at a constant angle sufficient for visual aiming during flight. On munitions-drop drones, the camera tends to be guided, allowing the operator to change the viewing angle, looking both forward and down for a more precise drop. Commercial drones like the DJI Mavic or Autel have high-quality factory-installed moving cameras, so they provide more precise aiming than FPV drones, which require additional devices to change the viewing angle.

A separate niche is occupied by fiber-optic systems, which are invulnerable to electronic warfare but have limited maneuverability and greater weight due to the use of a coil and cable.

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[16] Electronic warfare (EW) is a set of technical means and actions aimed at disrupting or jamming electromagnetic channels in order to deprive the enemy of effective communication, navigation, or control, or to protect one's own systems. The key components of electronic warfare are electronic suppression, electronic reconnaissance, and protection against enemy electronic warfare.

[17] VOG is an abbreviation of the Russian term "Vystrel Oskolochnyi Granatometnyi" ("Fragmentation Grenade Launcher Round"). This designation is used for ammunition for under-barrel and handheld grenade launchers, such as the VOG-17 or VOG-25.

For short-range drones, the selection of a warhead is determined by three factors: the type of target, the platform's payload capacity, and the availability of munitions. In practice, adapted factory-made munitions prevail, from grenades and mines to specialized cumulative elements that can be integrated both for drop and direct strike. Against personnel, high-explosive fragmentation (HEF) munitions are used most frequently, such as 60-mm and 82-mm mortar rounds, hand grenades, VOG grenades[17], and others.

1.4. Signs of intentional damage vs. loss of operator control

Although loss of control or accidental discharges of munitions occur for a variety of reasons, there are a number of signs that can distinguish an accident from a deliberate, aimed hit. These markers can inform conclusions on whether the operator maintained control over the drone at the moment of the strike and whether the target was chosen deliberately.

1.4.1. Munitions-drop drones

Munitions-drop drones can accidentally drop the munition due to a variety of circumstances, such as unreliable mounting, abrupt maneuvers, losing radio communication with the operator, or malfunction of sensors responsible for dropping the munition. However, the following indicators can help to prove the intentional nature of the drop:

a) **Hovering over the target**. If the drone is controlled by an operator, when attacking a stationary target, it hovers in the air to stabilize its position and take careful aim;

b) **Decrease in altitude**. To increase the accuracy of the attack, the drone can reduce its altitude. Otherwise, the drone lowering or hovering in one spot is illogical, since at low altitude, there is a higher likelihood of the drone being shot down or of losing communication.

c) **Camera angle**. If a video from the drone camera is available, a characteristic sign of

a targeted attack is a change in the camera's angle towards the target (specifically, the camera will tilt to a vertical downward view). In other cases, the drone's camera is normally directed forward for the best visibility.

d) **Presence of video**. If video footage of the attack exists from the drone that carried it out, this will indicate that the video signal was not lost and thus was steadily delivered to the operator.

e) **Lack of system notifications about loss of control**. Videos from drones that have lost control usually show messages like Failsafe or RXLOSS (in the case of kamikaze drones). In DJI Mavic munitions-drop drones there are red indicators or signs with a notification that remote control is lost. The absence of such notifications at the time of the attack indicates that control remained stable and the drone was controlled by the operator.

However, if a munitions drop drone is attacking a moving target, the indicators listed above are generally not relevant — except for the camera angle and the presence of video that may show the drone pursuing the target. Such attacks occur less frequently because they are more difficult to execute. However, experienced operators can use dropped munitions to hit moving objects, such as a moving car. In this case, the intentional nature of the attack can be proven by the fact of the pursuit of the target by the drone and dropping the munition alongside its trajectory.

The height at which munitions-drop drones hover before dropping the munition depends on many circumstances but is generally such that it would minimize the risk of being shot down from small arms — i.e., about 100 meters above the ground. However, in the case of strong winds, this altitude may be lower. In this case, the drone can descend as low as 30-40 meters for targeting, but the most common range of heights for dropping munitions is 60-100 meters.

1.4.2. Kamikaze drones

To assert that a kamikaze drone attack was intentional, a similar but separate list of circumstances must be taken into account:

a) **Speeding up before impact**. A controlled kamikaze drone would most likely gain speed before the attack. This will be accompanied by a characteristic increase in the intensity of engine sound. Since several attempts may be needed to approach the target right, such episodes of "escalating" sound may happen in a series. The speed gain is necessary so that: the force of the impact would activate the detonator of the attached charge; the target would be less likely to avoid the drone and the impact; and the risk of missing the target due to the early loss of the "picture" (video stream) during a slow approach would be reduced.

b) **Maneuvering before the hit**. For kamikaze drones, it is typical to adjust the trajectory immediately before impact: the operator, approaching at high speed, performs a final maneuver to aim the device precisely at the target. Sometimes, the drone's position relative to the target becomes clear only at close range; therefore, a few degrees of change in the angle by the operator are crucial. This indicator is easy enough to confirm if a video from the attacking drone is available. In addition, the pursuit of a moving target and the corresponding maneuvers also indicate that the attack was intentional.

c) **Availability of the video feed from the drone camera and absence of system notifications about loss of control** (such as Failsafe or RXLOSS notifications). This will also indicate whether the video signal was consistently received by the operator, and the absence of special notifications in the interface indicates that the control signal was also present.

We should additionally note some particular features of fixed-wing drones' behavior. Among Russian drones of this type, the most common ones are Molniya and Privet 82. A characteristic feature of such drones is the high altitude of approach to the target (up to 400 meters). Accordingly, the attack can occur either by diving at the target from a height or by approaching the target at tree height after a sharp descent. Signs of intentional damage to an object by such a drone may include:

a) **the drone circling above the target**. Sometimes, the operator cannot approach the target in an optimal way for a strike and therefore must perform additional maneuvers (turn, orbit, re-entry);

b) **change in engine noise**. The sound can significantly intensify, as the drone may gain speed before the strike and/or dive, or, conversely, the sound may reduce or disappear altogether (before the strike, the operator, having gained sufficient speed and altitude, can switch off the engine or significantly reduce speed or power). Analysis should take into consideration that the propulsion system can be either electric or gasoline-run, which affects the nature of the sound and its interpretation.

An additional indicator of an intentional strike by a UAV of any type can be the presence of another drone near the strike site, which serves to record the strike. These can be commercial drones like DJI Mavic or Autel, which fly nearby, or a kamikaze drone hovering nearby, which is designed to record the strike or, if necessary, to carry out a second strike.

1.4.3. Signs of losing control over the drone

Kamikaze and munitions-drop drones can lose control due to EW jamming, obstacles on the radio horizon, significant physical damage or technical mulfunction of the UAV, battery depletion, or, in the case of fiber-optic drones, damage to the connecting cable.

The behavior of a kamikaze drone after loss of operator control can depend on the settings of the Failsafe mode, which sets the drone's action algorithm in such cases. Below are the main possible "behavioral" scenarios:

a) the drone may continue its flight along the last known trajectory, sometimes gradually gaining or losing altitude depending on the position of the control sticks at the time of control loss.

If an obstacle or the target is in the way, detonation is possible, but the sound of the engine will not intensify in this case, since the speed and direction of movement remain at a stable level.

If there are no obstacles along the way, after a certain time (5 seconds to 2 minutes, depending on the settings) the drone may start rising, evenly or sharply. In this case, the sound of the engine will increase, but the device itself will move away from the potential target. If control is never regained, the drone will normally shut down the engines and fall chaotically. In such cases, the sound of the engine suddenly disappears and is then followed by the sound of an explosion from a collision with the ground or another object. Such a strike would not be intentional.

b) The drone may go into a sharp dive if the sticks on the remote control were in extreme or close to extreme positions at the time of loss of control. In this case, the engine sound may briefly intensify, and the drone itself may lose stability and start spinning in the air. If there is serious damage or a technical malfunction—for example, the failure of one of the motors—the drone will start loosing altitude and rotating around its axis. This chaotic trajectory will be different from the controlled maneuvering that the operator performs when preparing to attack a target. In general, this would indicate that the strike location may not have been the intended target.

The behavior of fiber-optic kamikaze drones is similar to radio-controlled platforms and depends on the Failsafe mode settings. The following scenario appears the most common in the situation of loss of control: during a certain time (up to 10 minutes), the drone levels its position in the air and moves in a straight line (even if the operator was maneuvering it before); the next stage (up to 20 seconds) is accompanied by an increased power of the engines and gradual climb; then the power increases even more alongside a sharp climb. This process is accompanied by a gradual or sharp increase in the volume of the drone's engines. The altitude of a fiber-optic kamikaze drone is quite clearly defined by its technical features and must be as low as possible to avoid damage to the cable (slightly above the grass level, directly above the tree line, under power lines, etc.).

As for fixed-wing drones, in the absence of access to the video from the operator's glasses / screen, it is more challenging to identify if there has been a loss of control compared to multirotor drones. There are several reasons for this:

a) fixed-wing drones can be equipped with autonomous guidance systems more often than multi-rotor drones. Therefore, even in case of loss of control, the drone will continue moving towards the target independently, without operator control, and flight trajectory and engine sound will be even, without the characteristic adjustments by the operator, according to the chosen settings;

b) in the absence of any means of guidance, these drones will behave in line with the in-built Failsafe mode similarly to the multirotor one. This usually means maintaining altitude and leveling, i.e., the drone will continue to move forward steadily at approximately the same height at which it lost control. After leaving the EW zone or moving outside the influence of an obstacle (e.g. terrain), control can resume. If the operator's connection with the drone does not resume, after battery depletion, the drone will gradually reduce speed and altitude until it lands or collides with an obstacle. Thus, unlike multirotor kamikaze drones, a fixed-wing drone is unlikely to make chaotic maneuvers after losing control. However, if such a UAV sustains significant physical damage, it may lose stability and enter a spin.

Munitions-drop drones can lose control, too, and their behavior thereafter depends on the type of the drone and set emergency scenarios. Heavy bomber drones, if control is lost, behave similarly to kamikaze drones. Drones like DJI Mavic or Autel, on the other hand, may rapidly gain altitude or, hovering at a certain level, slowly drift in the direction of the wind, depending on the operator's settings. When the battery charge reaches critical levels, the drone will gradually descend, maintaining slow movement downwind, until it lands or collides with an obstacle.

In conclusion, the structure, classification, principles of operation, control, and suppression of drones have a significant number of technical and tactical features which constantly change. This section only briefly outlines the most general characteristics necessary to understand the context. Identifying signs of intentional damage remains a difficult task. Primarily, this is because people who find themselves near a drone face immediate danger, and their first response is to hide rather than observe. This is the only correct course of action, which often saves lives but makes it difficult to record important details. In addition, changes in technology, development of new models and use cases all affect drones' behavior, which makes certain categories less obvious. Everything often happens in mere seconds, and only experience can help to spot the details that may indicate the intention to attack.

At the same time, the list of characteristics herein is not exhaustive and may be supplemented. In particular, the experience of individual experts or eyewitnesses may indicate additional or different criteria. Still, these guidelines are undoubtedly useful for somebody who documents or studies drone attacks, since they help to systematize observations, develop working hypotheses regarding intentionality, and attempt differentiation between intentional strikes and accidental damage.

Section 2. Considerations When Documenting Short-Range Drone Attacks

While working on this study, we focused on identifying features that distinguish short-range drone attacks from other types of weapons such as artillery, mortar, or missile strikes. Analyzing the collected testimonies, we summarize the unique nature of these attacks, as manifested both in the course of these incidents and in the experience of witnesses and survivors, in the ways in which they adapt to such attacks, as well as approaches to documenting these types of strikes.

In the approach used by Truth Hounds, when interviewing witnesses and survivors of shelling and other attacks such as missile strikes, a documenter must establish a) what preceded the attack; b) what the course of the attack was; c) what the consequences were; and d) what weapon was used. Collection of detailed information on these points ensures maximum completeness of data about an incident and assists with its proper legal qualification.

In interviews about drone attacks, the thematic focus remains the same, but such an interview would typically require a more detailed look into certain aspects of the incident or introducing new questions due to the unique features of this type of attack.

First, it is worth asking about the history of use of the attacked object, and the status of the attacked person during the armed conflict and before it. However, the main focus should stay with recreating the course of events directly before the incident. For example, it would be useful to know whether the respondent knew about reconnaissance drones near the site of the attack on the same day, the use of the attacked object (for instance, if the attacked object is a house), whether people entered or left the building, what they looked like and whether they can identify these people. If an attack is against a moving target, the best approach would be to try to recreate its route before the attack and collect a description of what the target looked like in as much detail as possible. It is also useful to ask whether respondents can describe or imagine what the target would look like from above.

In the context of a broader understanding of the circumstances surrounding the attack, it is worth asking whether the attacked object or individual was attacked before and whether the area is overall frequently targeted by drone attacks. It is also advisable to ask how often UAVs can be seen or heard in the area, from what direction they tend to appear and in what direction their flight continues. Sometimes, such observations allow for establishing a typical trajectory of drones, which helps to conclude whether the site of the attack was incidental, whether it is part of a typical trajectory of drones, and to identify whether movement in this area is predictable for drone operators.

When interviewing witnesses or survivors about the attack, it should be kept in mind that drone attacks have a more varied duration than attacks using other types of weapons and may last anywhere from several seconds (e.g. when a kamikaze drone selects an immovable target in the "free hunt" mode[18] and rapidly attacks it) to several minutes (when a drone pursues a motor vehicle on the move). It is important to establish the total duration of the attack by attempting to reconstruct the entire route and maneuvers of the drone from the moment it was first noticed by witnesses to the moment of the strike.

The presence or absence of order and logic in the UAV's maneuvers may indicate the quality of communication between the drone and the operator and the intention to attack. For instance, a family member of the man who was killed in the village of Dmytrivka on the bank of the Dnipro Estuary said that a Russian drone was pursuing the man when he was riding his moped along two streets (about 200 meters) before attacking him.[19] Such prolonged, targeted pursuit is a clear indication of the intent of the attack.

During the interview, pay attention to the description of the last seconds of the drone's flight: whether the flight was smooth, whether there were any maneuvers (steering, turning, acceleration, braking), whether there was a noticeable increase in the speed or, conversely, hovering and descent at a reduced speed. It is also important to look at repeated flights over a single point, repeated attempts to approach the target, and characteristic changes in the sound of engines

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[18] This refers to flights in search of targets without prior reconnaissance.

— all of this helps to differentiate between intentional targeting and accidental loss of control or technical malfunction.

Furthermore, try to carefully collect information about the location of the attack, the look of the attacked object or individuals, the terrain and buildings around, weather conditions at the moment of the attack, lighting, and visible landmarks. The operator can perceive and analyze the surroundings depending on what they see through the camera of the drone; it is therefore important to understand how the site of the attack looked from the viewpoint of the operator and what may have drawn their attention.

The audio aspect of the attack is also crucial: it is advisable to ask whether the respondents heard the sound of drone flight, what this sound was like, and whether it changed during the flight. Even without information about what the drone looked like, the description of its sound during the attack may indicate the intention to attack. Ask witnesses to recreate the sequence of changes in sound.

When documenting the aftermath of a drone attack, like with other types of strikes, it is important to establish the number of people who were killed and wounded, identify the nature of injuries, describe damaged or destroyed property, and attempt to localize the site of the explosion. It is also crucial to receive photos and videos of the attack site from witnesses, from open sources or to take such photos / videos, as well as to document the long-term physical and mental consequences of the incident suffered by the survivors.

To identify the type of the drone and the munition used in a specific incident, it is best to ask questions that clarify the course and aftermath of the attack. For instance, if respondents saw the drone in flight, ask them to describe its look in as much detail as possible. The description of the drone's sound can also be important, since different drone models have different engines, control systems, and other components, which create a characteristic sound. While this is less common, sometimes witnesses and survivors can provide a description of the munition delivered by the drone. Understanding the type of the munition and its size can narrow down the possible models of UAVs that may have been involved in

the attack, particularly if the approximate weight of the munition is greater than the payload capacity of certain drone models.

After an explosion, fragments of the drone shell, its components, or the munition itself may remain at the scene of the incident. Photos and videos of such remains can also greatly help in establishing which drone and munition were used.

Photos and videos of the attack itself can also be a valuable source for establishing both the intent and the type of drone used. Ask the respondents if they have such materials or know somebody who might have them. In addition, ask them if they have come across video of the incident recorded from the drone camera. Recordings are often published in Ukrainian or Russian online sources, and some witnesses and survivors of drone attacks interviewed by Truth Hounds were thus able to find videos of incidents they described. These videos often helped to compare the testimony with the characteristics of the UAV's operation and operator control as evidenced by the video. If there is a video, record the source (link, username, time of publication) and, if possible, archive the original file.

Note that documenting drone attacks may assist with not only the legal qualification of incidents, but also broader research goals, such as identifying protection strategies for civilians, research of patterns of use of new types of weapons, etc.

In regions where the threat of drone attacks is ubiquitous, the civilian population, emergency workers, and others are developing strategies to adapt and counter this threat. Respondents interviewed by Truth Hounds shared unique practices that have emerged in response to regular drone attacks and that help minimize the risk of damage. Documenting such experiences has not only value for anthropological or sociological studies but may also serve as a groundwork for developing local and international safety policies aimed at adapting civilian communities to the growing threat of combat drones in contemporary armed conflicts.

Given the above, respondents can be asked whether they know any practices to protect against drone attacks or to counter them, which

ones they use personally, which ones they consider more or less effective, and why. It is also important to trace the evolution of these practices: when and under what circumstances they emerged, how they changed over time, and whether any of them lost their effectiveness due to changes in drone types or attack tactics.

This study included interviewing respondents who most often witnessed or survived not one drone attack but an entire series. Many of them reside in localities under a constant threat of drone strikes, which significantly impacts the state of infrastructure, access to basic needs and resources, and, consequently, the everyday survival practices and the social dynamic of local communities.

Therefore, the added value of the interview may be a broader view of the context of such attacks and their impact on the respondents' sense of security, well-being, and daily lives. Respondents should be asked when exactly drone attacks began, how their frequency, tactics and characteristics have changed, what new challenges these attacks created for the community, and how residents adapted to these conditions.

The documentation experience gained by Truth Hounds during the drafting of this study indicates that the threat of drones has significantly transformed the lives of communities in the Lower Dnipro region. Interviews with people who live or work under regular drone attacks are a valuable source for examining the social, behavioral, and psychological effects caused by this new means of warfare.

Following the recommendations above when interviewing witnesses and survivors of drone attacks will help collect more accurate and comprehensive accounts. In turn, this will ensure higher-quality documentation of such incidents, strengthen the legal assessment of these attacks, and contribute to a deeper understanding of their impact on the civilian population.

Section 3. Drones as a Ubiquitous Threat: An Overview of Attacks against Ukrainian Civilians

On October 4, 2024, volunteer Denys Khrystov was on his way to organize evacuations from a frontline village in Donetsk oblast when he suddenly spotted a naked man on the road and stopped.[20] The man's name was Maksym, and he was attacked by a kamikaze drone while riding his motorcycle to get fuel. His clothes burned from the explosion, and his body suffered burns and fractures. Denys put the man into the evacuation vehicle and took him to the nearest hospital, but Maksym died in the ward a few days later.[21] A month and a half later, Denys' evacuation vehicle was hit by a kamikaze drone during another evacuation mission in Donetsk oblast.[22] The outer body of the car was badly damaged, but Denys himself was unscathed, though he did call the date of the attack his "second birthday."

Denys Khrystov
Source: Vilne Radio on Facebook

Stories like the one shared by Denys are entirely common for people working in frontline areas in Ukraine. The Russia-Ukraine frontline is becoming increasingly more saturated by drones every month. In February 2025, the Commander-in-Chief of the Armed Forces of Ukraine, Oleksandr Syrskyi, stated that 66% of the damage to Russian equipment at the front in the previous month was caused by combat drones.[23]

Alongside the increased use of drones on the frontline and reliance on this weapon in warfare, we observe growing risks that civilians, either intentionally or accidentally, may fall victim to these weapons. The UN Human Rights Council reported that 38 civilians were killed and 223 others were injured in drone strikes in Ukraine in January 2025

alone.[24] Despite the fact that the saturation with drones on the Russian and Ukrainian sides is almost identical, 95% of damage to civilians that occurred in January 2025 happened in the territory controlled by Ukraine, according to the UNHRC.[25]

Short-range drone strikes on civilians occur in various frontline areas — from border villages in Chernihiv oblast to the Black Sea coast in Mykolaiv oblast. While the next section provides a detailed examination of such attacks along the right bank of the Dnipro River and the Dnipro Estuary, this section briefly reviews examples of short-range drone attacks across the entire frontline.

These Russian attacks kill civilians, emergency workers, volunteers, and more. In addition, numerous videos of the strikes published by the Russian military indicate their awareness of destroying non-military targets.[26]

In May 2024, Russian troops had just breached the border of Vovchansk, Kharkiv oblast. On May 21, 2024, a Russian kamikaze drone destroyed a police car heading to Vovchansk to evacuate civilians. One police officer was killed and another injured.[27] A video of the attack from the drone camera was published in the Russian Telegram channel "Obsessed with the War":[28] in the video, the car is clearly identifiable as a police vehicle; moreover, the footage is accompanied by the song Sound of da Police by American rapper KRS-One, which highlights that the Russian side was aware they were attacking the police.[29]

It is not only police officers but also other emergency workers, such as first responders and medics, who suffer from Russian drone attacks along the entire frontline. The nature of their work entails regular assignments near the frontline, which means they regularly find themselves within the range of drone operation. The Russian military attacks such workers, particularly first responders, when they arrive at the site of a prior strike.[30] This tactic is known as double-tap.[31] For instance, on August 14, 2024, a Russian munitions-drop drone attacked first responders in the village of Stanislav, Kherson oblast, who were working at

[26] The issue of the intentionality of Russia's drone attacks against civilians and civilian facilities is considered in more detail in the next section.

[28] This Telegram channel with over 730,000 followers regularly covers the "special military operation."

the site of shelling. As a result, four people were injured and a fire truck was damaged.[32]

Russia's use of drones to carry out double-tap strikes has expanded the understanding of this tactic. Previously, it was primarily artillery and missiles used in such attacks, and the interval between the two launches was either calculated to allow for the time it would take first responders to arrive at the site of the first strike, or done using reconnaissance drones or agents on the ground. By contrast, using short-range drones gives the attacker much more precise and immediate information about the presence of rescuers, medics, and other civilians at the site.

Russian forces also target medical transport. For example, on 16 July 2025, in the Kupiansk raion of Kharkiv oblast, a drone attacked an ambulance, injuring two paramedics.[33] Similar incidents occur regularly in Kherson, Kharkiv, Dnipropetrovsk, and Donetsk oblasts.[34]

Utility workers and volunteers also fall victim to Russian drones, which in turn undermines civilian infrastructure and significantly impacts the living conditions of civilians in areas near the frontline and the border. For instance, in Chernihiv oblast, a drone strike on April 13, 2024, killed a worker of a bread factory who was taking bread to the village of Buchky on the border with Russia at the moment of the attack. On February 5, 2025, a kamikaze drone in Pokrovsk, Donetsk oblast, collided with a minibus of the national postal service Ukrposhta, which, among other things, delivers social payments.[35] Russian drones have also repeatedly struck regular minibuses and buses: such incidents were recorded along the entire frontline.[36]

> *"I was being chased by a kamikaze drone. I saw it in the mirror purely by chance and had to escape. I moved away just in time and it missed, hitting the corner of a house," shares Oleksandr, a minibus driver in Kherson, in his interview for Suspilne Kherson.[37]*

In addition, Russian short-range drones have attacked energy infrastructure facilities as well as related enterprises. For instance, UAVs attacked electrical substations near the city of Marhanets, Dnipropetrovsk oblast (September 2024) and a coal enterprise next to Pokrovsk, Donetsk oblast (December 2024).[38]

Drones also attack volunteers and humanitarian workers, which complicates the evacuation of civilians. For example, in November 2024, the Angels of Salvation charity suspended evacuations from the city of Kurakhove due to the extreme threat of drones, as the day before, a kamikaze drone had hit one of their evacuation vehicles with crew and civilians inside.[39] All passengers and the driver were unharmed, as the car was armored. However, not even an armored vehicle can always protect people against drone attacks: on December 2, 2024, two Russian kamikaze drones hit an armored evacuation van of the Baza Ua NGO, which was evacuating three women from the village of Shevchenko next to Pokrovsk. Two of the three women were injured in the attack.[40]

The Baza Ua armored van was attacked another time at the end of January 2025: while evacuating two civilians from Pokrovsk. A Russian drone hit the roof of the vehicle, which led to one volunteer, UK citizen Edward, who was driving, suffering severe injuries, including the loss of his left arm and his left leg.[41]

> *"It was just a strong flash, a blow. I tried to keep driving, and then I realized I was moving my shoulder but my hand was not moving on the wheel, and my leg was just crushed. (...) This cannot be described as anything other than a war crime. I am a civilian; I should not be at risk," shared Edward in a comment for Suspilne. Donbas.[42]*

In both cases, the evacuation van driven by volunteers was white, with orange signs "Evacuation" and "Volunteers" on the hood and on the side of the vehicle. Vans are particularly vulnerable to Russian drones due to their large size and low maneuverability.

In addition to facilitating evacuations, volunteers are also delivering humanitarian aid to residents of towns and villages near the frontline. As vol-

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[31] Russian forces used a double-tap strike tactic to target rescuers during the war in Syria. The Russian Armed Forces have also employed this tactic to carry out attacks in Ukraine, as a result of which rescuers, police officers, medics, journalists, and other civilians have repeatedly become victims. The use of this tactic is examined in detail in the Truth Hounds report "Cruelty Cascade: Examining the Pattern of Russian Double-Tap Strikes in Ukraine."

unteer cars are being destroyed by drones, this aid is also in jeopardy.

Attacks on humanitarian workers and volunteers are particularly dangerous in winter, as during this period, residents of frontline cities are much more dependent on their assistance due to the additional difficulty in accessing food and the need for heating.

On January 26, 2024, a Russian kamikaze drone hit the pickup truck of a volunteer from the Proliska humanitarian mission while he was distributing humanitarian aid in the town of Chasiv Yar.[43] The distance from the city to the frontline was about 3 kilometers at the time. The driver filmed a video of the trunk of the pickup after the drone hit. The trunk was filled with warm clothes and boxes of other necessities, some of which were engulfed in flames. In addition, the video clearly shows stickers with the logo of the humanitarian mission on the hood, roof, and side mirrors of the vehicle, which would signal to the drone operator that the pickup truck was used for non-military purposes.

There have also been cases of Russian drone attacks on humanitarian aid distribution points, e.g., in the village of Novodmytrivka, Kherson oblast, the village of Solonchaky, Mykolaiv oblast, and the city of Kupiansk, Kharkiv oblast.[44]

Under various circumstances, drone attacks have also obstructed journalistic work on the frontline and nearby. Both Ukrainian and foreign reporters have been targeted by drone attacks.[45] On May 25, 2025, two journalists of the Ukrainian media outlet Suspilne.Donbas were attacked by a Russian drone in the town of Rodynske, Donetsk oblast. At the moment of the attack, they were both wearing black bulletproof vests with the "Press" sign.[46]

Representatives of international organizations have also repeatedly become victims of Russian drone strikes. On September 12, 2024, Russia attacked a truck of the International Committee of the Red Cross (ICRC) in the Donetsk oblast, killing three of the organization's employees and injuring two more.[47] Ukrainian investigators established that the attack was carried out using artillery and the Lantset kamikaze drone, whose

remains were found on site. Three months after this attack, a Russian drone attack targeted an International Atomic Energy Agency (IAEA) vehicle on its way to the occupied Zaporizhzhia Nuclear Power Plant.[48] The IAEA vehicle, like the ICRC truck, had clear markings in the form of the logos of their organizations.

Still, the most common victims of Russian strikes are residents of towns and villages on the areas close to the frontline, who face the deadly threat from the sky every day, as a drone may appear at any moment. Civilians now try to spend as little time as possible outdoors. Russian drones crash into high-rise buildings, drop explosives on parked cars, and chase down cyclists and pedestrians. Experience shows that a drone can be used to target anyone and anything. Not even children are safe from falling victim to drone attacks.[49]

The low cost and large scale of drone production have long allowed them to be used directly against people. Back in July 2024, Russian Defense Minister Andrey Belousov stated that the Russian Federation produced about 4,000 drones with first-person view (FPV) technology every day.[50] Most FPV drone models, especially those produced in large quantities, are short-range drones. Therefore, even a single infantryman can be targeted by a kamikaze drone.

The examples above demonstrate that the range of drone targets goes far beyond purely military targets, and the number of cases of strikes on civilians, the manner in which they are carried out, and the narratives that accompany them indicate that these attacks are not accidental.

Section 4.
Analysis of Drone Attacks on Civilians and Civilian Facilities in the Lower Dnipro Region

The distance between the cities of Ochakiv and Zaporizhzhia is about 400 kilometers, if you walk along the Dnipro coast. Such a hike would take a traveler about 93 hours, filled with views of the Dnipro and the Ukrainian steppes. However, during the Russia-Ukraine war, this road is also filled with burnt cars, craters from artillery mines and shells, and drones flying overhead day and night.

Back in the early days of the Russian full-scale invasion of Ukraine, the Kakhovka reservoir, which was built on the Dnipro in the 1950s, became the boundary between Ukrainian and Russian troops. The average width of the reservoir was 9.4 km, so Russian units crossed the Dnipro only downstream, near the cities of Nova Kakhovka and Kherson. Even in the first days of the full-scale invasion, they used the highway through the Kakhovka Dam and the Antonivka Highway Bridge, capturing approximately 5,700 km² of the right bank.[51] However, in November 2022, the Ukrainian defense forces de-occupied this territory, including Kherson. The Dnipro riverbed then formed a contact line in this direction, and the the Antonivskyi road and rail bridges, as well as the bridge on the Kakhovka Dam, were blown up by Russian troops during their retreat. Thus, the transport connection between the right bank of the Dnipro River (controlled by Ukraine) and the occupied left bank completely disappeared.

The blowing-up of the Kakhovka Hydroelectric Power Plant (HPP) dam by Russian forces on June 6, 2023 led to the leakage of the reservoir and the shallowing of the Dnipro.[52] Hundreds of square kilometers of land surfaced after the leakage of the reservoir. Before the construction of the Kakhovka HPP, this area was known as Vekykyi Luh, or the Great Meadow.[53] The areas that emerged from under the water have become part of the "gray zone"—an area not controlled by either party to the conflict. Thus, for almost three years now, the Dnipro River has accounted for a third of the Russian-Ukrainian front, and attempts by both sides to force the river and create a bridgehead on the other bank have not had any success.

[53] The Great Meadow is the historical name of the Dnipro wetlands located below the island of Khortytsia in the 16th-18th centuries. It was about 20 km wide and about 100 km long. These wetlands were covered with deciduous forests, contained numerous meadows, straits, lakes, and swamps. Cossack localities were located along The Great Meadow.

Regular shelling along the coast of the Kakhovka reservoir began in the summer of 2022. For example, on July 12, 2022, the first artillery shelling of Nikopol took place, and July 27 saw the first shelling of Marhanets, located directly opposite occupied Enerhodar and the Zaporizhzhia NPP.[54] Russian forces began shelling the right bank of Kherson oblast shortly after their retreat. For example, the first shelling of de-occupied Kherson city took place on November 16, 2022, five days after the de-occupation. One resident was killed.[55] Of all the means of destruction, tube and rocket artillery remained the main danger for residents of the Ukraine-controlled area until the second half of 2023.

In the spring of 2023, Kherson law enforcement agencies and journalists began recording regular cases of the use of short-range drones for attacks. Reports from the village of Antonivka, near Kherson city, described the use of munitions-drop drones against civilians and their property, in particular against law enforcement officers.[56] By the end of 2023, attacks by munitions-drop drones, as well as kamikaze drones, covered the entire area of the right bank of Kherson oblast and continued to intensify.[57] Drone attacks in the Nikopol raion in Dnipropetrovsk oblast began in the spring of 2023, but occurred sporadically and increased markedly only in 2024.[58] Drone attacks in the direction of Ochakiv in Mykolaiv oblast were the last to begin, as late as in December 2023.[59]

The relatively easy approach of drones to the right bank of the Dnipro River and the Dnipro Estuary is facilitated by the flat terrain: the surface of the water provides a stable radio horizon, and the risks of loss of communication are reduced. It is also impossible to install stationary suppression equipment or positions to shoot down drones there.

The absence of large-scale offensive operations on this segment of the frontline means there is a lower number of servicemen and military equipment in the area in comparison with areas where more intense hostilities require more concentration of resources. In these circumstances, where the frontline is stable, the terrain is well known, and the military presence is limited, drones become a convenient weapon for the pinpoint engagement of targets. However, as further analysis

will demonstrate, the reality of the use of these weapons is much more complex.

4.1. Number of Attacks and Demographics

The territorial boundaries of this study cover the space from Ochakiv, Mykolaiv oblast, to Lysohirka, Zaporizhzhia oblast. This area covers the riverbank territories of the Mykolaiv, Kherson, Dnipropetrovsk, and Zaporizhzhia oblasts of Ukraine. Although we consider the entirety of this area, different parts of the riverbank have some differences in both the intensity of attacks and the number of residents.

In this area, most drone attacks target localities directly along the riverbank or within a few kilometers of it. However, with the increase in flight range and the use of communication relays, attacks are moving to increasingly remote areas from the river.

Counting the number of drone attacks is quite a complicated matter. Therefore, to try to estimate their number, one has to rely on the available regional sources: mostly reports of local authorities, messages in the Telegram channels of individual representatives, or information from specialized local channels.

Within the area of this study, Kherson oblast suffers the most from attacks. The main reasons for this are currently unknown, but several minor ones can be identified.

One reason is the fact that this is precisely the area where the Dnipro riverbed and the adjacent wetlands separating Russian and Ukrainian forces are at their narrowest. For example, between Kherson and Oleshky on the opposite bank, the distance is about 4 kilometers, and between Beryslav and Kakhovka it reaches only about 3.5 kilometers. Such a short distance reduces the flight time of the drone across the river, increasing the number of potential targets within its range, as the charge or length of the communication cable is consumed more slowly. In addition, it was in Kherson oblast that the main attempts to cross

the Dnipro River[60] took place, and there are sporadic operations to establish control over the islands in the Dnipro River.[61]

The main source of statistics related to drone attacks in Kherson oblast is Oleksandr Prokudin, the head of the Kherson Oblast Military Administration (OMA). In August 2024, Prokudin reported 3,300 drone attacks in the oblast between July 13 and August 13. He also provided data on the number of civilian casualties during this period: 7 dead and 112 injured.[62] His subsequent reports recorded a further increase in the intensity of attacks: in February 2025, a similar number of drone strikes on the right bank of the oblast occurred within two weeks alone.[63] According to him, in January 2025, as a result of drone attacks, 17 civilians were killed and 142 were injured.[64]

According to the Kherson OMA, as of March 2025 up to 80% of drones can be shot down "thanks to the radioelectronic dome set up over Kherson oblast."[65] In March 2025, Russian drones attacked the city of Kherson alone about 600–700 times a week (about a third of the total number of attacks in the oblast during this time).[66] In August 2025, the number of attacks on Kherson city and the community exceeded 1,500 per week.[67]

Along the Ukraine-controlled banks of the Great Meadow and the Dnipro Estuary, the intensity of drone attacks is markedly lower. The most demonstrative example is the Nikopol raion of Dnipropetrovsk oblast—an administrative unit that covers almost all the northern coast of the Great Meadow. Within the Nikopol raion, short-range drone attacks are reported by local authorities and local Telegram channels. The largest of these channels by number of subscribers is "What? Where to?," which, as of November 15, 2025, had more than 58,000 followers.[68]

Considering the reporting of this channel, we found that the average monthly number of attacks by kamikaze and munitions-drop drones recorded between September 2024 and March 2025 was 459 per month. The highest monthly figure was recorded in October 2024—626 attacks, and the lowest in January 2025—397 attacks. On average, about 40% of all drone attacks within the raion fell directly on Nikopol city—188 per month.

The average number of victims of drone attacks during the same period is nine people per month. The highest number of casualties was recorded in December 2024— 17 casualties— and the lowest in November 2024 and January 2025—3 casualties each. In total, six civilians were killed during this period: three in September 2024, another person in December 2024, February and March 2025 each.

On the northern bank of the Dnipro Estuary, local authorities and local Telegram channels remain the main sources of data on the number of drone attacks. Administratively, this territory is part of Mykolaiv oblast, namely Ochakiv city community, as well as Kutsurub and Halytsyniv village communities.[69]

The main official source of statistics on drone attacks in Mykolaiv oblast is the head of the regional military administration Vitalii Kim.[70] The reports published by Kim also indicate a gradual increase in the number of attacks: back in February 2024, he reported 14 attacks, in October 2024—53 attacks, and in March 2025—83 attacks.[71]

The intensity of short-range drone attacks on different parts of Mykolaiv oblast correlates to some extent with the demographic situation in these territories.

For example, in most localities of the right bank of the Dnipro in Kherson oblast, no more than a quarter of the pre-war population remained. In Kherson itself, as of January 2025, about 25% (≈66,000 people) of the city's population in January 2022 (279,131 people) remained.[72]

In Antonivka, only 9.5% (≈1,200 people) lived in January 2025, as compared to the January 2022 figure (12,619).[73] Even lower figures are observed in the Kizomys Starosta District, which includes the villages of Kizomys, Veletenske, Berehove, and Honcharne. In January 2025, 6.4% (≈200 people) of the pre-war population (3,149) remained here.[74]

Higher along the Dnipro we observe a similar situation: in Beryslav, 75 kilometers from Kherson, as of the beginning of February 2025, 6.7% (≈800 people) of the pre-war population (11,895) remained. In Tokarivka, located directly opposite the occupied Kozachi Laheri, near which hostilities were

taking place in 2023-2024, approximately 13 civilians remained as of November 2024, that is, about 1-2% of the pre-war population (1,000).[75]

The situation is changing significantly in the Novovorontsovka village community, which is located in the most northeastern part of Kherson oblast. Here, the Dnipro changes into the Great Meadow, and the width of the river mouth and wetlands increases. The village of Novovorontsovka, which is the administrative center of the community, lies directly on the bank of the Great Meadow, and the distance to the left bank of the river is 11.5 kilometers. As of February 2025, about half of the pre-war population remained in the village— about 3,000 people out of the pre-war population of 5,951 residents.[76]

Further, along the Great Meadow, the loss of population fluctuates at the level of 50-60% compared to the pre-war level. Thus, in Nikopol, according to Mayor Oleksandr Sayuk, in October 2024, about half of the usual population (105,160 people) remained.[77] In Vyshchetarasivka village, Nikopol raion, about 40% (≈1,200) of the pre-war population (≈3,000[78]) remained in March 2025.

The demographic situation is similar on the bank of the Dnipro Estuary: as of March 2025, about 59% (≈8,000) of the pre-war population (13,663) remains in Ochakiv.[79]

Within the same locality, those residential areas located closer to the Dnipro are usually more desolate, since they are the ones most often exposed to shelling. For example, in Nikopol, the old part of the city, which is located closest to the river, is strikingly different from other areas in terms of the amount of destruction and devastation.[80]

> *"We have many houses on the riverbank that are empty. Out of 20 houses, only one elderly woman lives in the basement and only goes out to feed the cats," a witness from Nikopol described the situation in the "old city."[81]*

[71] According to the calculations of the Truth Hounds monitoring team.

[80] Documenters of Truth Hounds personally visited the old part of Nikopol and witnessed a significant amount of destruction and devastation of this part of the city.

The analysis of these data shows a pattern: in localities that are subject to the largest number of drone attacks, the population has decreased much more significantly than where the number of such attacks is lower.

This distribution is not a consequence of drone strikes alone. First, a certain part of the residents of Kherson oblast left these territories during the Russian occupation. Secondly, along the entire bank of the Dnipro and the estuary, Russian forces are actively using tube and rocket artillery, air bombs and other heavy weapons next to drones. At the same time, the share of drone attacks in the total number of attacks is steadily increasing, and in some areas of the front, it already exceeds the number of artillery strikes.

For example, in Nikopol, the share of drone attacks in the total number of attacks in one month ranged from 0 to 23% in 2023, from 13% to 63% in 2024, and already during April-June 2025, the number of drone attacks consistently accounts for more than half of all attacks on the city.[82]

The UN Human Rights Monitoring Mission in Ukraine concluded that the greatest threat to the civilian population in Ukraine was from short-range drones in February 2025. According to its calculations, in January 2025, this type of weapon

caused about 70% of civilian casualties in Kherson oblast.[83]

4.2. Military presence

Various Ukrainian military forces are concentrated in the right bank of the Dnipro and the Dnipro Estuary. As of fall 2025, the presence of Ukrainian units is typical for the entire territory under analysis: fortification networks (trenches, dugouts, observation points, etc.) are located above the Dnipro River, from where artillery and drone crews operate. The territories along the bank host electronic warfare and electronic intelligence systems, the personnel operating them, and there are air defense units that shoot down long-range weapons.[84]

The lack of reliable data in the public domain complicates the assessment of the number of Ukrainian troops on the right bank of the Dnipro. In February 2024, the spokeswoman for the southern grouping of Ukrainian troops (Southern Defense Forces), Natalia Humeniuk, reported that the Russian group on the left bank of the Dnipro

[82] Information provided by the Nikopol City Council.

Monthly Number of Artillery and Drone Attacks on Nikopol

ACCORDING TO DATA PROVIDED BY THE NIKOPOL CITY COUNCIL
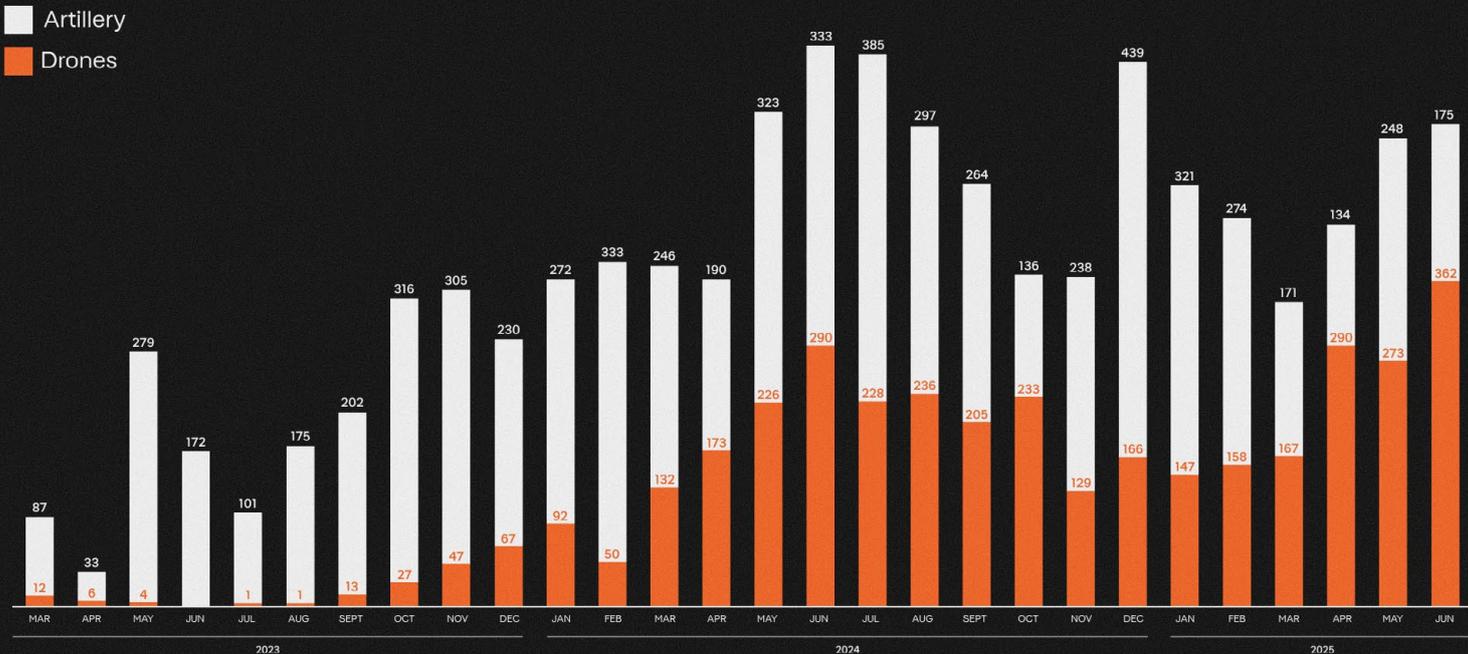
in the Kherson and Zaporizhzhia oblasts amounted to more than 70,000 people (both front and rear units were considered). The total number of Russian troops within the territory of Ukraine at the same time was about 470,000 people;[85] with the Russian troops in Zaporizhzhia and Kherson oblasts accounting for 14%. There is no reason to believe that the size of the Russian troops has changed since then, since the nature of hostilities on this part of the front has not undergone a material change. According to expert estimates, the ratio between Ukrainian and Russian forces along the front is from 1:2 to 1:6, which suggests that the Ukrainian group on the right bank of the Dnipro is at least half the size of the Russian one.[86]

Additional estimates can be obtained based on the analysis of the Ukraine Control Map—a map, whose authors, using OSINT analysis, establish the presence of specific Ukrainian and Russian units in different areas of the front.[87] In 2024-2025, these maps consistently confirmed two key observations: firstly, the significantly lower presence of military units on this segment of the front compared to other directions;[88] secondly, the number of Russian units on the left bank of the Dnipro is consistently higher than the Ukrainian ones on the right.

The widespread use of drones, as well as the increase in their flight range, the increase in cargo capacity, and the improvement in image quality, has created a new reality of war, which is acutely felt in the analyzed territory.

> "*The enemy can now detect the slightest movements and attack without notice, resulting in a battlefront locked into defensive strongholds with "soldiers buried in trenches, where even personnel rotations and medical evacuations have become perilous." [...] Ukraine's military has discarded Cold War-style methods, tactics, equipment, and information and signals management," wrote Valerii Zaluzhnyi, former Commander-in-Chief of the Ukrainian Armed Forces, in a column for the American Defense One publication.*[89]

For Ukrainian units within reach of Russian short-range drones, these changes mean minimizing movement, reducing the number of rotations of

fighters in forward positions, as well as more carefully masking weapons, positions, places of residence, and personnel.

The drone threat also contributed to a change in the behavior of servicemen outside the performance of combat missions. Even when not engaged in combat operations, servicepersons' behavior was characterized by an increased desire to reduce visibility as much as possible. For instance, while not taking part in hostilities the servicemen did not use their military vehicles and switched to passenger vehicles. Moreover, the use of military uniforms was limited only to the period of direct participation in hostilities.[90] When they were not involved in combat operations, servicemen changed out of their uniforms.

> "*Some soldiers [at times when they were not participating in hostilities] lived in the neighboring yard, but they wore civilian clothes, wearing uniforms only in the evening before leaving for the mission," said a local from Pokrovske, Nikopol raion.*

Wearing civilian clothing in such cases does not necessarily violate the norms of international humanitarian law, since according to Article 44 (3) of Additional Protocol I, combatants are obliged to distinguish themselves from the civilian population during the attack or preparation for it.[91] However, IHL does not require that combatants wear a uniform at all times.[92]

In addition, Article 37 of the same Protocol prohibits perfidy, including the pretense of civil status, to harm the enemy.[93] The Rome Statute qualifies insidious killing or wounding of an enemy as a war crime.[94]

A Russian drone attacks a military position under the Antonivskyi Bridge on the Dnipro River (spring-summer 2025). Source: @sueta_bpla on Telegram

Finally, Article 51, paragraph 7 of the AP I to the Geneva Conventions reads as follows:

> *The presence or movements of the civilian population or individual civilians shall not be used to render certain points or areas immune from military operations, in particular in attempts to shield military objectives from attacks or to shield, favor, or impede military operations. The Parties to the conflict shall not direct the movement of the civilian population or individual civilians in order to attempt to shield military objectives from attacks or to shield military operations.[95]*

Such actions are considered a war crime in accordance with the Rome Statute, too.[96] For the conduct to amount to a war crime combatant must have the specific intent to use civilian or protected personnel as human shields for military purposes.[97]

Russian sources accuse the Ukrainian military of using civilians as human shields to protect against attacks.[98] However, this Truth Hounds study found no evidence of the deliberate use of civilians by the Ukrainian military to achieve military objectives. On the contrary, the information received indicates that the Ukrainian military in Lower Dnipro are setting up positions outside densely populated areas. In addition, Ukraine's policy of evacuating the civilian population from the affected areas, implemented in some of these raions since 2023, also demonstrates the intention to protect civilians. Those who would like to leave threatened coastal areas are provided the opportunity to evacuate free of charge.[99] Some local authorities have even prohibited families with children from entering certain settlements for safety reasons.[100] There are also state programs for internally displaced persons.[101] Thus, these accusations lack merit, and in any case, any theoretical use of civilians as human shields would not justify attacks against them or disproportionate attacks where civilians are victims.

Thus, the practice of wearing civilian clothing outside of combat duty is not necessarily a violation of international humanitarian law, although additional information would be required for any definitive assessment. Clearly, members of the

Ukrainian armed forces are not obliged to wear military uniforms at all times. Moreover, no evidence suggests their use of human shields. But Article 58 of Additional Protocol I requires them, to the extent feasible, to "avoid locating military objectives within or near densely populated areas" and "take the other necessary precautions to protect the civilian population, individual civilians and civilian objects under their control against the dangers resulting from military operations."[102]

Out of practical necessity, in the frontline regions, civilian and military life are intertwined: servicepersons need housing, to travel to shops, to visit relatives and use civilian infrastructure. At the same time, this in no way exempts Russian forces from their obligation to distinguish civilians from combatants.[103]

4.3. Targets of Attacks

Local authorities and volunteer initiatives that report drone attacks do not publicly count the number of attacks by the type of target attacked, but the presence of numerous photos and videos of attacks in open sources allows forming an idea of objects that are most often the targets of Russian drones in Lower Dnipro.

For example, the Human Rights Watch study "Hunted From Above. Russia's Use of Drones to Attack Civilians in Kherson, Ukraine" notes that most often, the targets of attacks in the city are civilian pedestrians and people on two-wheeled vehicles, motor vehicles, residential buildings, medical infrastructure, SES staff, grocery stores, public transport, and power facilities.[104]

The data collected by the Truth Hounds monitoring team for Kherson and neighboring Antonivka confirm these observations. The data were collected based solely on open sources, including media pages, local social media channels, local authorities and regional law enforcement agencies. For example, in March-May 2025, at least 135 vehicles (including rapid response vehicles), 106 residential buildings, 11 commercial premises, and 5 energy facilities were destroyed or

[105] Dmytrivka, Dniprovske, Ivanivka, Katalyne, Kutsurub, Matrosivka, Ostrovka, Parutyne, Prybuzke, Solonchaky, Chervone Parutyne, and Yaselka villages.

damaged as a result of attacks by short-range drones in these localities. 313 civilians are also known to have been injured or killed in drone attacks during this period.

The monitoring team also collected data on the consequences of attacks in the Kutsurub community on the banks of the Dnipro Estuary[105] and in Nikopol. This made it possible to compare the nature and scale of the damage caused, depending on the location along the Dnipro River and the Dnipro Estuary and the type of terrain (urban or rural development). The data collection covered the same period as in Kherson—March-May 2025.

In Nikopol, during this period, as a result of drone attacks, 49 residential buildings, 47 transport units (including rapid response vehicles), and 7 energy infrastructure facilities were damaged, and another 45 civilians were injured or killed as a result of these attacks. In the Kutsurub community, 22 residential buildings, 8 vehicles were damaged, and 5 civilians were injured.

Despite the difference in scale, in all three locations, transport and residential development are the largest groups of damaged facilities, while energy infrastructure facilities constitute a smaller but consistently repetitive group of targets.

These data do not necessarily reflect the number of deliberately attacked objects and persons, but the number of objects and persons affected. That is, in some cases, the damage could be caused by the jamming of the signal or the malfunction of the drone. However, such situations most likely do not constitute a significant proportion of the total number of cases. So, the above statistics still allow us to conclude about the priority goals for drones.

Based on data from open sources and information received from interviewed eyewitnesses, we have identified the main types of targets attacked by short-range drones along the right bank of the Dnipro and the Dnipro Estuary.

Vehicles

Among the the cases studied, vehicles were most often affected, which is also confirmed by the witnesses interviewed by Truth Hounds.[106] Russian drones have attacked cars with both kamikaze and munitions-drop drones, including when the car was in motion. They also carry out remote mining of roads by dropping mines—most often PFM-1 Petal—as well as spikes and nails. In this way, the Russian side can attack previously hit cars previously for the second time.[107]

Vehicles of various sizes, colors and purposes, with and without markings, have come under attack. "In general, there was no selectivity on the part of the Russians because very often cars of municipal and emergency services were targeted," an anonymous witness from the city of Nikopol told Truth Hounds.[108] Along the Dnipro and the Dnipro Estuary, there have been direct hits of Russian kamikaze drones or munitions dropping on cars, minibuses, buses, trucks, cars with trailers, scooters, and bicycles.[109] A separate category is attacks on vehicles labeled as belonging to humanitarian organizations, police, special vehicles of rescuers, ambulances, etc.[110]

Numerous drone attacks on vehicles lead to a halt or restriction of passenger transportation in the area. For example, in Nikopol and Kherson, as a result of repeated drone attacks on passenger buses, public transport routes were changed and reduced. The situation is even more complicated in Antonivka, where public transport, ambulances, and utilities stopped traveling at the end of 2024.[111]

Russian kamikaze drone catches up with a vehicle with no signs of military affiliation (June 2025)
Source: @bpla_habr on Telegram

Casualties and Damage in Kherson and Antonivka, March–May 2025

BASED ON TRUTH HOUNDS MONITORING DATA

11 — COMMERCIAL PREMISES

RESIDENTIAL BUILDINGS — 106

5 — ENERGY FACILITIES

CIVILIANS KILLED OR INJURED CIVILIANS — 313

135 — VEHICLES
INCLUDING RAPID RESPONSE VEHICLES
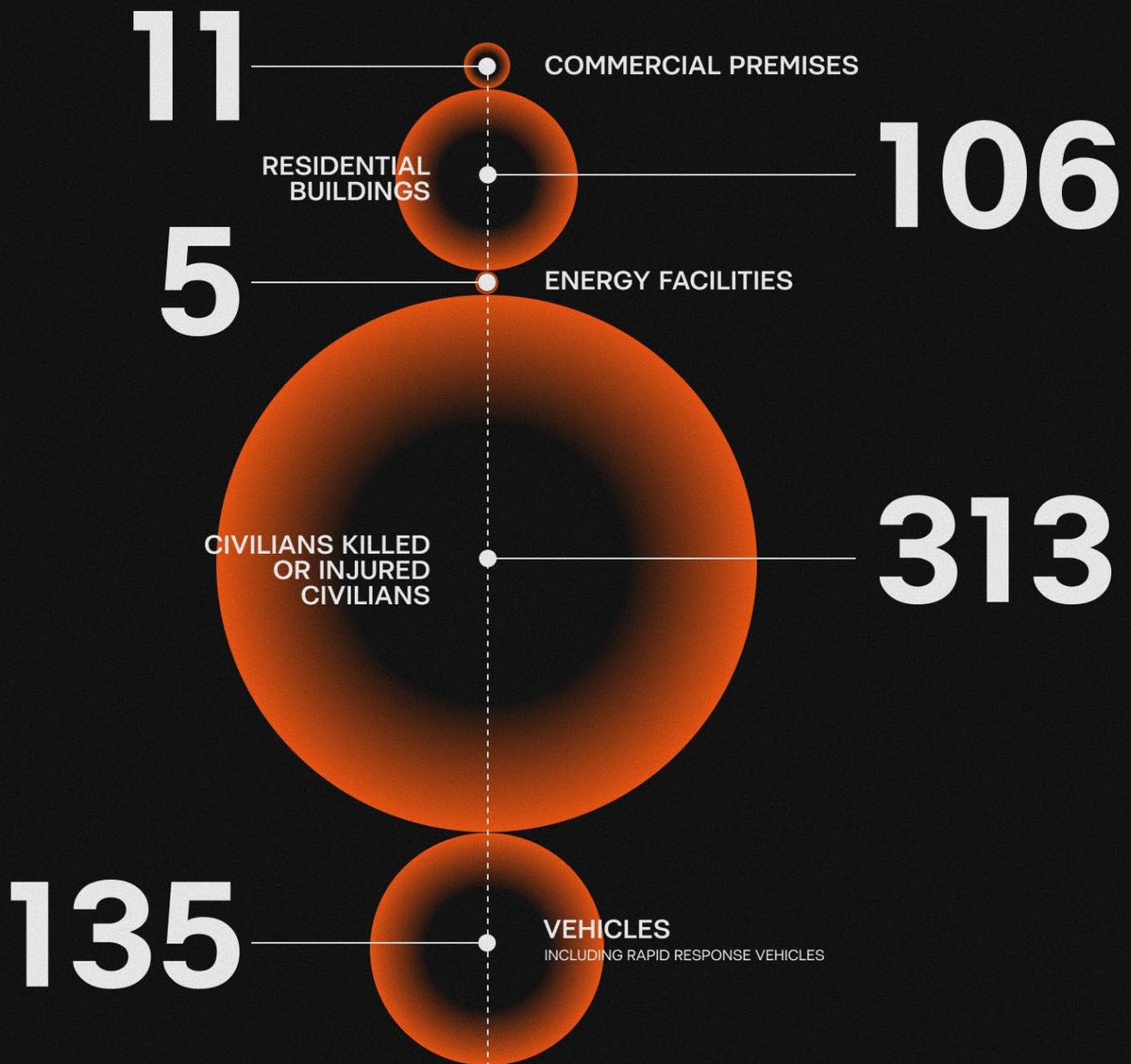
Attacks on public transport can be particularly deadly: in Marhanets, a kamikaze drone attack on a passenger bus of a local mining and processing plant killed 10 people and injured at least 51 on April 22, 2025.[112]

Along the Great Meadow, drones also cause logistical difficulties. For example, in Vyshchetarasivka, Nikopol raion, drone attacks have led to food shortages, because, since the beginning of drone attacks in the village, at least 5 cars that delivered food to the population have been attacked. This threat at the beginning of 2025 led to a reduction in supplies, as suppliers significantly limited their visits to the locality.[113]

Drivers are finding it increasingly difficult to avoid encountering drones, in particular due to the increase in their speed. A Truth Hounds interviewee reported that in November 2024, near Bilozerka village, he managed to escape from a drone chasing his car when he increased his speed to 110 km/h, driving in the opposite direction from the riverbank.[114] As of early 2025, most Russian FPV drones are capable of speeds of 70-120 km/h.[115] In urban conditions or on winding roads, drivers may not be able to escape from a drone flying at this speed.

In general, drivers try to avoid roads that run directly parallel to the river and take routes away from the riverbank. Often, the safer route to a locality on the Dnipro takes longer and runs along the worst road, since most localities along the Dnipro are connected by a direct route along the bank. For example, the fastest road from Nikopol to Vyshchetarasivka runs over the edge of the Great Meadow and takes about 55 minutes (47 kilometers) by car, and the safest road, which passes through the rear village of Tomakivka and which drivers choose more and more often, takes an hour and a half (more than 80 kilometers).

Housing

"The population is constantly trying to keep the doors in the buildings closed so as not to attract the drones' attention to the fact that someone lives in the house," a resident of the village of Stanislav, which is on the bank of the Dnipro Estuary in Kherson oblast, told Truth Hounds.[116]

Even at home, locals are in danger because residential buildings are also subject to frequent drone attacks; even the slightest sign of human presence, for example, with laundry hanging in the yard, suffices to attract drone operators. Russian drones attack private homes and the surrounding areas with both kamikaze and munitions-drop drones, while apartment buildings are most often attacked with kamikaze drones.

One of the respondents interviewed by Truth Hounds lost two houses in Lvove village, on the bank of the Dnipro River, due to attacks by Russian munitions-drop drones. According to him, the Russian military deliberately attacked his houses in two stages: first, with conventional explosive ammunition to pierce a hole in the roof, and

Firefighters extinguish a car attacked by a Russian drone in a village on the right bank of the Dnipro Estuary (December 2024) Source: Main Directorate of the State Emergency Service in Mykolaiv Region

Russian kamikaze drone attacks a residential building in the village of Dobra Nadiya near the Great Meadow (summer 2024) Source: @other_nikopol on Telegram

then the drone dropped an incendiary ammunition into the hole, after which the house burned to the ground. This tactic is confirmed both by information from open sources and by other civilians interviewed by Truth Hounds in Kherson, Antonivka, Stanislav, and Sadove.[117]

When attacking apartment buildings, the Russian military mostly targets windows.[118] If the window is open or blown out, the drone can fly in and detonate already indoors, thus causing more damage. Such attacks can be motivatedby various factors. For example, on August 22, 2024, a Russian kamikaze drone flew into the top floor of a 5-story building in Nikopol, after a Polish volunteer had published a video taken from the window of this apartment two days before.[119] An 81-year-old woman was injured in the attack.[120]

One of the witnesses from Kherson told Truth Hounds that one day in March 2025, while walking home from work, a kamikaze drone hit the window of a high-rise building on 14 Skhidna Street, connecting Kherson and Antonivka.[121]

> *"These high-rise buildings are often attacked by kamikaze drones that fly through the windows, causing fires and entire stairways to burn out," she says.*[122]

Sometimes munitions-drop drones attack the roofs of high-rise buildings, where communication equipment can be placed—radio equipment, mobile communication equipment, Starlink terminals, etc.[123] For example, a video released on September 26, 2024, shows a Russian drone hovering over the roof of a high-rise apartment building in Kherson and dropping ammunition on the communication equipment installed there.[124]

Together with artillery shelling and air bomb launches, drone attacks on the housing stock lead to the destruction of apartments and houses, the destruction of communications, heating and electricity networks, as well as significant civilian casualties.[125]

Energy facilities

Due to their high accuracy, drones have become a very effective weapon for the Russian military in their efforts to destroy small energy facilities such as transformers, substations, and power lines.[126] For instance, on October 22, 2024, two Russian drones hit a (transformer) substation in the village of Stanislav, Kherson oblast, leaving the village and the neighboring Oleksandrivka without power supply.[127] One of the village residents reported that substations and other critical facilities in the village use rope nets for protection from drones.[128]

> *"If you have artillery or GRAD[129] strikes, they cut cables, then experts come in, change the cables, and that's it. A drone, however, strikes the transformer directly and burns it down, and replacing a transformer is a painstaking, expensive process because a transformer costs much more than a wire or a cable," one of the residents of Vyshchetarasivka village in Dnipropetrovsk oblast told Truth Hounds*[130].

[129] GRAD — a multiple launch rocket system (MLRS) that fires 122-mm unguided rockets and is widely used by both Russian and Ukrainian forces.

A Russian drone attacks communications equipment on the roof of a residential high-rise building in Kherson (September 2024)
Source: @osvedomitell_alex on Telegram

A Russian drone drops explosives on an electrical substation in Kherson (November 17, 2024)
Source: @osvedomitell_alex on Telegram

Russian drones also attack alternative energy sources. According to a resident of Pokrov, Nikopol raion interviewed by our team, during power outages, Russian munitions-drop drones repeatedly attacked residential buildings with solar panels in the villages of Hrushivka, Marianske, and Oleksiivka.[131]

Similar cases have also been shared by residents of Dmytrivka on the bank of the Dnipro Estuary, almost 200 kilometers from the above-mentioned localities. According to them, kamikaze drones attacked wind farms located next to the village. There is drone footage of one such attack in open sources.[132]

In localities where the power supply has already been cut off due to shelling, Russian munitions-drop drones started targeting generators.[133] "They use drones to drop munitions on generators;

particularly, they attacked the one ensuring the work of our wells and the generator of the Invincibility Point,"[134] one of the residents of Sadove village near Kherson told Truth Hounds[135].

We have also recorded cases of drone attacks on gas stations. Even though gas stations are not classic energy infrastructure facilities, they provide transport and generators with heating, which is why they are also targeted. This is especially evident in the city of Nikopol, where at least 7 gas stations have been attacked since short-range drones began to be used—more than half of the total number in the city.

For example, on February 17, 2025, a kamikaze drone attacked a gas station at the entrance to Nikopol. A video of this attack was quickly shared online: in the last seconds, civilian cars are visibly present at the gas station, and the drone flies directly into the fuel dispenser.[136] A fuel explosion was avoided, but five civilians were injured as a result of the impact.[137] Attacks on gas stations were also recorded in Kherson, Marhanets, and the town of Novovorontsovka.[138]

Attacks on gas stations contribute to the disorganization of the daily lives of the civilian population. After such strikes, fuel supplies run out, gas stations shut down, and it becomes much

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[134] An Invincibility Point is a specially equipped place set up in Ukraine to provide basic services (heating, communications, electricity, water, medical care) during long power outages or emergencies. The initiative was launched in November 2022.

A transformer burned down as a result of a drone attack in the village of Vyshchetarasivka near the Great Meadow.
Photo provided by witness Vsh-101

Russian kamikaze drone attacks wind turbine on the bank of the Dnipro Estuary (June 2025)
Source: @osvedomitell_alex on Telegram

Short-Range Drone Attacks on Gas Stations in Nikopol

Vostok Gas
18 March 2024

Ukrnafta
31 August 2024 and 21 June 2025

Neftek
9 November 2024

BRSM
17 March and 27 October 2024

NIKOPOL

OKKO
9 and 7 December 2024, 17 February 2025

Ukrnafta
25 November 2024 and 15 November 2025

Ukrnafta
25 November 2024

One recorded attack
Two recorded attacks
Three recorded attacks

more difficult for civilian drivers to find fuel for their vehicles. The military also uses civilian gas stations, but such attacks have less impact on military operations because they have alternative fuel sources.

In addition to energy facilities, drones also target other infrastructural facilities necessary for the lives of civilians in communities along the Dnipro River and Dnipro Estuary.

For instance, Russian drones attack communication facilities (telecommunication towers, cell towers, satellite antennae, Starlink terminals), which leads to a deterioration or complete loss of reception in the area. For example, in January 2025, the mobile signal in the village of Vyshchetarasivka completely disappeared due to drone attacks on communication towers. Due to the loss of the cell network, locals were unable to contact emergency services for several months.[139]

Russian drones also affect the continuity of the water supply. A resident of Sadove village told Truth Hounds that on November 13, 2024, a Russian munitions-drop drone attacked two utility workers who were repairing the village water sup-

ply, which had been disrupted during a previous artillery strike. Both were injured by the strike.[140]

Civilians

Drone attacks result in significant casualties among the civilian population who continue to live in areas along the Dnipro River and Dnipro Estuary or are engaged in volunteer or professional activities there. Civilian casualties and deaths usually occur during attacks on the other types of targets listed above. However, testimonies and open sources demonstrate that civilians can be directly targeted by drones, particularly when they move in the street, work outside, or just stay in open spaces.

For example, on October 18, 2024, in Kherson, a Russian kamikaze drone attacked six utility workers who were repairing the roof of a morgue. Video of the incident, recorded by a surveillance drone that was monitoring the attack, has been posted online.[141] Five of the men were injured.[142]

On October 9, 2024, in Kherson, the Russian military carried out an attack using a munitions-drop drone, targeting two civilians who were walking

down the street. Both were wearing civilian clothing and had no indication they participated in any military formations, nor weapons.[143]

On March 16, 2025, a Russian drone attacked a 71-year-old pedestrian in the village of Antonivka. The drone footage published online shows that the man was slowly moving down the street and, when he noticed the drone, he fell on the ground and cowered but the drone operator still dropped the munition. The man died on the spot.[144]

Such systematic destruction of civilian infrastructure and attacks on civilians raise doubts regarding any justification for these actions in terms of military expediency. In the next subsection, we will look at the main indicators of the intentionality of such attacks.

4.4. Intentionality of Attacks on Civilians and Civilian Facilities

The intentional nature of Russian short-range drone attacks on the civilian population and facilities can be inferred from the above information regarding their widespread and systematic nature as well as from the fact of a common pattern in the analyzed territory. Furthermore, there are some other indicators that such attacks are not accidental. The proof of intent is based on information obtained from witnesses and survivors, footage of the attacks published in open sources, and messages in Russian Telegram channels.

A Russian drone moments after dropping explosives on a civilian with a stroller in Kherson (March 2025)
Source: @KOT_DOBROHOD on Telegram

4.4.1. The intentionality of attacks through the lens of eyewitness testimonies

As part of this study, Truth Hounds interviewed 39 individuals, and based on their accounts we identified 13 drone attacks in which the respondents were able to provide detailed descriptions of the drone's behavior during the strike. In 12 of these 13 attacks, civilian targets were attacked. At the same time, witnesses and survivors cited at least two indicators of intentionality, which are described in Subsection 1.4. of this report. For kamikaze drones, this includes a) speeding up before impact and b) maneuvering before the hit. Munitions-drop drones, on the other hand, would a) hover over the target and b) decrease altitude before the drop.

On February 14, 2025, a Russian kamikaze drone attacked the car of a Vyshchetarasivka resident while he was nearby. In an interview with Truth Hounds, the witness described seeing the drone first fly towards a non-operational bus parked nearby, then turn around, fly away and aim his car.[145]

> *"I managed to run away from the car, and the drone quickly descended, making a very loud buzzing sound, and hit the gas tank of my car," the witness said.*[146]

He suffered acubarotrauma, and the car suffered significant damage. Photos provided by the witness show a hole in the car a few centimeters above the fuel tank.[147]

Eyewitness testimony indicates that the drone sharply increased speed before impact and performed a maneuver immediately before impact. This behavior indicates that the operator maintained control over the drone until the target was hit.

The attack by a munitions-drop drone that took place on November 30, 2024, in Kherson, also clearly indicates that the operator maintained control over the drone at the time. That morning, one of the Truth Hounds respondents was on her way to work when she saw a descending drone in the sky above her. To hide, she ran to the nearest

public transport stop, where three other people were at the time.[148]

> *"I heard the drone descend very low, after which I heard a "switching" sound, similar to the sound of a machine gun shutter, and after that I immediately felt a strong pain in my left arm, saw wounded people and blood around," she told the Truth Hounds documenters.[149]*

Her testimony includes two indicators of the attack's intentional nature typical of munitions-drop drones: hovering and descending over the target.

We also recorded incidents with clear signs of intentionality on the banks of the Dnipro Estuary. For instance, in the village of Dmytrivka, a kamikaze drone hit and killed civilian Oleh Melnyk on October 27, 2024. That day, a drone flying over the village began following Oleh as he left the store on his moped toward home. On this path, he turned left from the main street of the village, towards where his house was located. The drone caught up with Oleh when he arrived home and stopped his moped and then it struck.[150] The attack appears to be clearly intentional, since the drone pursued the man for about 200 meters (the distance between the store and Oleh's home) and continued the pursuit even after he turned to the neighboring street.

The testimonies collected by Truth Hounds also contain detailed information about other attacks with signs of intent that occurred in various localities along the coast of the Dnipro River and the Dnipro Estuary.

However, we have also documented a case where civilian casualties are likely to have been caused by the fall of a drone thatoccurred due to loss of operator control or a technical malfunction. This incident that occurred on December 26, 2024, in the Central Market in Nikopol. Back then, eight civilians were injured as a result of the drone crash.[151] According to a shopkeeper interviewed by Truth Hounds, who sustained a left-thigh injury from the detonation, Russian drones often flew over the market en route to their targets.[152] That day, the woman did not see the drone approaching because she was standing behind the counter, but her acquaintance, who lost her left

leg as a result of the incident, was standing in the aisle between the stalls at the time of the attack and saw the drone approaching. She said that the drone was descending rapidly, and the munition and the quadcopter fell separately, at a distance of approximately 1-2 meters from each other.[153]

The photo from open sources shows the entire frame of the quadcopter lying on the ground.[154] Truth Hounds documenters were able to visit the scene of the incident and establish that the detonation of the ammunition occurred approximately one meter from where the drone frame was lying in the photo.

This incident appears uncommon, since based on the flight trajectory, the drone behaved like a kamikaze drone, as they are the ones to approach the target at a high speed. Such drones are also capable of dropping ammunition. However, in that case, the rapid approach to the target as recorded during this attack would be impractical. Therefore, we can assume that this incident most likely occurred due to the operator losing control or due to a drone malfunction.

Truth Hounds also documented a case of threats against a civilian who was the last remaining resident in the village of Tiahynka in Kherson oblast. The local received notes, which were delivered by drones, with murder threats unless he left the village.[155] This case illustrates the desire to intimidate people, force them to leave their homes, and intensify the atmosphere of constant fear and danger.
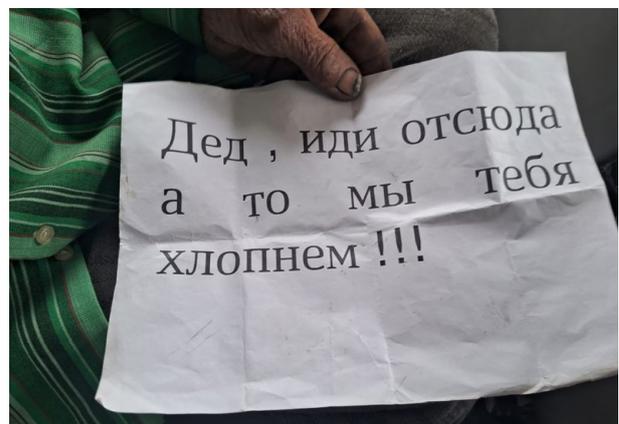
A threatening note dropped from a Russian drone, reading: "Old man, get out of here or we'll kill you."
Photo provided by Vsk-101.

4.4.2. The intentionality of attacks through the lens of messages in Russian Telegram channels

Telegram has numerous channels that are affiliated with specific drone units of the Russian army. These channels regularly feature videos of strikes with commentary, as well as other posts about the current situation on the frontline along the Dnipro River and the Dnipro Estuary. Such channels include "ROGOZIN," "Moisey | BA | SpN | MoD RF," "From Mariupol to the Carpathians," "TsSN BARS SARMAT," "BUSTLE ON THE FRONT | UAV," "KOT DOBROKHOD | UAV Kherson direction," "PHOBOS | UAV," "Light at the end of the tunnel," "UAV | HIVE," "HABR | UAV,"[156] "Tourists," "Remote Airlines," and "Angry Birds." These Telegram channels are run either by specific servicemen from units deployed in the occupied South of Ukraine, or by civilians who have strong ties to the Russian military and receive drone videos from them. Each of them regularly publishes videos of drone attacks along the right bank of the Dnipro River and a short "legend" that explains the context of the attacks to the readers. These channels rarely cover attacks along the Dnipro Estuary and the Great Meadow.

Most of these channels make posts claiming that Russian drones did not attack civilians. For instance, the channel of the PHOBOS unit wrote, "However they demonize or curse our pilots, they work selectively."[157] The same publication contains a typical call to the civilian population of the right bank to leave this territory and stay away from the Ukrainian military. This post, like other similar ones, creates an impression that the Russian military executes attacks exercising caution and being selective about their targets.

However, this is contradicted by the so-called "red zone" concept, actively used by Telegram channels, in particular ones tied to Russian units. A "red zone" is an area about 2.5 km inland along the Dnipro, which is within the strike area of Russian drones. Russian sources have repeatedly emphasized that any transport and individuals spotted by a drone in this area will be attacked.[158]

The "red zone" concept in the context of drone attacks in the Lower Dnipro region was probably first used in the Telegram channel "From Mariupol to the Carpathians." In a post dated January 7, 2024, the author of this channel reported that from now on the city of Kherson is included in the "red zone", and that "the movement of any passenger vehicle in the Red Zone entails taking measures to destroy it."[159] On the same day, this Telegram channel published a map where Antonivka, almost the entire city of Kherson,[160] and isles in the Dnipro River are marked red.[161]

The owner and main contributor of the Telegram channel "From Mariupol to the Carpathians," who calls himself Aleksandr, carefully hides his identity. However, the posts on his channel indicate that he participated in combat operations as part of one of the regular units of the Russian army in Southern Ukraine from June 2022 to May 2023, probably as a company commander, with a short break.[162] Posts on his channel contain numerous threats to civilians, xenophobic statements about Ukrainians, and justifications for massive shelling of residential buildings.[163]

In May 2023, Aleksandr was wounded and later transferred to the reserve on medical grounds. Since he started maintaining his channel back in June 2022, actively sharing his own combat experience and the situation in his section of the frontline, his channel gained popularity and had 18.4 thousand readers as of January 1, 2023.[164] Thus, after the injury, Aleksandr continued covering the hostilities along the Dnipro River, probably receiving information from former colleagues. Afterward, Aleksandr started actively raising funds for the needs of Russian units in Kherson oblast, particularly to purchase UAVs. As of the end of summer 2025, Aleksandr's channel had over 53 thousand readers.[165]

In the summer of 2024, Aleksandr began regularly publishing videos of drone attacks in Kherson, Antonivka, and the surrounding localities. In most of these videos, there is no indication that the targets attacked could be considered legitimate military objectives. Almost every such video is accompanied by a disclaimer "Red zone. Any

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[156] The first Telegram channel of the Habr unit was renamed into Sueta (Bustle) in January 2025 based on the call sign of serviceman Eduard Strupinskiy, who owns and runs the channel. At this time, Eduard was transferred to another unit in the Kherson direction. On March 6, 2025, the Habr unit created a new Telegram channel with the same name, where it continued to cover its activities.

movement of vehicles will be considered a legitimate target. All critical infrastructure facilities are a legitimate target" or something similar.[166]

In the first five months of 2025, at least 195 messages containing such a disclaimer were published in the Telegram channel "From Mariupol to the Carpathians." This applied not only to attacks on motor vehicles but also to ones against pedestrians and cyclists.

On June 16, 2025, the channel posted a message about the expansion of the "red zone." On the published map, the localities of Bilozerka, Komyshany, and Pryozerne, southwest of Kherson, were also marked in red.[167]

Russian Telegram channels, in particular "From Mariupol to the Carpathians", are also read on the right bank of the Dnipro. The rhetoric about the "red zone" contributes to the intimidation of residents of Kherson, Antonivka, and other places on the riverbank. "The Russians are spreading fear on their channels. They drew a 'red line' on the map where everyone is a legitimate target," shared a resident of Kherson in an interview with Truth Hounds.[168]

These fears are reinforced by direct threats from the authors of Russian channels. For example, the author of the channel "From Mariupol to the Carpathians" openly declared: "The war will pass, those who can survive in Kherson will remember their luck, but most of those who remain in the city will die."[169]

The concept of a "red zone" is also used by other Telegram channels likely run by active duty servicemen of the Russian Armed Forces, such as the channels "Phobos," "Sueta," "Kot Dobrokhod" and "Light at the End of the Tunnel."[170] These and other related channels also share posts from "From Mariupol to the Carpathians," and the authors of the "Remote Airlines" channel even thanked Aleksandr for gifting them a Mavic 3 drone.[171]

The "Phobos" Telegram channel, which covers the work of the unit of the same name, a.k.a. part of the 18th Combined Arms Army of the Russian Armed Forces, published 14 videos of drone attacks since the beginning of its existence until June 2025, with references to the "red zone" and the elimination of all vehicles therein. In most of these videos, the attacked targets had no visible indication of being part of any military structures.

The "Sueta" channel, owned by the Russian serviceman Eduard Strupinskiy, made a post in October 2024 featuring a map of the "red zone" with warnings for the civilian population on the right bank of the Dnipro, similar to the ones published by Aleksandr.[172]

The "Kot Dobrokhod" channel also publishes videos of attacks on targets that do not have any military indicators, with the disclaimer "red zone."[173]

Such rhetoric indicates that Russian drone operators do not distinguish between civilian and military targets within the so-called "red zone." Attacks on certain groups of civilians are not only tolerated but also encouraged. This is also evidenced by posts in these Telegram channels. This includes celebrating attacks on groups including, for example, representatives of Ukrainian government structures, local administrations, the National Police, the State Emergency Service, etc.[174]

On March 8, 2025, a video posted on the Telegram channel of the Habr division featured an attack on a police squad, filmed on the body camera of one of the squad members. This same video was previously published by the National Police of Ukraine. It shows a flash and a loud explosion in the darkness near a police car, after which one police officer starts screaming loudly that he can't feel his legs, and his partners are helping him. "A natural result of our work on transport," wrote the author of the Telegram post in the caption.[175]

In addition, on July 31, 2024, the "Moisey" Telegram channel published a video of a munitions-drop drone attacking a clearly identified police car. "The guys are working where I used to serve. Pressuring the recruitment centers and the police," wrote UAV operator Eduard lost, administrator of the channel.[176]

Representatives of Ukrainian local authorities in localities along the Dnipro River are also being attacked by Russian UAVs. For example, on March 12, 2025, a video of a drone attack with fiber-optic communication on the Nikopol City Council

appeared on the Telegram channel of Dmitry Rogozin, a Russian politician and military figure.[177] A local media outlet claimed that the drone flew directly into the office window of the mayor, Oleksandr Saiuk, who was not there at the time. "The war will end only after the physical destruction of those who unleashed it—the political and military leadership of the Kyiv junta," Rogozin wrote at the time.[178] Rogozin calls himself the commander of the Bars Sarmat unit, which is involved in testing new military technologies on the battlefield in Ukraine.[179] His post may indirectly indicate the involvement of this unit in the attack.

Authors of Russian channels also encourage attacks on first responders. On August 16, 2024, Russian forces shelled a school in the village of Antonivka, and when first responders arrived at the scene of the attack, it was attacked again.[180]

"I will also tell civilians, don't dare put out these objects, you will be hit," Eduard Iost wrote in the description of a video featuring the burning school. He claimed this school housed the positions of Ukrainian military personnel.[181] "Civilians" probably refers to first responders, since the post was made after they arrived at the site of the attack and were attacked again.

Civilians who help the Ukrainian military in any way are also being targeted. For example, on November 1, 2024, a post appeared on the "Sueta" channel with a video of a kamikaze drone attack on positions under the Antonivskyi Bridge and a death threat to all civilians who help the Ukrainian military. "Individuals carrying food are our direct target, there is no need to hide behind civilians, help the Armed Forces of Ukraine and you will be killed," the post said.[182]

On March 21, 2025, the "Kot Dobrokhod" channel published a video of a drone attack on a man in civilian clothes with an empty cart. The description of the video stated that this man had repeatedly delivered cargo for the military, which is why he was attacked: "And this will happen to everyone who helps the militants of the AFU."[183]

The aforementioned Telegram channels often feature videos of drone attacks against targets that have no indication of any military connections.

However, the authors of such posts emphasize that it was military personnel who were attacked.

For example, Aleksandr, administrator of the "From Mariupol to the Carpathians" channel, wrote, "The fags [the Ukrainian military, in the author's vocabulary] have long been using vehicles hiding behind civilians, or a red cross, or the medical service. Nothing will stop them."[184]

On November 18, 2024, the same channel "From Mariupol to the Carpathians" published a video of a munitions-drop drone attacking two men in the village of Antonivka, Kherson oblast. One of them was sitting on a moped, the other one was standing nearby. When they noticed the drone above them, they began to flee along the road. The drone chased them for a few seconds and then dropped a munition that exploded in the middle of the road. The man who ran faster disappeared from the camera's field of vision, and the other one, who was slower, ended up closer to the site of the explosion and was injured by fragments. After running a few more meters, he fell motionless on the grass next to a household fence.[185]

The caption of this video claimed that the men attacked were Ukrainian military personnel: "Kherson. Red zone. The AFU fags are very surprised it was our drone. As soon as they saw the drone, they immediately took off. There is only one conclusion. Don't run, you'll die tired. One was able to escape, but not too far... We will find everyone."[186]

However, a Kherson resident interviewed by Truth Hounds recognized this as the attack against his father, who was a civilian and worked as an energy engineer. According to him, his father delivered food to the elderly in the riverbank part of Antonivka on his moped and he stopped to talk to one of the locals called Vasyl—this was when they were approached and attacked by the Russian drone.[187] Vasyl died on the spot.

Examples of similar publications can be found in large numbers in other Telegram channels, such as "Phobos," "Sueta," "Habr," "Moisey," "Remote Airlines." Most of them are connected to units deployed in Kherson oblast, so the bulk of the publications concern attacks along the right

bank of Kherson oblast. However, there are similar publications regarding attacks in other areas along the Dnipro River.

For example, a whole host of excuses appeared in Russian Telegram channels after a kamikaze drone hit the top floor of a residential five-story building in Nikopol on August 22, 2024. Two days later, the Russian Telegram channel "SVO i TOCHKA" ("Special Military Operation and That's It" published an edited video with three scenes.[188] In the first scene, a person speaking Polish is filming a video on his phone of the view from the window of an apartment that was attacked. From the window, you can see the Zaporizhzhia Nuclear Power Plant on the other side of the Dnipro River. "There is the largest nuclear plant in Europe, now occupied because of Russia," says the author of the video in Polish. In the second scene, a Russian kamikaze drone approaches the same house, aiming for the window from which the video was shot. The third scene is an explosion in the window of a house, recorded by a reconnaissance drone.

"A short tour of the city of Nikopol. Khokhols [slur for Ukrainians] can whine endlessly that we are terrorizing civvies etc. But mister kurwa bober made a mistake. Thanks to OSINT-ers for identifying the right window," said the caption to the video.[189] In addition to using a derogatory term against Ukrainians, the text also alleges that the author of the video is a serviceman, in contrast to "civvies," i.e. civilians.

In reality, the video was filmed by Polish volunteer Krystian Machnik back in 2023. Krystian was involved in humanitarian aid to civilians in Ukraine and went to Nikopol as part of a volunteer mission. It was then that he rented an apartment in the house where the video was filmed but published it a whole year later.[190] "I am not that stupid to disclose my location next to the frontline, where I am within the enemy's field of vision. So I intentionally waited an entire year before publishing these materials," he wrote on his Facebook page regarding the situation.[191] Krystian posted this video on TikTok on August 20, 2024, and on the very same day, it was published in the Telegram channel "Nikopol / Marhanets / Enerhodar / Shelling," which had 15,000 followers at the

time.[192] This post was likely the publication that was discovered by Russian forces.

According to Krystian, and as confirmed by official data from the Nikopol local authorities, an 81-year-old resident was in the apartment at the time, and she was injured as a result of the drone attack.[193] Thus, the widespread Russian version of events is not true: it presents the attack as a strike on a military target, while in reality the target was a civilian residence, and believed to be a humanitarian volunteer's residence by Russian channels. This case once again highlights that the Russian military either disregards the principle of distinction or deliberately seeks to attack civilians.

It should be noted that there are cases where civilians unintentionally increase the risk of becoming a target for Russian drone operators by wearing items with military camouflage or installing electronic warfare equipment on the vehicles they use. For example, on April 4, 2025, three Russian kamikaze drones attacked the black van of volunteer Andrii Pietukhov in Antonivka. Russian Telegram channels called Andrii a serviceman.

Pietukhov was engaged in evacuating civilians and animals from villages and towns on the banks of the Dnipro. The trip to Antonivka on the morning of April 4 was one of his many evacuation missions. After picking up two locals and several dogs, Andrii drove to Khersonska Street—the main road of the village—where a Russian kamikaze drone hit his car right in the hood. Andrii remained unharmed and left the car with two civilian men and the dogs, hiding in houses nearby while two more drones attacked the damaged van again. They were later evacuated by another volunteer, whom Andrii was lucky enough to reach by phone.[194]

In the late hours of April 4, the "HABR | UAV" Telegram channel made a post with the footage of the attack filmed by Andrii himself. "In the video, you can clearly see a VW car. It is driven by a serviceman. The vehicle is armored, equipped with EW, with a 'chandelier,'" said the post under the video.[195]

Two days later, a new post about this attack appeared on the same channel. Now it contained a video from the drones that attacked Andrii's van,

and the text did recognize that the driver was volunteer Andrii Pietukhov. It was followed by severe criticism of Pietukhov's methods, as he drives a "military van" and puts civilians in danger.[196]

It is crucial to emphasize that Andrii is a civilian volunteer, and all the elements, i.e. the black color of the van, the camouflaged bulletproof vest, and the EW system,[197] were used due to his safety concerns in the situation of constant shelling and drone attacks and did not affect his status as a civilian. These characteristics can indeed increase the risk of civilian transportation and civilians being erroneously perceived as military targets.

Therefore, based on the analysis herein, we can speak about the systematic nature of attacks by Russian drones against civilians and civilian facilities along the coast of the Dnipro and the Dnipro Estuary. In many cases, these strikes have clear indicators of intentionality, as confirmed not only by the behavior of the drones during the attack and the rhetoric of Russian channels, but also by regular strikes on categories of persons and facilities protected under IHL, including medical personnel, police, first responders, volunteers, and humanitarian workers. These groups are usually easily identifiable by their uniforms, vehicle markings, and other clear insignia, eliminating the possibility of their being mistaken for military targets.

The patterns identified also indicate that the indiscriminate nature of drone attacks is not an isolated incident but a consistent practice. This behavior may be due to the low level of training of drone operators, the lack of control by the command, and the absence of systematic study of IHL norms in the training of Russian servicemen. At the same time, the duration and repetition of such attacks rather indicate that the command not only does not take measures to prevent them but actually tolerates or even encourages such practices.

The absence of changes that could indicate an intention to avoid harm to civilians and civilian facilities for over two years indicates that the existing pattern is deliberately maintained. This consistency may indicate the Russian use of drone attacks not only as a means of conducting combat operations but also as a tool to intimidate the civilian population, create an atmosphere of fear

and unbearable living conditions, and obstruct the activities of volunteers, humanitarian workers, and emergency services representatives in front-line areas.

4.5. Alleged Perpetrators

The territory covered by this study falls within the area of responsibility of the Dniepr Group of the Russian Armed Forces. This group, along with others located along the entire frontline of the Russia-Ukraine war, is part of the United Group of Forces of the Russian Federation in Ukraine.

The Dnepr Group includes various units of the Russian Armed Forces deployed on the left-bank region of Ukraine's south (from the Kinburn Spit to localities to the west of Vasylivka, Zaporizhzhia oblast). Large Russian units (divisions and brigades) usually have their own UAV strike crews,[198] and, given that attacks on civilians and civilian facilities using drones are a common phenomenon throughout the Lower Dnipro region, the list of those potentially responsible for such attacks can be assumed to be extensive.

As part of this study, we did not aim to identify the perpetrators of individual attacks but rather to identify Russian units that used or/and are using UAVs for attacks in the researched area. In particular, we were able to identify the presence of the following units:

→ Roy ("Hive"),[199] Phobos,[200] Habr,[201] which are part of the 18th Combined Arms Army;

→ 186th Separate Reconnaissance Battalion "Orbit";[202]

→ 8th Guards Artillery Regiment;

→ 205th Separate Guards Motorized Rifle Brigade;[203]

→ 104th Guards Airborne Assault Division;[204]

→ 61st Separate Guards Marine Brigade;[205]

→ 49th Separate Airborne Assault Brigade;[206]

→ Center for Special Purpose Unmanned Systems of the Russian Armed Forces "Bars-Sarmat";[207]

→ V. F. Margelov Volunteer Formation "BARS-33";[208] and

→ the Angry Birds reconnaissance battalion, the Remote Airlines unit, whose place in the structure of the Russian forces could not be established.

Almost all of these units operate along the Dnipro River in Kherson oblast. Some of the drone attacks recorded were also perpetrated by the 49th and 61st brigades on the northern coast of the Dnipro Estuary, and the BARS Sarmat group perpetrated attacks north to the Great Meadow.

We were able to find and geolocate some videos in open sources that allegedly record the work of these units. All of them concern Kherson oblast.

In general, among the entire array of videos of drone attacks in the Lower Dnipro region that we analyzed, the largest number concerns this particular territory. This may be due not only to the higher intensity of hostilities along the Dnipro riverbed in Kherson oblast than along the Dnipro Estuary and the Great Meadow, but also to the significant duration of the stay of some Russian units in this area, which gave them the opportunity to establish stable communication and effective use of drones, as well as to build strong informal communication systems. Judging by the content of the units' Telegram channels, they are not of-

ficial media outlets subordinate to the press services of brigades/divisions or the group of troops as a whole, but instead constitute «grassroots» initiatives; that is, they are created by servicemen themselves, volunteers, or bloggers who support specific units.

The analysis presented in this section shows that Russian short-range drone attacks along the Dnipro River and the Dnipro Estuary are systematic and widespread, significantly affecting the humanitarian situation and the safety of the civilian population in the riverside regions. Their intensity has increased throughout 2023–2025, spreading over an ever larger area from Kherson to Mykolaiv, and contributed to the substantial depopulation of frontline communities and the destruction of residential, transportation, medical, and energy infrastructure.

The collected data indicate that the use of drones in this region exceeds military necessity: the attacks are directed at civilian objects and individuals not involved in hostilities. This practice demonstrates a systemic disregard for the principles of international humanitarian law and creates an atmosphere of constant danger and fear among the local population.

Section 5. Civilians' Preventative and Protective Practices under a Drone Threat

The widespread and systematic use of drones has become an important factor in transforming the behavioral patterns of the civilian population near the frontline. In response to this threat, many communities have developed diverse, locally established practices for protecting, informing, and mitigating these risks.

We are aware that each armed conflict has its own contextual features, which include different security, social, technological, geographical, and institutional conditions. Accordingly, the nature and scale of the use of drones, as well as ways to counter them in different conflicts, may differ significantly from what has been recorded in Ukraine. At the same time, the Ukrainian civilian population's experience, established in conditions of systematic violence and constant threat, is of great value. This painfully gained experience can become a critical source of knowledge for other societies. Its study, understanding, and adaptation to local realities can significantly increase the chances of survival in a situation of growing use of drone technologies against the civilian population in other areas.

In this section, we propose to consider the practices that were recorded as a result of open-source analysis, as well as interviews of residents in communities along the right bank of the Dnipro River and the Dnipro Estuary. For analytical convenience, we have identified three key categories of such practices: information-related practices, passive protection, and active protection.

5.1. Information-Related Practices

Although drones can be heard and seen in the air, it is much more difficult to detect them in time than it may seem. Even a slight noise can make it difficult to hear a drone, and in the conditions of a city or a village, houses, trees, and other objects obscure the view. Hearing and spotting a drone while driving a car is also difficult due to the noise of the engine and limited visibility in the mirrors and through the glass. These circumstances bring the need to inform the civilian population about any drone threats to the forefront.

More than half of Truth Hounds respondents reported the importance of drone threat alerts for life and health. Along the entire bank of the Dnipro and the Dnipro Estuary, there are systems for notifying the civilian population of the threat of such attacks. The most common information channel about drone threats remains the Telegram messenger: messages are sent both by local authorities and public initiatives. Telegram is one of the most popular messengers in Ukraine and allows locals to set up notifications in such a way as to receive an individual sound signal for a particular channel on the phone.[209] These channels were established back in 2022, when there was a need to notify the local population about the threat of artillery shelling.

The official "air alert," which is activated by sirens across Ukraine to warn of airborne attacks, is largely ineffective in providing timely warnings about artillery or drone strikes. This is due to the high frequency of such attacks and the extremely short period of time that people have to respond to the threat (for example, an artillery shell fired from the left bank of the Dnipro reaches the right bank in 20–60 seconds, depending on the area).[210] In such a situation, the siren can even be harmful, preventing you from hearing the whistling noise of a projectile or the buzz of a drone and reacting in time.[211]

Most of the existing channels were not created specifically to respond to the drone threat but were the result of adapting existing mechanisms to new challenges.[212] We also know of at least one volunteer team that reported drone attacks simultaneously via Telegram and Viber. According to the founder of this channel, an alternative channel in Viber was created primarily for the elderly and villagers, who use this messenger more often than Telegram.[213]

In different communities, the role of grassroots movements and local authorities in drone threat notification differs. For example, in the Novovorontsovska village community in Kherson oblast, a drone threat is reported in a centralized manner by local authorities in a special Telegram channel called "Novovorontsovska Military Administration," while in Nikopol in Dnipropetrovsk oblast, the first initiatives for notification were grassroots

due to the lack of effective solutions on the part of the city administration. Subsequently, local authorities also began to notify about the threat of shelling.[214]

For example, the threat of drone attacks in Nikopol is now reported in the Telegram channel of Oleksandr Saiuk, the city mayor, as well as in several unofficial channels maintained by residents. The most popular such channel in Nikopol raion is "What? Where to?"[215] It reports information about a drone being spotted, its approximate flight path, and any changes in direction, up to the point where movement ceases, for example, due to being shot down or as a result of an impact without detonation.

The threat of drone attacks can be identified and reported in two ways.

The first is the monitoring of CCTV cameras. For example, in 2023, the team of the Telegram channel "Threat to Nikopol/Marhanets" installed a network of video cameras, directed towards the occupied left bank of the Dnipro, along the northern shore of the former Kakhovka reservoir within the Nikopol raion. At first, flashes indicating an artillery shot were recorded on the cameras, and with the advent of attack drones, cameras began to be used to record drones. After spotting the drone, the monitors immediately publish a message about the type of threat and the approximate direction of its movement in the Telegram channel.[216]

The second way to record the threat of drones is through auditory and visual fixation. For example, the Telegram channel "Kherson: Air / UAV" has a chat intended for use by residents of Kherson and those who are often in the city.[217] Here, users can text if they notice or hear a drone near them and indicate an approximate location. Thus, the message, which must be written in accordance with the chat rules, is published on the channel.[218]

Notifications of a drone threat directly affect the behavior and movement of residents of communities along the right bank of the Dnipro River and the Dnipro Estuary. "Before returning to the village, people try to sit through the attack in the surrounding villages and wait for a message in the group about the absence of drone danger over the territory of the village," was how a resident described the situation in Dmytrivka.[219]

In different parts of the right bank, the ability of channels to record attacks in a timely manner and, accordingly, their role in informing the population differ. For example, in Kherson, there are several Telegram channels (Kherson DRON, KHERSON: Air / UAV, channel of the head of the Kherson Oblast Military Administration (RMA), Oleksandr Prokudin) reporting on the threat of drones in the city.[220] However, according to witnesses, these channels report only a small part of all drone attacks.[221] There are so many drones attacking Kherson that there is simply no way to record and report all attacks in time. However, these notifications still give locals and those visiting the city a general understanding of the changing trends of attacks, for example, in which area of the city the number of drones is higher in a particular period of time.

An important component of informing the civilian population about the drone threat is to spread awareness of the threat among the local population. For example, in September 2024, a brief illustrated guide for the local population on the rules of conduct during a drone attack was developed

A warning about anti-personnel mines scattered by Russian drones in the village of Dmytrivka on the right bank of the Dnipro Estuary (May 2025). Photo: Vitalii Poberezhnyi

in Kherson.[222] Posters with the guide were printed and placed on information stands around the city. The e-version of these posters is available in good quality on the Internet, and the authors of the initiative encourage everyone to download the posters and distribute them where knowledge of the relevant safety rules is relevant.[223] However, during the field mission, Truth Hounds documenters recorded announcements about threats associated with drone attacks in only one locality other than Kherson — Dmytrivka village in the Kutsurub community.

5.2. Protection

To counter the drone threat, the civilian population and local authorities use various methods of protection, which can be roughly divided into passive and active. Passive protection involves actions aimed at minimizing the risk of damage, that is, protecting people and property without directly affecting the drone itself. On the other hand, active protection is aimed directly at neutralizing the drone.

Passive protection

The most common method of passive protection against drones practiced by the population along the entire bank of the Dnipro River and the Dnipro Estuary is the maximum restriction of any movement. Respondents from communities regularly hit by drone attacks told Truth Hounds that the constant presence of Russian drones has forced them to significantly reduce their movement, both on foot and by transport.

"Most of the activities in Kherson take place in shelters or basements, but in general, the locals try not to move around the city or to attend events for no reason," a Kherson resident told Truth Hounds in an interview.[224]

Interviewed respondents shared that they carefully planned each movement outside their homes, trying to make it as short and inconspicuous as possible for Russian drone operators, considering weather conditions, time of day, notifications of drone attacks, the presence of natural and artificial shelters along the route, etc. If possible,

locals prefer walking because vehicles are the most often targeted by Russian drones. This impression is supported by the data analyzed in the previous section.

> *"Locals who travel by car try to equip their vehicles with quality tires for both main and spare wheels and keep a pump, jack, and wheel wrenches in the car so that they can make quick repairs and avoid coming under a drone attack," a resident of the Stanislav community explained.[225]*

Even within their own household, residents of riverbank communities try to minimize any activity that can attract attention from the air, such as spending less time in the yard, keeping the door to the house closed, and hanging out laundry at night.[226] At the same time, in the case of private housing, this pattern of behavior implies limiting routine household maintenance, which inevitably affects the comfort and well-being of residents in riverbank communities. For example, mowing the grass or repairing a house damaged by a previous shelling may attract the attention of a drone operator and result in an attack. For Russian drone operators, any activity on the territory of a household can be a pretext for an attack, so locals are trying to create the impression that their home is abandoned.

At the same time, not all means of camouflage are agreed upon or supported by the local population. For example, journalists from Kherson shared different opinions on the need to use bulletproof vests and helmets in the city. One journalist said that in the summer of 2024, he stopped using armor protection so as not to attract the attention of drone operators, and another said that he continued to use armor protection while performing editorial tasks.[227]

The practice of wearing camouflage did not emerge immediately after the appearance of drones but only after the first attacks on civilians began. Many did not expect that drones, which are precision-guided weapons, would be directed against civilians.[228]

In cases when a drone is detected visually or by sound, civilians should take cover as quickly as possible in a place that is fully or partially out of

its line of sight — for example, by moving indoors, standing under a large tree, or, in sunny weather, stepping into dense shade.

If a drone is noticed while driving, an effective way to avoid an attack will be to accelerate the car to a high speed. For example, one of Truth Hounds' interviewees noticed a drone chasing his car in the sky on the highway near the village of Bilozerka (Kherson oblast), accelerated the vehicle to 110 km/h, and, after driving about 2 kilometers, lost sight of the drone.[229] At the same time, this method is effective mainly outside populated areas, in open terrain and on roads with proper surfacing where it is possible to reach high speeds safely.

Locals, as well as volunteers and local authorities, also turn to the experience of the military to prevent drone attacks. For example, it has become common for civilians to use drone detectors such as Tsukorok, Kseon-L, or Vartovyi, which were originally developed for military needs. With the emergence of the drone threat, numerous affordable portable detectors — costing around 100 USD — appeared on the market, capable of detecting signals from remotely controlled drones.[230] However, such detectors can detect the signal at a limited number of frequencies, and when Russian units change the radio frequencies they use, the existing detectors may lose their effectiveness and need to be replaced. In addition, detectors will not record fiber-optic drones, since these drones do not emit radio signals and therefore remain "invisible" to radio-frequency detection systems.

There are also interceptor-detectors (e.g., Spuk, Obrii, Chuika) that not only notify of a detected radio signal of a drone, but also relay the intercepted video from the drone to a small screen built into the detector.

These interceptors are about four to five times more expensive and are used most often by representatives of specialized organizations whose work is closely related to or affected by the drone threat. For example, an anonymous volunteer uses interceptor detectors during evacuation missions to Kherson. The detector once intercepted a video of a kamikaze drone trying to attack the car in which the volunteer went on an official mission.[231]

One common form of countering drones implemented by local authorities is the installation of protective nets over critical facilities. For example, in Vyshchetarasivka village in Dnipropetrovsk oblast, drone attacks disabled three of the four transformer substations located in the village. Local authorities covered the fourth substation with protective nets, which, as of the time of recording the interview with the village head, successfully blocked the next drone attacks. In case of damage as a result of a drone explosion, the net is simply replaced with a new one. "There was a case when three drones tried to destroy the transformer, but between the hits, utility workers managed to install a new protective net, which saved the transformer," a local resident reported[232].

A resident of the Stanislav community, also stressed that nets are an effective protection method against drones.[233]

A volunteer from Kherson holds a drone detector that intercepted a signal from a drone flying nearby (April 15, 2025). Screenshot from a video provided by a witness.

A farmer in a field holds a drone detector (August 2025). Source: Suspilne

Active protection

Active protection methods affect the drone's ability to attack. At the same time, this course of action carries increased risks, as such devices may attract the attention of a drone operator, thereby increasing the likelihood of being targeted.

In most cases, these methods are of military origin and have been adapted for civilian use.

Electronic warfare is an example of a military technology that civilians began to use in response to short-range drone attacks. The segment of the electronic warfare (EW) market used by civilians is primarily small-sized, portable, and inexpensive devices manufactured by Ukrainian companies (GRAK, Kvertus, Blue Bird, etc.). However, the use of EW equipment has several important limitations. An EW device operates at a limited number of frequencies and cannot jam all radio-controlled drones.[234] Information about the current frequencies used by the Russian military is not publicly available, and if EW frequencies are incorrectly tuned, the system may also create obstacles for Ukrainian drones.[235] EW devices will also be powerless against fiber-optic drones.

EW equipment can become a target of attack if it is noticed by the drone operator or electronic reconnaissance of the enemy, since such means interfere with the quality of radio communication between the drone and the operator and are therefore one of the priority targets. In addition,

Tulip nets sent by a volunteer from the Netherlands to Ukraine to protect civilians in the Kherson oblast from drones
Source: Media Most

EW equipment is primarily a military technology used by the military, and the presence of such a tool on the roof of a car or house can be interpreted by the operator as a sign of the military purpose or use of the object.

At the same time, it should be noted that civilians use primarily portable, low-cost electronic warfare equipment that is small and has a limited range of suppression. In other words, these gadgets will affect only drones that are in close proximity.[236] Therefore, the EW equipment used by civilians usually does not pose a threat to drones if they do not fly close to them.


Volunteer Andrii Pietukhov's evacuation bus, equipped with an electronic warfare system on the roof, which was attacked by Russian kamikaze drones in the village of Antonivka (April 4, 2025).
Source: @bpla_habr on Telegram

Another way to counter drones, which has become widespread primarily in Kherson oblast, is the use of firearms. Several respondents told Truth Hounds that they use smoothbore shotguns loaded with buckshot against drones — firearms that, in peacetime, are typically used for hunting.[237] Unlike EW systems and radio detectors, firearms can be effective against drones using a fiber-optic connection: a shooter can aim either at the drone itself or at the cable that links it to the operator, attempting to sever it.[238]

Respondents noted that they use small arms for self-defense when the drone behaves threateningly or flies critically close to people. It is extremely difficult to aim and shoot down a drone with a firearm at an altitude of more than 100 meters or if it is in motion.[239]

For example, Oleksandr Hordienko, a farmer from the Beryslav raion of Kherson oblast, began taking a ten-shot double-barrel shotgun with him when he went out to work in his fields after drones started appearing overhead. He uses it to shoot down drones. "I applied for permits and bought a Turkish ten-shot gun.[240] With ten or even fewer rounds, it's possible to shoot down a drone that flies on a fiber-optic cable," Oleksandr told the Kherson outlet Most.[241]
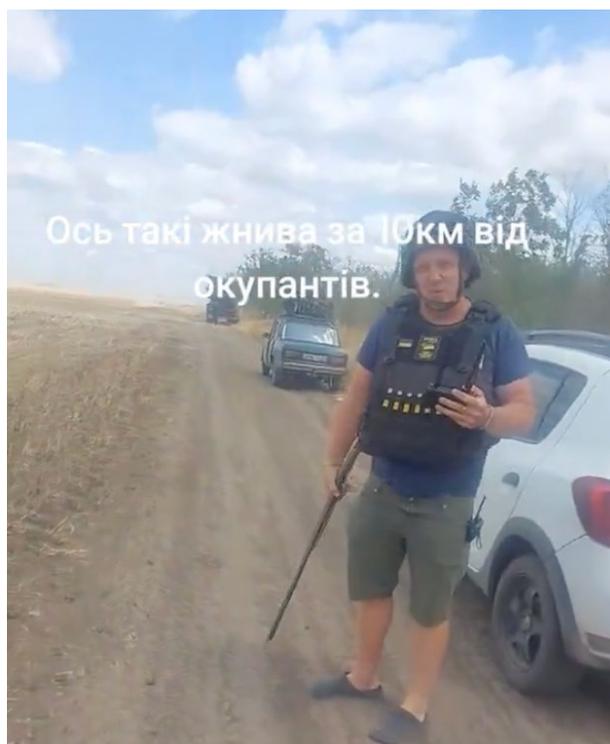
A farmer with a drone detector and a firearm in a field in the Kherson oblast (summer 2025).
Source: @oleksandrstarodubets on TikTok

Those whose work is often under the threat of drone attacks often combine both means: electronic warfare and firearms. "We always go to dangerous areas in bulletproof vests, with a helmet, with a first aid kit, and with rifles because this is the most effective means of protection against drones. We are currently also using the EW system Vidma supplied by the Lithuanians," said a resident of Vysoke who organizes evacuations of locals from riverside villages and delivers humanitarian aid.[242]

Drone attacks have had a profound psychological impact on the local population. Witnesses and survivors interviewed by Truth Hounds noted that drones caused a stronger fear than artillery: "People are more afraid of drones [than of artillery — ed.]. They may be less destructive, but because of their precision, they are terrifying," a resident of Vyshchetarasivka explained.[243]

Civilians, local authorities, and specialized organizations dealing with the threat of drone attacks have developed numerous practices for prevention and protection from such attacks. They include providing prompt and detailed information about the threat of drones using messengers, limiting activity that can attract the attention of the drone operator, careful planning of open space movements, the use of protective nets over certain objects, etc. At the same time, civilians have adapted certain military practices: they use detectors and interceptors for drones as well as actively countering drones, through the use of electronic warfare and firearms to suppress or destroy drones.

[240] Oleksandr Hordienko died as a result of an attack by a Russian drone on September 5, 2025, while working in the field.

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Section 6.
Legal Analysis

International Humanitarian Law (IHL) binds both Russia and Ukraine, as parties to an international armed conflict, to restrict their means and methods of warfare so as to protect those who are not participating in combat.[244] IHL primarily derives from the four Geneva Conventions of 1949 and the Additional Protocol I of 1977 ("AP I"), the Hague Conventions of 1899 and 1907, and rules found in customary international law.[245]

6.1. Protection of Civilians

The overriding principle in determining the legality of military attacks is that of distinction. This is codified in Article 48 of AP I:

> *In order to ensure respect for and protection of the civilian population and civilian objects, the Parties to the conflict shall at all times distinguish between the civilian population and combatants and between civilian objects and military objectives and accordingly shall direct their operations only against military objectives.[246]*

AP I Art. 51(2) further states that the civilian population and individual civilians shall not be the object of attack.[247] IHL defines civilians as all those persons who are not members of the armed forces of a Party to the conflict or of organized armed groups.[248] Where there is doubt whether a person is a civilian, the attacking forces must consider that person a civilian.[249] The presence of non-civilians within the civilian population "does not deprive the civilian population of its civilian character."[250]

Indiscriminate attacks: Attacks that fail to distinguish between civilians and combatants, and/or between civilian objects and military objectives, are indiscriminate.[251] AP I Art. 51(4) prohibits indiscriminate attacks, defining them as:

> (a) those which are not directed at a specific military objective;

> (b) those which employ a method or means of combat which cannot be directed at a specific military objective; or

> (c) those which employ a method or means of combat the effects of which cannot be limited as required by this Protocol.[252]

Article 85(3)(b) of AP I also lists a number of attacks that shall be regarded as grave breaches of IHL, "when committed wilfully, in violation of the relevant provisions [of AP I], and causing death or serious injury to body or health."[253] These include:

> *(i) making the civilian population or individual civilians the object of attack; and (ii) launching an indiscriminate attack affecting the civilian population or civilian objects in the knowledge that such attack will cause excessive loss of life, injury to civilians or damage to civilian objects...[254]*

Truth Hounds' research found a number of short-range drone attacks, particularly in the "red zone," to be indiscriminate, including those laying anti-personnel petal mines on roadways used by civilians.[255] Some of these amount to deliberate attacks on civilians, discussed in more detail below. Short-range drone operators also appear to single out first responders and police officers for direct attack.[256]

Direct Participation in hostilities: Civilians retain protection "unless, and for such time, as they take a direct part in hostilities."[257] While IHL does not directly define direct participation in hostilities, the commentary to AP 1 Art. 51 defines direct participation as "acts of war which by their nature or purpose are likely to cause actual harm to the personnel and equipment of the enemy armed forces."[258] Adopting and applying this definition, the International Criminal Tribunal for the Former Yugoslavia ("ICTY") found that what amounts to direct participation must be assessed by the facts of each individual, and noted that actions such as expressing sympathy for one side, or accompanying and supplying food to one party, would not qualify as direct participation.[259]

The International Committee of the Red Cross ("ICRC"), offering interpretive guidance, posits a three-prong test for determining whether acts

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[245] An international armed conflict exists if one state uses force of arms against another state. This also applies to all cases of total or partial military occupation, even if the said occupation meets with no armed resistance. See Article 2 common to the Geneva Conventions.

qualify as direct participation in hostilities.[260] According to this test, the act must:

1. be "likely to adversely affect the military operations or military capacity of a party to an armed conflict or, alternatively, to inflict death, injury, or destruction on persons or objects protected against direct attack." (The "threshold of harm" requirement);

2. have "a direct causal link between the act and the harm likely to result either from that act, or from a coordinated military operation of which that act constitutes an integral part." (The "direct causation" requirement); and

3. "be specifically designed to directly cause the required threshold of harm in support of a party to the conflict and to the detriment of another." (The "belligerent nexus" requirement)[261]

Further articulating this test, the ICRC made clear that acts of self-defense undertaken by civilians protecting themselves or others against unlawful attack would not qualify as direct participation in hostilities because they lack the "belligerent nexus."[262] While they may directly cause harm to the military capacity of a party to armed conflict, they are not designed to support one party of the conflict over the other, but rather to defend against an incipient violation of the laws of war.

Each instance of civilian "active" protection described in section 5 requires individualized analysis as to whether it amounts to direct participation in hostilities, and therefore a temporary loss of protection. "Active" self-defense techniques such as shooting down drones and using jamming tools attached to civilian vehicles and homes may meet the threshold of harm requirement because they adversely affect the military capacity and/or operations of Russian forces by downing drones.

But, as they were described to Truth Hounds' documenters, they lack the "belligerent nexus."[263] Both hunting rifles and jamming tools used by civilians are, in most cases, only effective where a drone is extremely close to and seemingly on a path to attack the defending civilian.[264] Jamming tools, for their part, may affect Ukrainian and Russian military capacity alike.[265] Moreover, witnesses interviewed by Truth Hounds stated that they had acquired firearms and/or jamming tools only

in response to frequent drone attacks on civilians in their areas.[266] The purpose of these actions is clearly self-defense, not supporting one party of the conflict over another. Therefore, according to the ICRC's interpretive guidance, these forms of active protection would not amount to direct participation in hostilities.

6.2. Protection of Civilian Objects

Protection of civilian objects mirrors that of protection of civilians and the civilian population. Under AP I Art. 52(1), civilian objects shall not be the object of attack or reprisal.[267] Civilian objects are all those that are not military objectives, which in turn are defined as "those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage."[268] When there is doubt as to "whether an object normally dedicated to civilian purposes"—such as a house, school, or place of worship—is "being used to make an effective contribution to military action," there is a presumption that it remains a civilian object.[269]

Russian short-range drone operators fail to distinguish between civilian objects and military objectives, and, as discussed in subsection 4.3. and 4.4., repeatedly directed attacks against civilian objects. Their practice in some settlements of striking any home where there is a sign of residence[270] clearly demonstrates a failure to abide by the presumption of civilian status in violation of AP I Article 52(1), as well as an indication of an intent to attack civilian objects.

Protection of objects indispensable to the survival of the civilian population: AP I Article 54(2) also specifically prohibits "starvation of civilians as a method of warfare" as well as attempts to "attack, destroy, remove or render useless objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas for the production of foodstuffs, crops, livestock, drinking water installations and supplies and irrigation works, for the specific purpose of denying them for their sustenance value

to the civilian population or to the adverse Party, whatever the motive, whether in order to starve out civilians, to cause them to move away, or for any other motive."[271]

Russian short-range drone operators have conducted repeated and seemingly systematic attacks on food delivery trucks, resulting in food shortages in certain settlements.[272] These may amount to an attack on foodstuffs in violation of AP I Art. 54(2). They are unlawful in themselves and, in combination with other attacks on civilian objects, may form part of an effort to cause civilians to move away from their homes.

6.3. Precaution

The principle of precaution, as defined in AP I Article 57(1), holds that combatants must, in the course of military operations, take constant care to spare the civilian population, civilian objects, and individual civilians.[273] This mandate supplements fundamental IHL principles. AP I Art. 57(2) further holds that combatants planning an attack must take the following precautions:

> (i) do everything feasible to verify that the objectives to be attacked are neither civilians nor civilian objects...;

> (ii) take all feasible precautions in the choice of means and methods of attack with a view to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects; [and]

> (iii) refrain from deciding to launch any attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.[274]

Russian short-range drone operators have failed to take adequate precautions in attack. The crash and detonation of a malfunctioning drone at a market in Nikopol, which injured eight people, demonstrates this in pointed terms.[275] The sheer volume of explosive drones launched into densely populated areas makes these calamitous colli-

sions more likely. Witnesses at the Nikopol market saw drones flying over the market frequently; it was only a matter of time before a drone malfunctioned and hit. As such, this instance may amount to a violation of AP I Art. 57(2)(a)(ii), as it indicates a failure to choose means and methods of attack that minimize injury to civilians and damage to civilian objects.[276]

Effective advance warning: AP I Article 57(2) (c) requires that parties give "effective advance warning [...] of attacks which may affect the civilian population" when "circumstances permit."[277] A warning that does not give civilians enough time to evacuate is not effective.[278] Civilians that do not evacuate do not lose their IHL protection,[279] and the issuance of an "effective warning" does not relieve an attacking party of its obligation to take all feasible precautions to avoid harm to civilians and civilian objects.[280]

Drone operators have not provided effective advance warning of military activities. Public statements on Telegram channels affiliated with Russian drone units threatening first responders[281] and declaring all vehicles legitimate objects of attack[282] clearly do not constitute effective advance warning. They advertise direct attacks on civilians, rather than warn of an attack that may affect the civilian population. In this, they were not fashioned to allow civilians time to evacuate to safety by specifying the time and vicinity of attack, but rather seemed to be issued in an attempt to legitimize unlawful attacks on civilians and civilian objects, and/or threaten civilians. Attacks on civilians in the "red zone" following these threats were unlawful, with these threats in some instances demonstrating intent to target civilians.

6.4. Accountability

Individuals who commit serious violations of IHL with criminal intent can be prosecuted.[283] Commanders who knew or should have known about serious violations that their forces commit and fail to stop or punish those responsible can be found liable under the doctrine of command responsibility.[284] The following presents a non-exhaustive list of serious violations for which Russian short-range drone operators and their commanders may be

held culpable under international and Ukrainian criminal law. This report references elements of crimes as defined in the Rome Statute (RS) and customary international law, including the jurisprudence of past international criminal tribunals, with the understanding that the Ukrainian Criminal Code incorporates these as sources of application and interpretation via Article 438.

War crime of attacking civilians: it is a war crime to intentionally make civilians the object of attack.[285] This crime may encompass "attacks that are carried out in an indiscriminate manner, that is by targeting an area, as opposed to specific objects, or not targeting specific military objects or persons taking a direct part in hostilities, so long as the perpetrator was aware of the presence of civilians in the relevant area," as well as "attacks that are launched without taking necessary precautions to spare the civilian population or individual civilians."[286] Criminal intent may be inferred from "the means and methods used during the attack, the number and status of the victims, the discriminatory nature of the attack or, as the case may be, the nature of the act constituting the attack."[287]

The evidence strongly suggests that Russian drone operators have launched intentional attacks on civilians. Many short-range drones discussed in this report are highly maneuverable, provide the operator a real-time video feed of the object of attack, and strike at a short distance from their target. These circumstances provide drone operators with a uniquely transparent environment in which to make informed decisions on the status of their target. That they still attacked civilians indicates strongly that these attacks were intentional. Russian military bloggers' public statements foretelling or celebrating attacks on civilians, though difficult to link to specific perpetrators, may demonstrate intent to target civilians, and show an environment of impunity in which attacks of civilians are permitted, if not encouraged.

In a demonstrative case, on 12 June 2025, a Ukrainian court convicted a Russian short-range drone operator *in absentia* under Ukrainian Criminal Code Article 438 for using a Mavic quadcopter to drop a grenade on two civilians in Kherson Oblast.[288] The court relied on victims' testimony,

a photo from the drone's FPV camera, and Telegram messages in which the perpetrator confessed to the attack to conclude the attack was a deliberate war crime.[289]

War crime of attacking civilian objects: it is likewise a war crime to launch an intentional attack on civilian objects.[290] Russian short-range drone operators have attacked *en masse* houses,[291] public transport,[292] and private vehicles.[293] In one case, discussed in subsection 4.4.2, they struck an apartment building after social media showed that a humanitarian volunteer lived there,[294] and in several instances struck minibuses serving no apparent military purpose.[295]

The use of some objects targeted by Russian attacks, such as energy infrastructure and gas stations, may require additional investigation to establish whether they may qualify as lawful military objectives. Regardless, Truth Hounds' research strongly suggests that Russian short-range drone operators launched intentional strikes on civilian objects serving no military purpose.

War Crime of attacking medical and humanitarian objects: it is a war crime to intentionally direct "attacks on buildings, material, medical units and transport, and personnel using the distinctive emblems of the Geneva Conventions in conformity with international law," among them the Red Cross.[296] Short-range drone attacks on ambulances, rescue workers, and medical facilities[297] may amount to this crime. Statements in Telegram channels warning that first responders may be the object of attack may be evidence of the attackers' intentions.[298]

War Crime of terror: the crime of terror is not listed in the Rome Statute, but is found in customary international law. As such, it may be prosecuted as a violation of Ukrainian Criminal Code Article 438. AP I Art. 51(2) prohibits "[a]cts or threats of violence the primary purpose of which is to spread terror among the civilian population."[299] The ICTY defined the crime of terror as consisting of the following elements:

1. Acts or threats of violence directed against the civilian population or individual civilians not taking direct part in hostilities, causing

death or serious injury to body or health within the civilian population.

2. The offender wilfully made the civilian population or individual civilians not taking direct part in hostilities the object of those acts of violence.

3. The above offence was committed with the primary purpose of spreading terror among the civilian population.[300]

What constitutes "grave consequences" depends on the facts of each case, but includes death and serious injury.[301]

With respect to the third element, that spreading terror was the "primary purpose" means that the perpetrators understood that terror would result from their unlawful acts, and intended this result.[302] This "specific intent" for the crime "can be inferred from the circumstances of the acts or threats of violence, that is, from their nature, manner, timing, and duration."[303]

Though short-range drone operators operating in the Lower Dnipro have struck military objectives, a large portion of attacks struck civilians and civilian objects, including public transport, first responders bearing special markings, cafes, and shops.[304] Russian drone operators have also issued public[305] and private threats[306] to civilians. Drone operators have also warned that they would kill first responders arriving to render aid to civilians injured by drone strikes, and declared all civilian vehicles targets in public Telegram channels. In one case, drone operators reportedly dropped a note on a civilian saying they would kill him if he did not leave his home.[307] These actions seem "calculated to demoralise, to disrupt, to take away any sense of security from a body of people who have nothing … to do with the combat."[308]

As commentators have observed, the pattern of attacks of drone operators in the Lower Dnipro is "strikingly similar"[309] to attacks noted in *Milosevic*, targeting civilians at sites "well-known to be frequented by them during their daily activities, such as market places, water distribution points, on public transport."[310] This may serve as "strong indicia of the intent to spread terror."[311] Truth Hounds' research in the Lower Dnipro there-

fore aligns with the conclusions reached by the UN Commission of Inquiry on Ukraine ("UN CoI") with respect to Kherson Oblast,[312] and Human Rights Watch with respect to Kherson city and its surroundings,[313] that these acts of violence were intended, among other things, to spread terror among the civilian population.

Crimes against humanity: certain acts, when committed as part of a widespread and systematic attack against the civilian population, amount to crimes against humanity.[314] The ICC defines "attack directed against any civilian population" as "a course of conduct involving the multiple commission of acts" listed as crimes against humanity "against any civilian population, pursuant to or in furtherance of a State or organizational policy to commit such attack."[315] This policy may be evident from the state or organization facilitating the attack, or, in some circumstances, a failure to take action to stop the attack.[316]

Short-range drone attacks on civilians in the Lower Dnipro region are themselves widespread and systematic.[317] Operators have targeted civilians repeatedly in a geographic area spanning hundreds of kilometers, for over a two-year period. In some settlements, drones are constantly in the air.[318] The large-scale and highly-coordinated nature of this attack, as well as the mobilization of state resources required to undertake it, demonstrates that the attack is pursuant to state policy. Moreover, there is no evidence that commanders of the Russian armed forces have taken action to stop attacks on civilians. On the contrary, short-range drone operators' dissemination of violent content may demonstrate Russian commanders' tacit support for the attacks.

Crime against humanity of murder: it is a crime against humanity to commit murder as part of a widespread and systematic attack against the civilian population.[319] Russian drone operators have repeatedly killed civilians as part of a pattern of persistent violence that spans hundreds of kilometers along the Dnipro River and the Dnipro Estuary, in which more than a dozen Russian units apper to be implicated.[320] In the context of the broader widespread and systematic attack on Ukrainian civilians, this may amount to the crime against humanity of murder.

Crime against humanity of forcible transfer of population: it is also a crime against humanity to, "by expulsion or other coercive acts," forcibly displace "persons from the area in which they are lawfully present."[321] Short-range drone operators attack civilians regularly, all means of transport, as well as gas stations, grocery stores, power generation and distribution facilities, food delivery trucks, housing, and other objects necessary for daily life.[322] This has paralyzed some settlements and made stepping outside a harrowing, potentially life-threatening ordeal, imposing an environment of constant threat. The predictable result has been civilians leaving their homes in droves.[323]

Short-range drone attacks, therefore, may constitute coercive acts intended to forcibly transfer residents of Lower Dnipro to other areas. Accordingly—and in alignment with the findings of the UN CoI with respect to Kherson Oblast[324]—these attacks may constitute the crime against humanity of forcible transfer of population.

Truth Hounds' analysis indicates that Russian drone strikes along the Lower Dnipro routinely violate the laws of war, and in some cases may amount to war crimes and crimes against humanity. The repeated targeting of civilians and civilian objects where operators have real-time control over targeting, public rhetoric that encourages or justifies violence against civilians, and the deliberate creation of conditions forcing the population to flee their homes all point to intentional and systematic conduct. The evidence suggests not only the individual responsibility of drone operators but also elements of a broader Russian state policy aimed at terrorizing the civilian population of Ukraine. Russian drone operators' actions require further investigation through both national and international accountability mechanisms.

Conclusions and Recommendations

The study has found that attacks of Russian short-range drones against civilian targets along the right bank of the Dnipro River and the Dnipro Estuary are systematic actions that constitute a stable element of Russian tactics. Despite the relatively low intensity of hostilities in this area, the Lower Dnipro region has turned into a space of a constant drone threats, where civilian life in itself has become extremely dangerous even with everyday protection measures in place.

The testimonies collected from survivors and eyewitnesses, information from open sources, and monitoring data all demonstrate a clear pattern: that the Russian military is targeting first responders, medics, utility workers, volunteers, residents, energy facilities, and civilian vehicles, with no links to military targets or objectives.

Drone operators typically have direct visual control over the target. Video recordings of the attacks and eyewitness accounts leave no doubt that, in most of the cases analyzed, the operators were able to recognize that the object or person was not a military target before the strike, and the drone's behavior indicated that the operator retained control. Thus, these strikes cannot be considered targeting errors or the consequences of EW suppression of drones. Instead, they indicate that the Russian military disregards the principle of selective attacks and, in many cases, deliberately targets civilians and civilian facilities.

Analysis of Russian sources proves that such attacks are part of a practice legitimized in Russia's own military narrative. The designation of riverbank areas as a "red zone," where any movement is declared to be a legitimate target, essentially justifies systematic violations of IHL. This behavior indicates that the Russians are deliberately turning areas near the frontline into a space with no right to life, where the idea of protecting civilians has lost its force before the Russian military's imperative to attack without question everything within this territory.

This paves the way to the possible legal qualification of these actions as serious violations of international humanitarian law, including repeated violations of the principle of distinction, and a failure to take adequate precautions in attacks. At the level of individual criminal liability, the attacks may potentially constitute war crimes, in particular deliberate attacks against civilians and civilian objects (Art. 8(2)(b)(i-ii) of the Rome Statute) and the crime of terror, found in customary international law. Given their systematic and widespread nature, these actions also may potentially constitute crimes against humanity, including murder and forcible transfer of the population (Art. 7(1)(a) and (7)(1)(d) of the Rome Statute, respectively). The transparency of the attack environment provided by drones, including through camera and video footage of the drone's trajectory and target, helps to establish the operators' direct intent. In addition, the absence of pushback from the Russian military command indicates that not only the perpetrators themselves but also their commanders may explicitly or tacitly condone these crimes and can also be brought to justice.

The danger posed by drones has prompted civilians and professionals located in riverbank communities to develop their own mechanisms for protection from and counteraction of this threat. Over time, these initiatives—from installing protective nets over energy facilities and distributing hazard warning systems to using drone detectors—have evolved into consistent local practices. Their further study, support, and dissemination can become the basis for strengthening the security of the civilian population not only in other frontline regions of Ukraine but also in the context of future armed conflicts in other countries, where such challenges may, tragically, become increasingly relevant.

Recommendations

For Ukrainian law enforcement bodies

→ Take into account this report's findings and the proposed approaches to the legal qualification of drone attacks on civilians and civilian objects, particularly the possibility of viewing them as crimes against humanity in the context of the widespread and/or systematic nature of the committed attacks;

→ Strengthen the interaction between law enforcement agencies, military structures, and civil society organizations to exchange evidence-based materials related to drone attacks and to improve mechanisms of recording and documenting these crimes and bringing the perpetrators to justice.

For local administrations and Lower Dnipro Region communities

→ Share and implement effective prevention and protection practices against drone attacks on civilians based on the experience of communities where these systems have already proven effective. Create local alert systems with the use of mobile apps, chats, and loudspeakers;

→ Equip public places with small-capacity shelters with sturdy doors and basic first aid supplies, which will allow civilians to reach a safe place more quickly in the event of a drone threat and, as necessary, provide first aid to the injured;

→ Scale the installation of anti-drone nets on roads and beyond;

→ Conduct regular trainings for the local population, emergency service workers, and volunteers regarding the rules of conduct during drone attacks;

→ Organize awareness campaigns for civilians regarding the importance of maintaining clear and distinct appearances between civilians and combatants (including through choice of clothing and vehicles), while at the same time not discouraging the use of personal protective equipment.

For the Government of Ukraine

→ Provide workers of emergency services working within the reach of short-range drones with special detectors to receive early alerts of threats;

→ Promote improved coordination between the emergency services and the Armed Forces of Ukraine for the purpose of early warning of threats in airspace and protection of personnel;

→ Ensure and monitor high-quality training of emergency service workers regarding the rules of conduct during drone attacks, taking into account technical innovations.

For law enforcement and criminal justice actors of foreign countries

→ Investigate cases of drone attacks, particularly ones affecting the citizens of the respective country and/or when the suspect is located in its territory, falls within the national

jurisdiction through the passive citizenship principle or through the principle of universal jurisdiction.

→ Provide Ukrainian law enforcement agencies with technical, evidentiary, expert, and analytical support in investigating crimes related to the use of drones against civilians.

For governments of foreign countries

→ Provide financial and technical support to Ukrainian communities in restoring damaged infrastructure, including rescue and rapid response equipment, and allocate funds for training emergency services and civilians;

→ Allocate financial resources to Ukraine for the development and procurement of systems for protecting against, detecting, and neutralizing drones;

→ Promote the implementation of compensation programs, particularly within the International Compensation Mechanism for Ukraine;

→ Strengthen sanctions against companies that supply drone components and drones to Russia.

For international intergovernmental and non-governmental organizations

→ Study and share the experience of communities in the Lower Dnipro region with respect to protection against drones, which may be helpful in regions where similar threats are only emerging;

→ Support community initiatives aimed at informing, educating, and supporting civilians psychologically in areas subject to constant drone attacks;

→ Begin preparations for legal interpretation and prevention, protection of civilians from drone threats, and development of the regulatory framework at the highest international level (or specifying / refining the existing regula-

tory framework) regarding the procedure and restrictions of drone use in conflicts;

→ Support law enforcement with evidence collection, disseminate methods and best practices of investigating drone attacks on civilians, with the goal of deterring or preventing further attacks due to the threat of criminal prosecution.

Annex 1.
The Ethical Ambiguity of Drone Warfare

The use of UAVs in contemporary warfare raises many ethical concerns. While proponents of drone warfare argue that it helps protect soldiers' lives and reduces the risk of collateral damage, skeptics highlight its impact on the well-being of civilians and soldiers, as well as its potential to lower the threshold for initiating and engaging in armed conflicts.

The overview below offers a concise analysis of the possible opportunities and concerns associated with drone warfare from an ethical standpoint. While the alleged "pros" and "cons" are presented here in a clear-cut and disaggregated way for the sake of clarity, the reality is far more complex, and the boundary between them is often blurred.

Unlike the rest of the report, which focuses exclusively on Ukraine, this annex mainly draws on international experiences with drone use and the ethical challenges that have accompanied them. This broader perspective aims to highlight the universality of the ethical dilemmas emerging from the proliferation of drones in modern armed conflict and to encourage cross-border dialogue on possible responses to at least some of them.

Considering the rapid evolution of drone warfare, in which new technologies and tactics emerge as soon as the parties reach a sense of parity, ethical questions will inevitably continue to evolve and grow in complexity. Consequently, many of the arguments presented in this annex may soon require reassessment or a more nuanced interpretation.

Alleged advantages

Relative reduction of risk to soldiers' lives and psychological well-being

Some drones can be operated from remote locations, including thousands of kilometers away from the battlefield. This not only shields UAV pilots from enemy attacks but also reduces the need for ground troops in active combat.

Infantry forces are still used and will likely remain irreplaceable in reconnaissance in the near future. However, drones have radically transformed this type of operation more than any other pre-drone military specialization.[325] Once among the most dangerous roles, similar to that of assault troops, reconnaissance has become relatively safer compared to other combat roles, as—at least in some cases—drones allow for intelligence gathering without direct exposure to enemy fire.[326] At the same time, drones have enhanced the manoeuvrability of infantry by providing a real-time view of the battlefield from above, which may potentially help reduce casualties and improve situational awareness. As a result, soldiers responsible for carrying out such operations may be less likely to face injury or death. Some research has indicated that drone operators may experience a lower risk of developing psychological conditions such as PTSD due to their reduced presence in and greater awareness of high-risk environments.[327] However, the evidence regarding this is inclusive and studies have so far been limited only to the United States.[328]

Meanwhile, the rapid development of drone warfare and the emergence of increasingly advanced countermeasures and adaptation mechanisms (e.g. electronic warfare systems and interceptor drones) have steadily raised the risks for operators, particularly those using short-range drones that require proximity to the battlefield. For instance, in Ukraine, "Russian forces have focused their efforts on triangulating operator [hideouts] and rapidly bringing artillery, glide bombs, and other [uncrewed aerial systems] to bear on them," which has led to rising casualties among Ukrainian FPV operators.[329]

Efficiency and minimization of collateral damage

UAVs can gather high-quality intelligence, enabling them to carry out precision strikes that may minimize the risk of collateral damage. Some reconnaissance drones can remain aloft for several days, providing continuous surveillance and allowing operators to choose the optimal moment to strike when civilians are not present.[330]

However, due to the covert nature of many drone operations, it is difficult to accurately estimate the proportion of civilian to combatant deaths. Due to the lack of disaggregated data, estimating how civilian casualties caused by drones compared to those caused by other precision weapons, such as strike missiles and laser-guided bombs, remains challenging. Furthermore, civilian casualty counts are inherently unreliable and can be influenced by various factors beyond the type of weapon used.

Based on technical characteristics alone, UAVs should allow for more precise strikes, potentially reducing the risk of civilian casualties. In reality, it remains unclear whether drones have actually been less deadly to noncombatants than other precision weapons in recent armed conflicts, making the argument about their superior ability to discriminate and minimize collateral damage subject to further scrutiny. Nevertheless, most modern UAVs are still controlled by humans, who make the final decisions on their use in the battlefield. This means that even with perfect information, soldiers can misinterpret footage, make mistakes, or deliberate decisions, leading to civilian casualties.

In any case, drones will likely remain central to warfare for decades due to their technological advantages. While some weapons, such as indiscriminate munitions, face restrictions because of overwhelming ethical concerns, UAVs are still generally viewed as a more neutral technology. Their continued use is therefore shaped less by ethical debates and more by their strategic value, as their impact depends on how they are employed rather than on any inherent indiscriminate nature.

Concerns

High civilian casualties

Contrary to the previous argument, policymakers, journalists, and human rights organizations have raised concerns about the high number of civilian deaths caused by attacks involving UAVs.[331] While accurate data is increasingly difficult to obtain and all figures are estimates, evidence from The Bureau of Investigative Journalism on U.S. strikes shows that drone strikes killed between 33 and 878 civilians in Afghanistan (2015-2020), 424 and 969 in Pakistan (2004-2018), 7 and 68 in Somalia (2007-2020), and 91 and 142 in Yemen (2002-2020).[332] An analysis published by Airwars in partnership with *The Guardian* further suggests that *"at least 22,679, and potentially as many as 48,308 civilians, have likely been killed by U.S. strikes,"* although this includes both drone and missile attacks.[333]

A important point is that the U.S. method for tracking casualties in strikes against terrorists classified all military-age males in the strike zone as militants unless evidence to the contrary emerged after the attack, meaning civilian casualties in official U.S. statistics may have been underreported.[334]

No similarly comprehensive reports on drone strikes resulting in civilian deaths were found for other countries, highlighting the need for systematic data collection on civilian casualties disaggregated by weapon type. The data available at the moment may not be sufficient to draw reliable general conclusions.

Heavy toll on civilian mental health and daily life

While UAVs may cause fewer civilian casualties than other types of weapons due to their precision (assuming the intended target is a military objective rather than the civilian population) their use is nonetheless associated with significant adverse effects on civilian mental health and daily life. What distinguishes UAVs from other types of weapons is their ability to loiter over areas for extended periods, gathering intelligence or preparing for an attack. This persistent presence creates a heightened sense of anticipation and uncertainty among affected communities. A study by TBIJ found that drone loitering led to *"fear of attack, severe anxiety, powerlessness, insomnia and high levels of stress"* among civilians in Pakistan.[335] Another study further revealed that civilians living in areas affected by drone warfare exhibited anticipatory anxiety and *"reactions reminiscent of [PTSD], such as emotional breakdowns, anger outbursts, exaggerated startle responses, fleeing indoors and hiding when seeing or hearing drones, fainting, poor appetite, psychosomatic symptoms, [...] and startled awakening at night with hallucinations about drones."*[336] Additionally, a report by Stanford Law School and NYU School of Law documented negative effects of drone warfare on various other aspects of civilian life, including the willingness to rescue victims and provide medical assistance due to the high risks of double-tap UAV strikes, educational opportunities, burial traditions and the willingness to attend funerals, and community trust.[337]

Discrimination and proportionality challenges

Drones may provide high-quality intelligence, possibly enabling better decision-making. However, the final say still rests with the humans who operate them, and they may be subject to bias and mistakes. This is particularly relevant in the context of signature strikes, which target "groups of men who bear certain signatures, or defining characteristics associated with terrorist activity, but whose identities are not known."[338] According to witness testimony, in Pakistan, groups of "common people with beards" could be targeted by drones due to their alleged resemblance to terrorists.[339] In this regard, strikes based on such "pattern of life analysis" are inherently subjective and place civilians at disproportionate risk of harm, violating the legal principles of discrimination and proportionality.

Videogame mentality and manhunting

As some drone operators may be thousands of kilometers away from the battlefield, their work may resemble a video game in which "a kill is reduced to a click of a mouse."[340] This effect is further reinforced by the fact that many drone systems are operated through interfaces that closely resemble gaming technologies, including console-style controllers and goggles, making the physical experience of remote warfare feel strikingly similar to navigating a virtual environment. As a result, the thin line between on-screen actions and real life may become even more blurred, potentially increasing the dehumanization of targets and lowering the ethical threshold for executing a strike.[341]

In the Gaza Strip, Israeli soldiers have reportedly used UAVs to target civilians injured in the aftermath of bomb attacks. "I was lying on the ground after a bomb had dropped, and this quadcopter came down, hovered over me, and shot me," recalled a child patient, as quoted by British surgeon Prof. Nizam Mamode, who was working in the Gaza Strip in August–September 2024.[342] This demonstrates that the same technological distance that makes killing feel virtual can also deepen the dehumanization of targets, even when operators observe them up close in real time. This sniper-like precision, combined with a clear view of conditions on the ground via a camera, enables a form of personalized remote targeting that other weapons cannot achieve, making drone warfare a unique case from an ethical perspective.

Additionally, because drones can loiter for hours or even days before striking, they represent a form of "prolonged intentionality." Some American UAV operators, who followed suspected terrorists over extended periods, even reported developing a sense of attachment to their targets.[343] Such prolonged surveillance inevitably turns the act of killing into a deliberate decision, driven by a clear intent to harm rather than a spontaneous or reactive action. This, as a result, has import-

ant legal implications specifically with regard to violence against civilians.

Reduced cost of armed conflict

Drones are generally cheaper to produce than other types of weapons. Commercial UAVs, such as the Chinese Mavic 3, can be purchased for as little as 2,000 EUR and used in combat to carry hand-made explosive devices.[344] This affordability, combined with their ability to drastically reduce the risk of death or injury for soldiers, has raised concerns about the impact of UAVs on lowering the cost of war for state and non-state actors.

A 2018 study by James Igoe Walsh and Marcus Schulzke found that "drones noticeably increase[d] [public] support for the use of force" among the American population compared to manned aircraft and ground troops.[345] Certain types of UAVs[346] are broadly considered highly efficient in achieving military objectives without endangering personnel.[347] This perception could lower the threshold for initiating or intervening in an armed conflict, especially if the cause is seen as just, since decision-makers would face minimal audience costs for using force.[348] For instance, a 2015 Pew Research Center poll revealed that 58% of Americans supported drone strikes against suspected terrorists in countries like Pakistan, Yemen, and Somalia, with whom the U.S. was not officially at war.[349] At the same time, 48% expressed concern that such attacks could "endanger the lives of innocent civilians."[350]

Finally, drone technologies can also benefit non-state actors with limited resources and who are widely known for their human rights violations. While drones have been used for the benefit of countries acting in self-defense, organizations like the Islamic State and al-Qaeda have reportedly used UAVs for intelligence gathering, targeted killings, and violence against civilians.[351] The lack of proliferation regulations and the ability to cheaply assemble basic drones with publicly accessible materials have made this technology a game-changer for armed groups that do not adhere to international humanitarian law and disproportionately harm civilians.

Conclusion

The ethical dilemmas arising from the growing importance and continuous technological evolution of drones in modern warfare pose new challenges for a wide range of actors, from armed forces and policymakers to legal experts and civil society activists at both national and international levels. While the technical characteristics of UAVs, such as cameras in FPV drones, should provide sufficient information to prevent collateral damage to civilians and civilian objects, evidence from the armed conflicts in Ukraine, the Gaza Strip, and other contexts has shown that, in the absence of political will to minimize harm—or in the presence of deliberate policies aimed at instilling fear and suffering—drones can be even more dangerous and deadly than other types of weapons. Considering this, future discussions on the ethics of drone warfare should lay the groundwork for national and international regulations—similar to those governing landmines, chemical weapons, and other types of arms—on when the use of drones can be considered acceptable in modern warfare and what special precautions are necessary to protect civilian lives.

Annex 2.
Drones, Security, and Human Rights Beyond Armed Conflict

The growing accessibility, simplified construction, and decreasing production costs of drones have enabled their use far beyond traditional war zones. Once confined to military and intelligence operations, drones are now deployed across civilian and hybrid contexts, raising profound questions regarding security, privacy, and human rights. This annex explores how drones have become tools of surveillance, espionage, criminal activity, and even sabotage beyond conventional battlefields.

The first subsection focuses on state surveillance, examining how governments across the world—from the United States and the United Kingdom to China, Spain, and the Arabian Peninsula—increasingly rely on drones to monitor populations, enforce public order, and control urban spaces. The second addresses espionage, highlighting the use of drone technology for intelligence gathering and cyber capabilities, with particular attention to incidents involving China and the United States. The third subsection turns to criminality, where drones have been repurposed by non-state actors such as drug cartels in Mexico, Colombia, and Brazil, as well as in isolated cases of targeted killings in Russia. Finally, this annex examines hostile drone incursions and sabotage, focusing on recent Russian-linked operations across Poland, Romania, Germany, Denmark, and France, which illustrate the growing role of drones in hybrid warfare and the vulnerability of European security frameworks.

Through these diverse case studies, this annex demonstrates how drones have become emblematic of a broader shift: the normalization of technologies of war within civilian life, where the boundaries between security and freedom, and defence and surveillance, continue to blur.

Surveillance

Multiple governments across the world have begun using drones to monitor their populations.

Drawing on the work of Ole B. Jensen, the metaphor of «boomerangs», originally articulated by Michel Foucault, offers a compelling lens through which to analyze the role of drones in contemporary surveillance regimes[352]. Historically, many Western surveillance technologies were first developed and deployed in colonial or military contexts abroad before being reimported into urban centers. The use of helicopters during the Vietnam War and their subsequent integration into domestic policing practices exemplifies this phenomenon. Similarly, modern unmanned aerial vehicles, initially employed in military operations in Afghanistan, Iraq, and Pakistan, now hold the potential to become an additional tool of urban surveillance. As such, drones may function as Foucauldian boomerangs, extending the logic of warfare into the management of everyday urban life. The practical deployment of drones and the historical significance of aerial power are brought

into dialogue with theories of spatial movement and social control.

A central concern in this development is the increasing militarization of urban spaces[353], a process in which drone technologies may play a critical role. The deployment of UAVs for urban surveillance risks further entrenching modes of control that blur the lines between civilian and military spheres, normalizing an architecture of security based on preemptive observation and intervention.

The United States is one significant case where drones have increasingly been used for security operations beyond battlefield settings. U.S. law enforcement agencies have integrated drones into a variety of operations, including search and rescue missions, SWAT deployments, and forensic investigations. Examples include the Oklahoma City Police using drones to enhance public safety at the 2024 state fair, the NYPD resolving a home invasion with drone assistance, and Montgomery County, Maryland replacing 214 patrol deployments with drone use.[354] Since 2018, drone adoption among U.S. police departments has risen from 599 to over 1,500 departments by late 2024[355]. In 2025 U.S. agencies intensified covert drone surveillance over Mexico, which involved unarmed MQ-9 Reaper drones to locate fentanyl laboratories.[356]

Another example is UNODC's support to countries like Suriname and Trinidad and Tobago, where it has donated advanced drones to strengthen law enforcement capacities in combating illicit firearms trafficking[357]. In Suriname, for instance, drones are enhancing surveillance, intelligence gathering, and cross-border monitoring, marking a major step forward in the country's fight against organized crime and arms smuggling.[358]

In the Arabian Peninsula, the appeal of drones similarly extends beyond military applications. Small monarchies, constrained by limited human resources, have favored unmanned systems for cost-effective surveillance.[359] Dubai's introduction of a «Robocop» to patrol city streets exemplifies the broader incorporation of automation into internal security strategies.[360]

Similarly, Spain's use of drones for civilian oversight illustrates another dimension of state surveillance. In 2016, the Spanish government launched an aerial surveillance initiative to detect tax fraud, uncovering approximately 1.69 million property irregularities and recovering €1.25 billion in taxes.[361] While effective for state revenue collection, such uses simultaneously expose the tension between security objectives and the protection of personal privacy.

In some countries, drones are deployed to monitor public gatherings or even to track individuals deemed to be dissidents or activists. For example, in China, drones are widely used for surveillance, with reports indicating that they are deployed to monitor protests and maintain control over public spaces.[362] Such practices can be seen as violations of the right to free assembly, freedom of expression, and the right to privacy. In some cases, these surveillance activities are carried out with little to no legal oversight or public accountability.

The use of drones for surveillance purposes has also been condemned in Western countries. In the United States, a 2016 investigation uncovered that the Baltimore Police Department had clandestinely utilized drones to conduct continuous surveillance of the city's population, taking photographs every second and remaining airborne for up to ten hours per day. The practice was sharply criticized by the American Civil Liberties Union, which described it as «the technological equivalent of placing an ankle GPS monitor on every individual in Baltimore.»[363]

In the United Kingdom, the increasing deployment of drones by police forces to monitor political demonstrations has provoked similar criticisms. Advocacy groups revealed that drones were used during Black Lives Matter protests, Extinction Rebellion actions, and anti-HS2 campaigns, often without clear regulatory frameworks.[364] The controversial use of drones during the first COVID-19 lockdown further heightened public unease.[365] A 2020 survey found that 60% of respondents expressed concerns about privacy impacts, and 67% feared safety risks associated with unregulated drone use.[366]

Organizations such as Drone Watch and Liberty have warned that the expansion of drone surveillance risks curtailing the right to protest, particularly among marginalized communities.[367]

Espionage

Drones have increasingly raised concern regarding their potential misuse for intelligence gathering and espionage activities.[368] Equipped with sophisticated micro-computers, drones can approach secure facilities while evading traditional surveillance and perimeter security systems. From such close positions, they can execute cyberattacks, such as exploiting Bluetooth vulnerabilities, establishing «evil twin» Wi-Fi networks to intercept data, or deploying keyloggers to capture passwords and sensitive information.[369]

Recent reports underscore the heightened risk of foreign espionage through drone technology. According to investigations cited by *The Wall Street Journal*, published in October 2024, unidentified drone swarms were observed over critical U.S. infrastructure, including restricted airspace above Langley Air Force Base in Virginia for 17 consecutive days.[370] Similar incidents occurred at the Department of Energy's Nevada Nuclear Security Site, a key location for nuclear testing activities.[371]

Despite these security concerns and the risk that foreign-made drones may contain spyware and transmit sensitive data, many U.S. law enforcement agencies that deploy unmanned aircraft systems continue to rely on such devices in their daily operations. In particular, an estimated 80% of them use drones manufactured by Chinese companies due to their affordability and performance.[372]

Criminality

The proliferation of drones among criminal cartels represents another growing challenge for law enforcement and national security agencies worldwide. In particular, Mexican drug cartels have been at the forefront of adapting drone technologies. Initially employed for targeted assassinations of rival gang members and security forces, drones are now routinely used in direct confrontations, mimicking conventional military tactics.

One example is the Mexican state of Michoacán.[373] Here, armed groups engage in what could be described as aerial skirmishes, using explosive-laden drones to assert territorial control. These attacks, once exceptional, have become more frequent since 2021.[374] Tragically, these confrontations often result in civilian casualties. Authorities have documented the deadly impact of drone warfare on non-combatants.[375] In early May 2021, armed operatives of Jalisco New Generation Cartel (CJNG) launched drones equipped with C-4 explosives and fragmentation grenades over the community of Pinolapa. Testimonies from local residents described coordinated attempts by the cartel to enter the community via mountainous terrain, using drones as a tactical tool to soften resistance.[376] In response to such threats, residents have resorted to forming or supporting local militias, often aligned with «Cárteles Unidos», a coalition of rival groups sometimes posing as self-defense forces.[377] The persistent violence, including mass displacements of over 3,000 people who reportedly fled their homes, has overwhelmed local communities.[378]

Beyond direct attacks, drones have revolutionized the logistics of drug trafficking. Since the early 2010s, Mexican cartels have employed UAVs to transport illicit substances across the U.S. border, circumventing traditional detection methods. These drones, often designed for heavy payloads of 60 to 100 kilograms, operate primarily at night, executing cross-border flights that deliver narcotics without ever landing on U.S. soil.[379] As highlighted in Congressional testimony, drone incursions across U.S. airspace have become routine: a sheriff from Texas reported nearly 1,937 unauthorized drone flights within a single 31-day period in 2023.[380]

The effectiveness of these tactics has not gone unnoticed internationally. Colombian criminal organizations, including the Gulf Clan, have emulated the Mexican model, using drones for narcotics trafficking.[381]

Apart from the criminal activities mentioned above, short-range drones have become an attractive weapon for homicide and settling scores.

Russian authorities are investigating the first known homicide committed using a FPV drone as the murder weapon on February 8, 2024.[382] The case involves the targeted killing of a prominent businessman in the Trans-Baikal region.[383] The investigation into this incident has been complicated by the fact that FPV drones can operate at significant distances from their launch point and are widely accessible, with basic drone operation now taught in many Russian schools.[384]

Drones can also facilitate secure communication. In Brazil, for example, the Primeiro Comando da Capital (PCC), the country's most powerful criminal organization, has used drones to smuggle mobile phones into high-security prisons.[385]

Hostile drone incursions and risk of sabotage

The recent series of drone incursions across Europe underscores the growing use of unmanned aerial vehicles as instruments of hostility.[386] Strategic Policy expert Maksym Beznosiuk has even described this trend as a form of "hybrid warfare", echoing the Danish Defense Minister's expression of "hybrid attack".[387] On September 9th, 2025, around twenty Russian drones penetrated deep into Polish airspace, forcing the closure of airports in Warsaw and triggering NATO's highest alert since the start of the full-scale invasion[388]. Prime Minister Donald Tusk described the violation as unprecedented and invoked NATO's Article 4 for urgent consultations.[389] A week later, another drone breached Romanian airspace during an attack on Ukraine, prompting Bucharest to scramble fighter jets.[390] These incidents followed a suspected sabotage explosion in August 2025 at Romania's Cugir arms factory, which destroyed over 130,000 rounds of ammunition destined for Ukraine.[391] According to sources within the Polish prosecutor's office and the Internal Security Agency, Russian intelligence has also planned drone-based sabotage operations in Poland, Lithuania, and Germany.[392] These operations reveal Russia's expanding reliance on drones not only as battlefield tools in Ukraine but also as means of intimidation, sabotage, and destabilisation across the continent.

By October 2025, this strategy had extended to the maritime domain, signalling a new phase in Moscow's hybrid warfare. A Russian-linked oil tanker, the *Boracay* — part of the so-called "shadow fleet" — was boarded by the French navy off Saint-Nazaire amid suspicions it had served as a launch platform for drone incursions into Danish and Norwegian airspace.[393] Two other cargo ships operating near Copenhagen were also suspected of similar activity.[394]

These incidents reflect a growing pattern across the European continent: as noted, drone incursions have disrupted Denmark, Poland, Romania, Germany, Lithuania, France, and Norway, while drone debris has also been reported in Bulgaria and Latvia, underscoring the broad geographical scope and escalating nature of this threat in Europe[395].

These episodes have exposed critical gaps in Europe's ability to counter such asymmetric threats. This has been shown in Germany, where uncertainty over which authority had the mandate to neutralise hostile drones has underscored a persistent weakness in the continent's defensive coordination.[396]

Conclusion

Despite their potential benefits, drones introduce a variety of security risks, particularly in terms of privacy and personal freedoms. The weaponization of drones for targeted violence has transformed these devices into powerful tools of criminality. Beyond the physical dangers, the use of drones raises critical concerns around privacy, data security, and civil liberties. Without dedicated legal frameworks, authorities have struggled to manage safety, privacy, cybersecurity, and air traffic risks. Addressing these multifaceted threats requires urgent investment in comprehensive counter-drone strategies, effective legal tools, and international cooperation. Without such measures, drones will remain as much a source of insecurity as they are of innovation.

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4 According to monitoring by Truth Hounds.

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17 VOG is an abbreviation of the Russian term "Vystrel Oskolochnyi Granatometnyi" ("Fragmentation Grenade Launcher Round"). This designation is used for ammunition for under-barrel and handheld grenade launchers, such as the VOG-17 or VOG-25.

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127 Інтерв’ю з Stn-101.

128 Ibid.

129 GRAD — a multiple launch rocket system (MLRS) that fires 122-mm unguided rockets and is widely used by both Russian and Ukrainian forces.

130 Інтерв’ю з Vsh-101.

131 Інтерв’ю з Nvv-101.

132 От Мариуполя до Карпат / Херсонское направление. Правый берег [@osvedomitell_alex], (06.06.2025). Telegram, URL: https://archive.ph/IxLzg (дата звернення: 09.11.2025); От Мариуполя до Карпат / Херсонское направление. Правый берег [@osvedomitell_alex], (07.06.2025). Telegram, URL: https://archive.ph/X1rsW (дата звернення: 09.11.2025); От Мариуполя до Карпат / Херсонское направление. Правый берег [@osvedomitell_alex], (14.06.2025), Telegram, URL: https://archive.ph/ymlAu (дата звернення: 09.11.2025).

133 Інтерв’ю з Sdv-101; Інтерв’ю з Ntn-101; Поліщук, Марина (2024). Дрони атакують і вдень, і вночі: розповіді жителів Херсонської громади, які потрапили під удари БпЛА. Гривна, URL: https://grivna.ua/publikatsii/droni-atakuyut-i-vden-i-vnochi-rozpovidi-zhiteliv-hersonskoyi-gromadi-yaki-potrapili-pid-udari-bpla (дата звернення: 09.11.2025).

134 An Invincibility Point is a specially equipped place set up in Ukraine to provide basic services (heating, communications, electricity, water, medical care) during long power outages or emergencies. The initiative was launched in November 2022.

135 Інтерв’ю з Sdv-101.

136 Никополь/Марганец/Энергодар/Обстрелы / Видеоперехват с камеры руснявого fpv-дрона, который атаковал АЗС, пострадало 5 человек [@other_nikopol], (17.02.2025). Telegram, URL: https://archive.ph/tdZos (дата звернення: 09.11.2025).

137 Admin (2025). Атака дронами на Нікопольщині: п'ятеро постраждалих. Прихист, URL: https://www.prikhist.com/2025/02/ataka-dronamy-na-nikopolshchyni-p-iatero-postrazhdalykh/ (дата звернення: 09.11.2025).

138 Мокляк, Аліна (2024). Армія РФ з дрона атакувала заправку у Херсоні: поранені двоє людей. Суспільне.Херсон, URL: https://suspilne.media/kherson/820985-armia-rf-z-drona-atakuvala-zapravku-u-hersoni-poraneni-dvoe-ludej/ (дата звернення: 09.11.2025); Доброго вечора, ми з Нікополя! / Поліція оприлюднила відео, де ворожий дрон поцілив по АЗС у Марганці, постраждало троє людей: поліцейські надали першу медичну допомогу важкопораненому чоловіку [@ViktorArtemenkoNikopol], (30.12.2024). Facebook, URL: https://www.facebook.com/groups/nikopol2022/posts/2081474265616375 (дата звернення: 09.11.2025); Інтерв’ю з Nvv-101.

139 Інтерв’ю з Vsh-101.

140 Інтерв’ю з Sdv-101.

141 От Мариуполя до Карпат / Херсон. Красная зона. Страйк [@osvedomitell_alex], (23.03.2025). Telegram, URL: https://archive.ph/6y7×4 (дата звернення: 09.11.2025).

142 ХЕРСОН: Non Fake / Сегодня российские дроны совершили множество атак по Днепровскому району города Херсон [@kherson_non_fake], (18.10.2024). Telegram, URL: https://archive.ph/eeaqi (дата звернення: 09.11.2025).

143 От Мариуполя до Карпат / Херсон. Красная зона [@osvedomitell_alex], (09.10.2024), Telegram, URL: https://archive.ph/kLDqw (дата звернення: 09.11.2025).

144 Бєлякова, Катерина (2025). У передмісті Херсона внаслідок атаки РФ загинув чоловік. Суспільне.Херсон, URL: https://suspilne.media/kherson/971955-u-peredmisti-hersona-vnaslidok-ataki-rf-zaginuv-colovik/ (дата звернення: 09.11.2025); От Мариуполя до Карпат / Херсон. Красная зона [@osvedomitell_alex], (17.03.2025). Telegram, URL: https://archive.ph/mPbYO (дата звернення: 09.11.2025).

145 Vsh-102

146 Ibid.

147 Ibid.

148 Khr-101

149 Ibid.

150 Інтерв'ю з Dmt-101.

151 Радіо Свобода (2024). ДСНС: війська Росії атакували ринок у Нікополі, постраждало шестеро людей. URL: https://www.radiosvoboda.org/a/news-nikopol-ataka-rynok-poraneni/33253572.html (дата звернення: 09.11.2025).

152 Інтерв'ю з Nkp-103.

153 Інтерв'ю з Nkp-102.

154 Никополь/Марганец/Энергодар/Обстрелы / У Нікополі – 8 поранених через атаку російської армії дроном-камікадзе [@other_nikopol], (26.12.2024). Telegram, URL: https://archive.ph/igwso (дата звернення: 09.11.2025).

155 Interview with Vsk-101.

156 The first Telegram channel of the Habr unit was renamed into Sueta (Bustle) in January 2025 based on the call sign of serviceman Eduard Strupinskiy, who owns and runs the channel. At this time, Eduard was transferred to another unit in the Kherson direction. On March 6, 2025, the Habr unit created a new Telegram channel with the same name, where it continued to cover its activities.

157 ФОБОС │ БпЛА / Отрывок из отчета нашего пилота. Обратите внимание — пилот указывает «высокий трафик гражданских т/с, риск поражения гражданских» [@Fobos_herson], (05.05.2025). Telegram, URL: https://archive.ph/KPO90 (дата звернення: 09.11.2025).

158 СУЕТА НА ФРОНТЕ │ FPV / Жители данной местности, которая отмечена красной зоной на карте, в этих районах наши расчёты будут вести уничтожение любого транспорта — это одна из наших ключевых целей [@sueta_bpla], (06.10.2024). Telegram, URL: https://archive.ph/OB8A5 (дата звернення: 09.11.2025).

159 Война 2022 Россия-Украина WAR UKRAINE RUSSIAN / Херсон [@osvedomitell], (07.01.2024). Telegram, URL: https://archive.ph/OOssX (дата звернення: 09.11.2025).

160 The Tavriiskyi district and the northwestern part of the Korabelnyi district of Kherson city were not marked red in this map.

161 Война 2022 Россия-Украина WAR UKRAINE RUSSIAN / Херсон. Активная красная зона [@osvedomitell], (07.01.2024). Telegram, URL: https://archive.ph/8sMpp (дата звернення: 09.11.2025).

162 Война 2022 Россия-Украина WAR UKRAINE RUSSIAN / Другая сторона [@osvedomitell], (06.12.2022). Telegram, URL: https://archive.ph/6spfs (дата звернення: 09.11.2025); Ukrainian investigators from Kavun.City and Toronto Television outlets conducted their own investigations into the identity of "From Mariupol to the Carpathians" channel administrator. They believe he is Oleksandr Sheptura, a "DPR" police officer from Donetsk. Truth Hounds were unable to confirm these findings but found a number of facts that may contradict them. For example, Oleksandr Sheptura's patronymic is Viktorovych, and the administrator is referred to as Aleksandr Nikolaevich in the Remote Airlines Telegram channel. In addition, content analysis of the Telegram channel "From Mariupol to the Carpathians" indicates that its main administrator was a career Russian military officer and, before the so-called "special military operation," participated in the Russian military operation in Syria, which contradicts the information about Sheptura.

163 От Мариуполя до Карпат / В Мариуполе это была нормальная практика [@osvedomitell_alex], (22.10.2022), Telegram, URL: https://archive.ph/57UH0 (дата звернення: 09.11.2025); Война 2022 Россия-Украина WAR UKRAINE RUSSIAN / С этого дня все расположения будут ровнятся [@osvedomitell], (19.11.2022). Telegram, URL: https://archive.ph/oqQzp (дата звернення: 09.11.2025).

164 От Мариуполя до Карпат [@osvedomitell_alex]. TGStat, URL: https://tgstat.ru/channel/@osvedomitell_alex/stat/subscribers (дата звернення: 09.11.2025).

165 Ibid.

166 От Мариуполя до Карпат / Херсон. Красная зона [@osvedomitell_alex], (10.06.2025), Telegram, URL: https://archive.ph/2UDgD (дата звернення: 09.11.2025).

167 От Мариуполя до Карпат / Белозёрка. Камышаны. Приозёрное. Красная зона [@osvedomitell_alex], (16.06.2025), Telegram, URL: https://archive.ph/kfQYM (дата звернення: 09.11.2025).

168 Khr-106

169 Война 2022 Россия-Украина WAR UKRAINE RUSSIAN / Херсонское направление [@osvedomitell], (28.11.2024). Telegram, URL: https://archive.ph/2Dj7w (дата звернення: 09.11.2025).

170 ФОБОС │ БпЛА / Херсонское направление. Красная зона [@Fobos_herson], (24.06.2025). Telegram, URL: https://archive.ph/ynNfy (дата звернення: 09.11.2025); СУЕТА НА ФРОНТЕ │ FPV / Жители данной местности, которая отмечена красной зоной на карте, в этих районах наши расчёты будут вести уничтожение любого транспорта — это одна из наших ключевых целей [@sueta_bpla], (06.10.2024). Telegram, URL: https://archive.ph/OB8A5 (дата звернення: 09.11.2025); КОТ ДОБРОХОД │ БПЛА / Херсон. Красная зона [@KOT_DOBROHOD], (22.08.2025). Telegram, URL: https://archive.ph/o7Yo5 (дата звернення: 09.11.2025); Свет в конце тоннеля Chat [@thetunnellight_chat]. Telegram, URL: https://t.me/thetunnellight_chat (дата звернення: 09.11.2025).

171 Удаленщики Airlines / Спасибо большое каналу «От Мариуполя до Карпат» и его друзьям, а именно Александру Николаевичу за предоставленный Mavic! [@AirlinesVDV], (31.05.2025). Telegram, URL: https://archive.ph/rUMtZ (дата звернення: 09.11.2025).

172 СУЕТА НА ФРОНТЕ │ FPV / Скинули фото из моего учебного заведения — повесили меня на доску почёта [@sueta_bpla], (13.04.2025). Telegram, URL: https://archive.ph/qA9R2 (дата звернення: 09.11.2025); СУЕТА НА ФРОНТЕ │ FPV / Жители данной местности, которая отмечена красной зоной на карте, в этих районах наши расчёты будут вести уничтожение любого транспорта — это одна из наших ключевых целей [@sueta_bpla], (06.10.2024). Telegram, URL: https://archive.ph/OB8A5 (дата звернення: 09.11.2025).

173 КОТ ДОБРОХОД │ БПЛА / Херсонское направление [@KOT_DOBROHOD], (10.01.2025). Telegram, URL: https://archive.ph/dm3gt (дата звернення: 09.11.2025).

174 БпЛА │ РОЙ / Херсон, Полиция [@bpla_roy], (18.07.2025). Telegram, URL: https://archive.ph/6YBoG (дата звернення: 09.11.2025).

175 ХАБР │ БПЛА / Объективный контроль со стороны поросят [@bpla_habr], (08.03.2025). Telegram, URL: https://archive.ph/kHrOq (дата звернення: 09.11.2025).

176 Моисей │ БА │ СпН │ МО РФ / Работают парни где я раньше проходил службу [@gefestwar], (31.07.2024). Telegram, URL: https://archive.ph/DWklZ (дата звернення: 09.11.2025).

177 РОГОЗИН / В связи с постоянными обстрелами наших мирных жителей мы слетали на тот берег в Днепропетровскую область и навестили тех, кого принято называть «центрами принятия решения» [@rogozin_do], (12.03.2025). Telegram, URL: https://archive.ph/7kRpe (дата звернення: 09.11.2025).

178 Ibid.

179 URL

180 РБК-Україна (2024). Росіяни знищили єдину в Україні «зелену школу» (відео). РБК-Україна, URL: https://www.rbc.ua/rus/news/rosiyani-znishchili-edinu-ukrayini-zelenu-1723810922.html (дата звернення: 09.11.2025); Головне управління ДСНС України у Херсонській області / Херсонські рятувальники потрапили під повторний ворожий обстріл [@DSNSKHERSON], (16.08.2024). Facebook, URL: https://www.facebook.com/DSNSKHERSON/posts/pfbid015ZQwA4vCJxU5LyiDgEh7HJXjtCpc2pFb2auCUdrov9vSePSvep4Awk64GAD8o9Bl?locale=uk_UA (дата звернення: 09.11.2025).

181 URL

182 URL

183 URL

184 URL

185 URL

186 URL

187 Interview with Kostiantyn Kliova.

188 URL

189 In this context, the expression "mister bober kurwa" is an obscure reference to the author of the video, based on a popular Polish-language meme.

190 URL; URL

191 URL

192 URL

193 URL

194 Interview with Andrii Pietukhov.

195 URL

196 URL

197 Each case of civilians using methods of active protection, such as EW, in self-defense requires individual legal assessment regarding whether such actions can be equated to "direct participation in hostilities," which would entail the loss of protected status by the civilian.

198 URL; URL; URL

199 https://t.me/roy_bpla/49

200 https://t.me/osvedomitell_alex/27053

201 https://t.me/osvedomitell_alex/24168

202 https://t.me/Team_ORBIT/16

203 URL

204 URL

205 URL

206 URL

207 URL

208 URL

209 URL; URL

210 URL; Interview with Oleksandr Konfederat

211 Interview with Natalia Derhach

212 URL

213 Interview with Oleksandr Konfederat

214 URL; Interview with Oleksandr Konfederat.

215 URL

216 Interview with Oleksandr Konfederat

217 Interview with Kostiantin Kliova

218 URL

219 Dmt-102

220 URL; URL; URL

221 Khr-104

222 URL

223 URL

224 Khr-102

225 Interview with Ivan Samoilenko

226 Interview with Natalia Derhach

227 Khr-102, Khr-106

228 Ntn-101

229 Interview with Blz-101.

230 UR

231 Khr-107

232 Interview with Oleksandr Sivak

233 Interview with Ivan Samoilenko

234 URL

235 Interview with Hlib

236 URL, URL

237 Interview with Serhii Darmostuk, Ntn-102

238 URL; interview with Hlib

239 URL

240 Oleksandr Hordienko died as a result of an attack by a Russian drone on September 5, 2025, while working in the field.

241 URL

242 Interview with Serhii Darmostuk

243 Interview with Oleksandr Sivak

244 An international armed conflict exists if one state uses force of arms against another state. This also applies to all cases of total or partial military occupation, even if the said occupation meets with no armed resistance. See Article 2 common to the Geneva Conventions.

245 Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, adopted August 12, 1949, 75 U.N.T.S. 31, entered into force October 21, 1950; Geneva Convention for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, adopted August 12, 1949, 75 U.N.T.S. 85, entered into force October 21, 1950; Geneva Convention relative to the Treatment of Prisoners of War, adopted August 12, 1949, 75 U.N.T.S. 135, entered into force October 21, 1950; Geneva Convention relative to the Protection of Civilian Persons in Time of War, adopted August 12, 1949, 75 U.N.T.S. 287, entered into force October 21, 1950; Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts (Protocol I), adopted June 8, 1977, 1125 U.N.T.S. 3, entered into force December 7, 1978; Convention (IV) Respecting the Laws and Customs of War on Land and the Annexed Regulations Concerning the Laws and Customs of War on Land of 18 October 1907 (Hague Regulations), 3 Martens Nouveau Recueil (ser. 3) 461, 187 Consol. T.S. 227, entered into force January 26, 1910; See International Committee of the Red Cross (ICRC), (2005). Customary International Humanitarian Law. Cambridge Univ. Press.

246 AP I Art. 48.

247 AP I Art. 51(2).

248 AP I Art. 50(1).

249 Ibid.

250 AP I Art. 50(3).

251 AP I Art. 51(4)(a).

252 AP I Art. 51(4).

253 AP 1 Art. 85(3).

254 AP I Art. 85(3)(a) and (b)

255 Interview with Stn-101; Ivanova,Tamila (2024). Ataky droniv ta dystantsiine minuvannia: yak narazi vyzhyvaiut zhyteli Khersona. Suspilne.Kherson, URL: https://suspilne.media/kherson/824855-ataki-droniv-ta-distancijne-minu-vanna-ak-narazi-vizivaut-ziteli-hersona/ (accessed: 14.11.2025); Fatieieva, Anna (2025). Rosiiany skydaiut na Dnipropetrovshchyni miny-peliustky, yaki zahrozhuiut myrnym meshkantsiam. Vidomo, URL: https://vidomo.media/ukr/

war/1739370827-rosiyani-skidayut-na-dnipropetrovshchini-mini-pelyustki-ya-ki-zagrozhuyut-mirnim-meshkantsyam (accessed: 14.11.2025).

256 See Subsection 4.3.

257 AP I Art. 51(3).

258 See also Galic Trial Judgment para. 48.

259 Strugar Appeal Judgment para. 177.

260 ICRC (2008). Interpretive Guidance on the Notion of Direct Participation in Hostilities under International Humanitarian Law. 90 International Review of the Red Cross. P. 995 – 996.

261 Ibid.

262 Ibid.

263 Ibid.

264 See IBIS Zbroia ta Poliuvannia / Chy mozhlyvo zbyty dron z hladkostvolnoi rushnytsi na vysoti bilshe 100 metriv? [@IbisArms], (30.07.2023). Youtube, URL: https://www.youtube.com/watch?v=7bj3ALZdNdQ (accessed: 14.11.2025); Rebro (2025). Kupyty REB: pokrokova instruktsiia, vydy, diahnostyka ta osoblyvosti. REB, URL: https://reb.com.ua/buy-reb/ (accessed: 14.11.2025); KOLO (2024). Shcho take zasoby radioelektronnoi borotby (REBy)? URL: https://koloua.com/news/shcho-take-zasobi-radioelektronnoyi-borotbi-rebi-34 (accessed: 14.11.2025).

265 Interview with Hlib.

266 Interview with Vsk-101; Interview with Ntn-102; Interview with Khr-105.

267 AP I Art. 52(1).

268 AP I Art. 52(2).

269 AP I Art. 52(3).

270 Interview with Stn-101.

271 AP I Art. 54(1), 54(2).

272 Interview with Vsh-101.

273 AP 1 Art. 57(1).

274 AP 1 Art. 57(2).

275 Interview with Nkp-102.

276 AP I Art. 57(2)(a)(ii).

277 AP I Art. 57(2)(c).

278 See Commentary to Additional Protocol I (AP I), art. 57, para. 2225 (stating that the function of warnings is to "give civilians a chance to protect themselves").

279 See AP I Art. 57(5) ("No provision of this Article may be construed as authorizing any attacks against the civilian population, civilians or civilian objects.")

280 See AP I Art. 57(2)(c).

281 Moisei │ Bezdushnaya Aviatsiya / Ups, zapitpalili tochku vzleta ukrofashis-tov [@gefestwar], (16.08.2024). Telegram, URL: https://archive.ph/qCgkb (accessed: 14.11.2025).

282 SUETA NA FRONTE │ FPV / Zhiteli dannoi mestnosti, kotoraya otmechena krasnoi zonoi na karte, v etikh raionakh nashi raschyoti budut vesti unichtozhenie lyubogo transporta — eto odna iz nashikh klyuchevikh tselei

[@sueta_bpla], (06.10.2024). Telegram, URL: https://archive.ph/OB8A5 (accessed: 14.11.2025).

283 See ICRC, Customary International Humanitarian Law, rule 156.

284 AP I Art. 86(2).

285 RS Article 8(2)(b)(i).

286 Trial Chamber VI │ 08 July 2019 │ ICC-01/04-02/06-2359 at para 921.

287 The Prosecutor v. Germain Katanga ICC-01/04-01/07 (Int'l Criminal Court March 27, 2014) at para 807.

288 Velykooleksandrivskyi raionnyi sud Khersonskoi oblasti (2025). Sprava № 650/3777/24. Provadzhennia № 1-kp/650/78/25. URL: https://reyestr.court.gov.ua/Review/128058801 (accessed: 14.11.2025).

289 Ibid.

290 RS Article 8(2)(b)(ii).

291 See Mala, Svitlana (2024). «Bachyla, yak rosiiski drony pidryvaly ta pid-paliuvaly susidski budynky». Museum of Civilian Voices by the Rinat Akhmetov Foundation, URL: https://civilvoicesmuseum.org/stories/bachyla-yak-rosiys-ki-drony-pidryvaly-ta-pidpalyuvaly-susidski-budynky (accessed: 14.11.2025); Khotsianivska, Alla (2024). Safari na liudei. Rosiiski viiskovi navmysne poliuiut dronamy za tsyvilnymy na Khersonshchyni. Radio Svoboda, URL: https://www.radiosvoboda.org/a/rosiys%CA%B9kiy-viys%CA%B9kovi-masovo-atakuyut%-CA%B9-dronamy-myrne-naselennya-khersona-ta-oblasti/33219523.html?utm_source=chatgpt.com (accessed: 14.11.2025); Voina 2022 Rossyia-Ukraina WAR UKRAINE RUSSIAN / Kherson. Krasnaia zona [@osvedomitell], (07.10.2024). Telegram, URL: https://archive.ph/nalR9 (accessed: 14.11.2025); Interview with Sdv-101; Interview with Stn-101; See Subsection 4.3.

292 See BBC News Ukraine (2025). Rosiiany udaryly po avtobusu v Marhantsi: 9 zahyblykh, maizhe piv sotni poranenykh. URL: https://www.bbc.com/ukrainian/articles/c20z41mepl7o (accessed: 14.11.2025); See Subsection 4.3.

293 See Subsection 4.3.

294 See Subsection 4.4.2.

295 See Subsections 4.3. and 4.4.

296 RS Article 8(2)(b)(xxiv).

297 See Subsection 4.3.

298 See Subsection 4.4.2.

299 AP I Art. 51(2).

300 Galić Trial Judgement, para. 133; Galić Appeal Judgement, paras 100, 101.

301 Milosevic Appeal Judgement at para 33.

302 In Prosecutor v. Galić, the ICTY Trial Chamber stated: "Primary purpose" signifies the mens rea of the crime of terror. It is to be understood as excluding dolus eventualis or recklessness from the intentional state specific to terror. Thus, the Prosecution is required to prove not only that the Accused accepted the likelihood that terror would result from the illegal acts – or, in other words, that he was aware of the possibility that terror would result – but that that was the result which he specifically intended. The crime of terror is a specific-intent crime." Para. 136.

303 Milosevic Appeal Judgement at para. 881.

304 See Subsection 4.3. and 4.4.

305 See Voina 2022 Rossyia-Ukraina WAR UKRAINE RUSSIAN / Kherson [@os-vedomitell], (07.01.2024). Telegram, URL: https://archive.ph/OOssX (accessed: 14.11.2025); Ot Mariupolya do Karpat / V Mariupole eto bila normalnaya praktika [@osvedomitell_alex], (28.10.2022). Telegram, URL: https://archive.ph/57UH0 (accessed: 14.11.2025); Voina 2022 Rossyia-Ukraina WAR UKRAINE RUSSIAN / S etogo dnya vse raspolozheniya budut rovnyatsya [@osvedomitell], (19.11.2022). Telegram, URL: https://archive.ph/oqQzp (accessed: 14.11.2025).

306 Interview with Vsk-101.

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Інтерв'ю з Vsk-101.