

Kyiv
Dialogue

KONRAD
ADENAUER
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UKRAINE AIR WAR MONITOR

Analyses for the Protection of Ukrainian
Cities and Infrastructure

Data and analysis:
Marcus Welsch

10 August 2025

VOL VII

PREFACE TO THE SEVENTH VOLUME

With this seventh issue, the Monitor Air War Ukraine enters a new phase. **We are pleased to announce that the Konrad Adenauer Foundation (KAS) has become a co-publisher of the Monitor.** This strengthens our ability to both document and develop the analysis of the Russian air war against Ukraine.

From now on, new issues will be published regularly at the beginning of each month, supplemented by an English version for international readers. We would like to thank the KAS and all donors whose support makes our work possible.

We continue to welcome professional feedback, content-related suggestions, and additional information that can enrich our analysis. We would also be pleased to hear from anyone who wishes to contribute to or support our ongoing efforts.

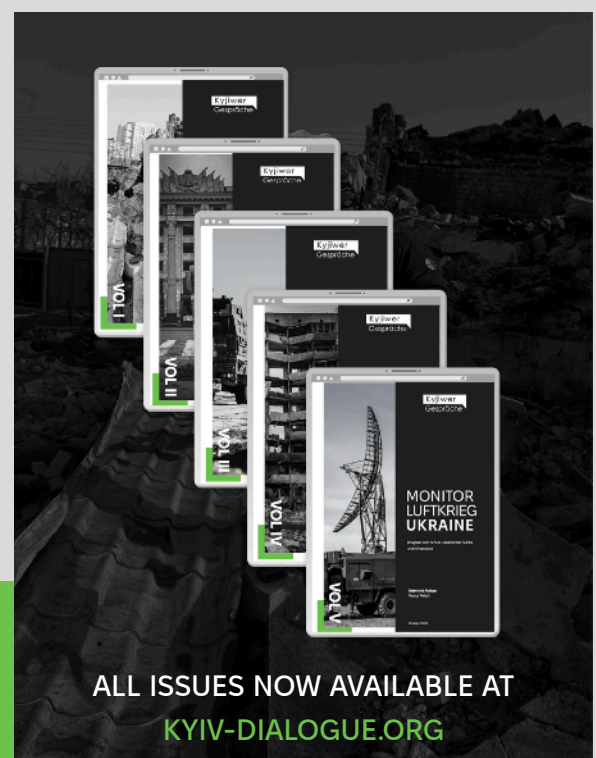
Kyiv Dialogue Team

EXECUTIVE SUMMARY

- ▶ **Since August 2024, Russia has been massively shifting its air war to drone attacks.** A new peak of almost 6,300 drones was reached in July 2025. Around half of these are so-called fake drones without explosive devices, which are used to overload Ukrainian air defences.
- ▶ **The effectiveness of Ukraine's air defence is stabilising again.** After a slump in the spring, the average firing rate in July was back at 89 %. Electronic warfare (such as jammers) caused the failure of up to 60 % of Russian drones.
- ▶ **The number of unintercepted drones rose sharply in the first half of 2025 (June - 745), especially in less protected regions.** However, the destructive power of the drones does not match that of the cruise missiles and rockets used in earlier phases of the war.
- ▶ **The threat from cruise missiles and ballistic missiles has decreased due to improvements in air defence and interceptor missiles.** Interception rates for modern missile types such as the Kh-101 and Kalibr have increased to up to 90 per cent since March 2025.
- ▶ **The psychological burden on the civilian population is increasing.** There are nationwide drone attacks with over 100 missiles per night almost every day. In the first half of 2025, 6,754 civilians were killed or injured – the highest number since the start of the war.
- ▶ **The Kharkiv oblast is particularly affected, followed by Dnipropetrovsk, Odesa and Kyiv and the surrounding area.** Especially smaller towns and regions far from the capital suffer from insufficient air defense coverage.
- ▶ **The primary aim of the Russian air war against Ukrainian cities remains psychological attrition.**

However, Ukrainian resilience has not been broken, and the strategic benefit of the new waves of attacks remains limited.

- ▶ The **expansion and diversification of Ukrainian defence systems** are crucial for sustainable defence. This includes the promising development of new types of interceptor drones, which are already being used successfully in drone defence. Countering the next generation of more powerful Russian drones will require large-caliber systems and airborne defense systems.
- ▶ **Offensive measures against Russian production and logistics sites and improved control of international supply chains** must complement air defence to weaken Russia's ability to continue the air war in the long term.
- ▶ Only a **comprehensive strategy combining air defence, technological advancement, offensive operations, and targeted sanctions** can weaken Russia's ability to wage war over the long term.



SITUATION MAY-JULY

ANALYSIS AND TRENDS

In the summer of 2024, a new, intensive phase of the Russian air war against Ukrainian cities and civilian infrastructure began, characterised by increasingly massive waves of night-time attacks to terrorise the civilian population.

However, the countermeasures taken by Ukrainian air defences show that Ukraine is not helpless in the face of Russia's terror and that the population and civilian infrastructure can be better protected with some effort.

The strategic benefit of this new phase of the air war for Russia is far lower than the images of the recent attacks suggest.

CHANGE IN ATTACK TACTICS

Since August 2024, Russia has shifted its focus to **continuously increasing drone strikes**. Previously, the focus of Ukraine's air defence was primarily on defending against

cruise missiles and ballistic missiles.

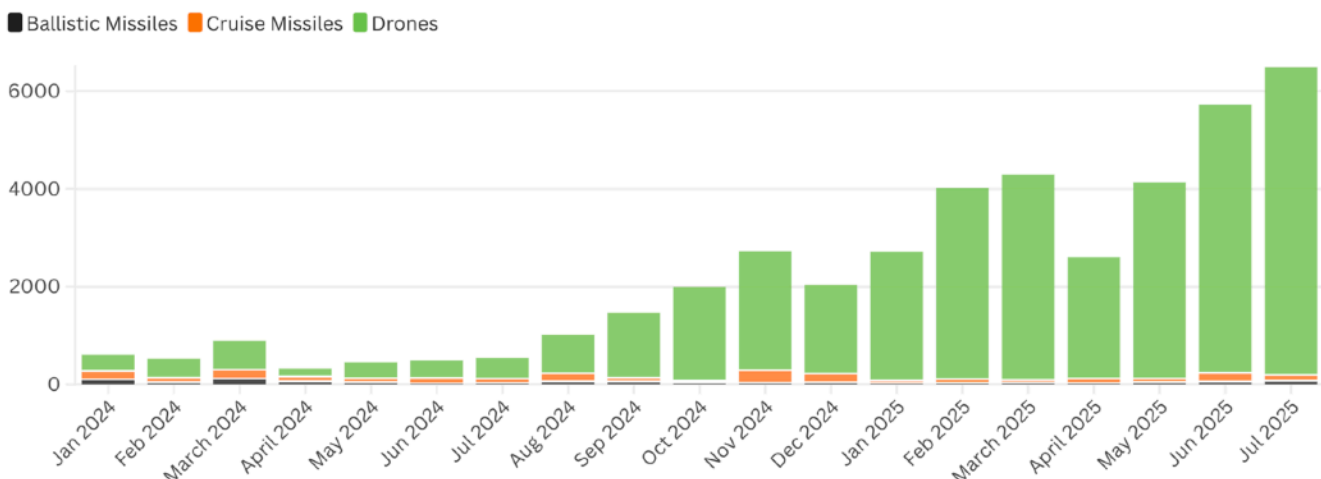
Bottlenecks in the supply of important air defence systems and interceptor missiles posed the greatest challenge, which is ongoing.

At the beginning of the Russian air war in autumn 2022 (first major wave of attacks 11.9.2025), drones accounted for only around 30% of the missiles deployed (maximum 400-600 drones per month). Today, long-range drones account for around 95% of Russian airstrikes against civilian targets.

The number of drones deployed rose rapidly from 800 in August 2024 to almost 6,300 in July 2025.

The main reason for this is the mass production of the Geran-2 drone, a replica of the Iranian Shahed drone, in the **special economic zone in Tatarstan in Russia**, which is being pushed forward by all means.

Russian Deployed Missiles and Drones per month



Data: Perspectus Analytics, KPSZSU, ISW Daily Reports

In addition, around half of the drones deployed are so-called 'fake drones', cheaply produced dummies without explosive devices, which are primarily used to distract and wear down Ukrainian air defences.

NEW CHALLENGES FOR UKRAINE'S AIR DEFENCE

The technical development of Russian drones poses new challenges for Ukrainian drone defence due to new flight altitudes, greater resilience to interference signals, and improved, more autonomous control (see [Monitor Vol VI](#)).

In the meantime, drones have become the greatest threat to Ukrainian cities and infrastructure. This can be seen in the comparison of the monthly number of unintercepted attacks, which provides an orientation and categorisation of the threat situation. In the whole of December 2024, just 21 drones were not intercepted, causing only minor damage compared to the missiles. Today, 20 to 40 drones a day, and up to 80 on record nights, deliver their explosives to the target. Until the winter, Ukraine had largely succeeded in bringing the drone war under control with the help of mobile

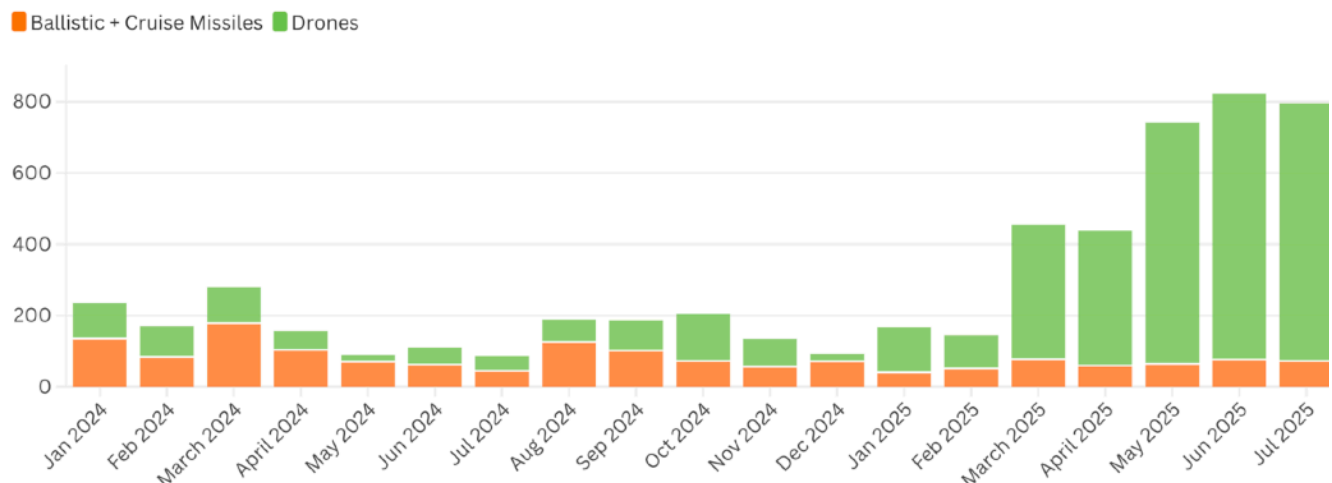
interception squads, intelligent acoustic early warning systems, and technical developments. However, since February, interception rates have fallen from month to month. In March, 300 drones could no longer be intercepted for the first time, followed by more than 745 in June. Since July (700), the figure has fallen slightly again. Cruise missiles and rockets were increasingly better intercepted over the course of 2024, and only make up a small proportion of the unintercepted missiles in 2025.

LIMITED DAMAGE POTENTIAL DESPITE MASS ATTACKS

Although the number of successful attacks has increased, the destructive potential of drones remains limited compared to other types of missiles. Their explosive payload is 10-20 times less than that of cruise missiles and rockets.

An initial evaluation suggests that the explosive charge delivered to the target does not mathematically exceed the record values of January/February 2024. A detailed analysis will be provided in the next issues of the Monitor.

Not Intercepted Missiles and Drones per month



Data: Perspectus Analytics, KPSZSU, ISW Daily Reports

PSYCHOLOGICAL ATTRITION AS A GOAL

After Russia failed to achieve its goal of destroying Ukraine's power and heat generation in the winter of 2024/25, **attacks are now increasingly being directed at particularly vulnerable civilian targets** such as hospitals, maternity clinics, and residential buildings (see [↗ Monitor Vol III](#); [↗ Monitor Vol VI](#)).

As a result, the **number of civilian casualties has risen significantly**: 6,754 civilians were killed or injured in the first half of 2025 alone. This is the highest half-year figure since the beginning of the war ([↗ UN Human Rights Monitoring Mission in Ukraine, 10.07.2025](#)).

Added to this is the **enormous psychological strain** caused by the ongoing and intensive drone attacks. The number of nights with waves of attacks from more than 100 drones has multiplied. Before 26 August 2024, there had only been four nights of comparable

intensity since the start of the Russian air war. Now it is every other night.

At the same time, with each new 'record night', Moscow pursues the claim of demonstrating escalation dominance - from 267 drones on 23 February to 298 (25 May) and 355 (26 May) to 472 (1 June), 477 (2 June), 539 (4 July) and finally 728 (9 July).

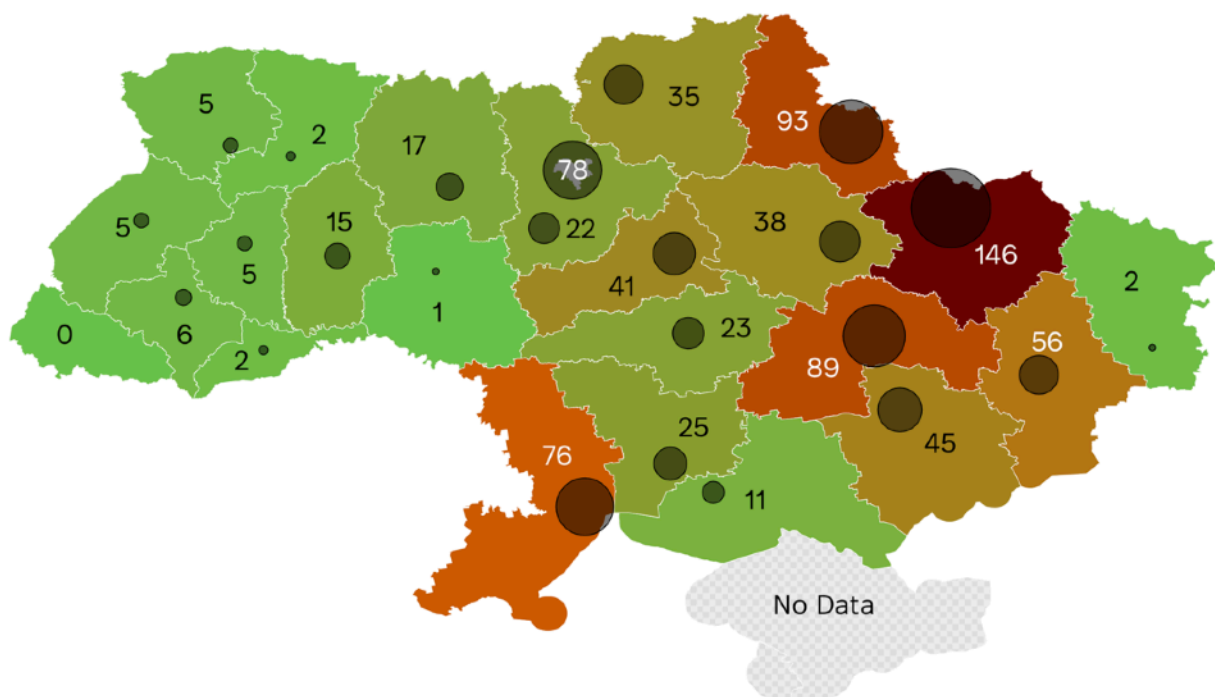
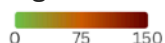
These numbers are not only **intended to intimidate the Ukrainian population, but also to emphasise Russia's determination to Ukraine's Western partners.**

DIFFERENT EXPOSURE OF CITIES AND REGIONS

An analysis of all daily reports from the *Institute for the Study of War (ISW)* on the Russian air war against Ukraine (see [↗ ISW, Russian Offensive Campaign Assessment](#)) from January 2023 to July 2025 shows the **very different exposure of the Ukrainian regions.**

The city and oblast of Kharkiv are particularly affected. As a large city close to the Russian border, Kharkiv is not only exposed to long-

Number of Days with Damage Reports
By region, since January 2025



Data: Perspectus Analytics, ISW Daily Reports

range drones and missiles but also to smaller FPV drones, glide bombs, and cluster munitions that are almost impossible to defend against.

The city and region of Kharkiv have been mentioned around 260 times in the attack reports since January 2023. The city of Dnipro and the Dnipropetrovsk oblast (195 registered attacks since 2023) and Odesa (190 mentions) have also not experienced a single month without air strikes.

The capital Kyiv was mentioned 190 times, and the neighbouring Kyiv oblast (excluding the urban area) an additional 55 times. Even if Kyiv and the neighbouring regions are added together, the number of attack nights is lower than that of the Kharkiv oblast.

The severity of the permanent burden becomes even clearer if you look at the year 2025 separately. The entire Kyiv oblast was already mentioned 100 times in the reports that year, while the Kharkiv oblast was mentioned 145 times, i. e. two out of every three days.

Sumy has been increasingly affected since the beginning of 2025 (around 90 times). It is the most attacked region after Kharkiv and Kyiv, followed by Odesa and the unoccupied part of the Donetsk region. Zaporizhzhya, Cherkasy, Poltava, and Chernihiv were also more heavily shelled this year.

TREND SHIFT IN UKRAINE'S DRONE DEFENCE

But how can Russian drone terror be countered, and how resilient is Ukrainian air defence?

For now, around half of the drones deployed are only dummies without explosive charges, and the majority are still of the Geran-2 type, which is comparatively easy to intercept.

However, Ukrainian air defence must reckon with increasingly sophisticated variants that have more powerful engines, autonomous control systems, and new flight altitudes (see ↗ [Monitor Vol VI](#)).

The unexpectedly large number of drones and the varying mission profiles caused the firing rate to drop from 98 % in February to 83% in May. A recovery set in in mid-June (86%), followed by 89 % in July. Nevertheless, the annual average for 2025 (88 %) is still below the 2024 figure (93 %).

Moscow is relying on large waves of attacks against a small number of targets to overload Ukraine's air defences at certain points. However, larger quantities do not automatically lead to successful attacks. On the nights when the capital Kyiv was targeted, the interception rate usually remained above 90 %.

Smaller waves of less than 100 drones, on the other hand, caused more damage in peripheral, less well-protected cities than the concerted attacks on the capital. Even during the large-scale attack on 9 July, 98% of the 728 drones were neutralised or intercepted.

The success of Ukraine's drone defence is based not only on improved interception procedures, but also to a large extent on **electronic warfare (EW)**, which disables Russian drones in flight through targeted jamming signals. On the record night of 9 July, 57 % of attacking drones were intercepted electronically.

In view of this effectiveness, it remains a key task to provide additional protection, particularly for cities in regions close to the front. The night of 4 July, when Kyiv, Poltava, Kirovohrad, and Odesa were the focus of attacks, shows just how crucial the regional

drone defence equipment is. That night, 63 of 539 drones could not be intercepted. 23 people were injured, and a Polish embassy building in Kyiv and the Chinese consulate in Odesa were also hit ([↗ Kyiv Independent, 4.7.2025](#)).

INCREASED DEPLOYMENT OF MISSILES AND ROCKETS

In addition to the drone war, there has been a renewed increase in the use of Iskander-K cruise missiles, which have hardly been used this year but have been used in almost every wave of attacks since the end of May. The frequency of Kh-101 attacks is also increasing noticeably, even if it has not yet reached the level of the second half of 2024.

The production figures indicate that Moscow is deliberately holding back its stocks and building up larger reserves (more on this in the upcoming Monitor issues).

The deployment of ballistic missiles is also now above the figures for the winter months. The decisive factor is therefore not only how many additional Patriot or IRIS-T systems Ukraine receives to better protect parts of the country far from major cities, but also how many spare parts and defence missiles can be delivered worldwide.

SUCCESSSES IN INTERCEPTING CRUISE MISSILES AND ROCKETS

The evaluation of the past few months shows an unexpectedly **significant increase in the interception rates for ballistic and cruise missiles**, and faster than Russia is increasing its deployment figures.

The interception rate for the most frequently deployed cruise missile type Kh-101 rose from 70 % in March to 90 % in July, which is largely

due to the successful **integration of F-16 fighter jets into the air defence system**.

The Kalibr cruise missiles were also intercepted in over 90 % of cases in July (April: 60 %) and even the defence against the Iskander-M/KN23 ballistic missiles, which are difficult to intercept, has improved, with 35 % and 50 % of cases intercepted in June and July respectively (previous year: 10-20 %).

Even the Kh-47/M2 Kinzhal hypersonic missile, praised as „**Putin's miracle weapon**“, was shot down in six out of nine missions in the past two months.

These successes are not only due to the US turnaround in delivery policy, which allows for a more predictable and generous deployment of the scarce air defence systems. It is above all the skill of the Ukrainian air defence, whose contributions to protecting the cities must be highly recognized.

NEED FOR ACTION AND FIRST SUCCESSSES IN DRONE DEFENCE

To defend against the growing number of drone and missile attacks, **the Ukrainian air force must be supplied with enough interceptor missiles and ammunition**. While systems like IRIS-T and Patriot are costly and not designed for effective drone defence, it is important to **strengthen more affordable solutions alongside them**.

The US company Swift Beat is currently working with Ukraine to develop defence drones against Russian Shaheed/Geran-2 drones. They are reportedly responsible for 90 % of the missiles intercepted by interceptor drones in recent weeks ([↗ Don's Weekly, 28.7.2025](#)). Similarly, tests of the German Skynex system (delivered 2024)

show promising results ([↗ United 24, 12.7.2025](#)).

The most effective way is to provide Ukraine with significantly more financial resources to promote its domestic drone defence development ([↗ Suspilne, 11.7.2025](#)). The Ukrainian 'Clear Sky' programme has already successfully intercepted 650 drones over the Kyiv oblast ([↗ armyinform, 11.7.2025](#)).



Ukrainian interceptor drone in 2025, [↗ Militarniy, 7.8.2025](#)

CLOSING CAPABILITY GAPS

To defend against new types of drones, Ukraine urgently needs new weapon systems that it does not produce itself.

As military expert Gustav Gressel explained to the Monitor, the 12.7mm MGs that the Ukrainians have used so far are not sufficient against the new type of Shaheed drones with a higher flight altitude. For the flight altitude of 4-5,000 metres, at least 35 mm, and preferably 76.2 mm guns are required. Companies in both Sweden and Italy manufacture high-calibre machine guns for

naval applications, which could be converted and made available to Ukraine.

In addition, **armed training aircraft of Western design could be used against jet-powered drones of a new type (Geran-3 drone)**, in which trained Ukrainian pilots could be deployed against Geran-3 drones, who would later continue their training for F16 or Mirage types, according to Gressel's proposal.

RUSSIAN PRODUCTION PEAKS STILL NOT REACHED

Estimates from Ukraine's military intelligence (GUR) published in June that Russia produces 150–170 drones per day ([↗ ISW, 28.6.2025](#)) now appear outdated. Current consumption averages and a July peak even point to 175–210 per day. Bundeswehr Major General Christian Freuding warns of attack waves of up to 2,000 drones ([↗ Nachgefragt, 19.7.2025](#)). A dimension that Russia is aiming for in the medium term, and to which Europe must be able to react.

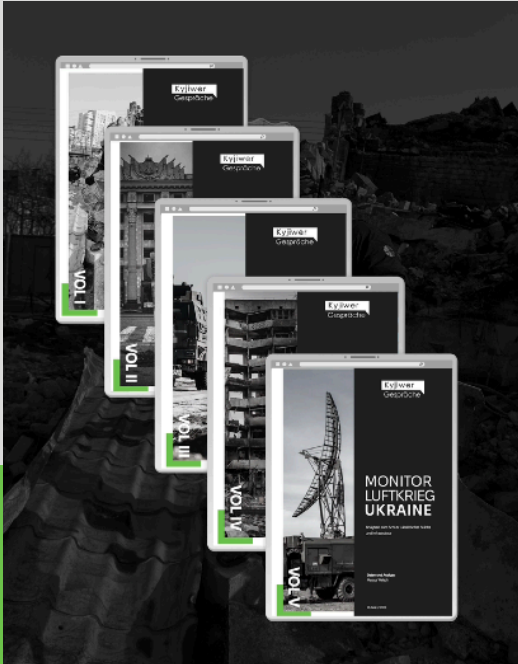
„OFFENSIVE COUNTER AIR“

In addition, Ukraine should intensify its 'offensive counter-air' measures, i.e. directly attack enemy aircraft, airfields, production facilities and logistics hubs. This monitor has repeatedly described this as an important means of weakening Russia's war industry.

In addition, **economic sanctions** are necessary to disrupt Russian spare parts supply chains, especially from China.

Only with an overall strategic approach of air defence, technology promotion, offensive operations, and accompanying sanctions will Russia's ability to wage war be weakened in the long term.

ABOUT THE UKRAINE AIR WAR MONITOR



The **Ukraine Air War Monitor** ...

- ▶ **Reports on the latest developments** in Russia's air war against Ukraine
- ▶ Is built on a **unique database** tracking all airstrikes since autumn 2022.
- ▶ Provides **data-driven recommendations** to enhance short- and medium-term support for Ukraine.
- ▶ Is **designed for policymakers, experts, and journalists.**

The monthly newsletter

„UKRAINE AIR WAR MONITOR – ANALYSES FOR THE PROTECTION OF UKRAINIAN CITIES AND INFRASTRUCTURE“

provides analyses on ongoing Russian airstrike campaigns, identifies emerging trends, and enables assessments of Russia's evolving military strategy and capabilities.

The **UKRAINE AIR WAR MONITOR** is tailored for political decision-makers, security and military policy experts, and journalists. Its primary objective is to **provide data-driven recommendations** on how Western partners can enhance Ukraine's air defence against Russian attacks.

The analysis is based on a **comprehensive and unique database** tracking every Russian

airstrike on civilian targets in Ukraine since autumn 2022.

The monitor is published by „Kyiv Dialogue“ in collaboration with OSINT and data analyst Marcus Welsch and the Konrad Adenauer Foundation.

More information about the series and access to former volumes (in German) can be found on our website. ([↗ kyiv-dialogue.org](https://kyiv-dialogue.org))

Support our work:

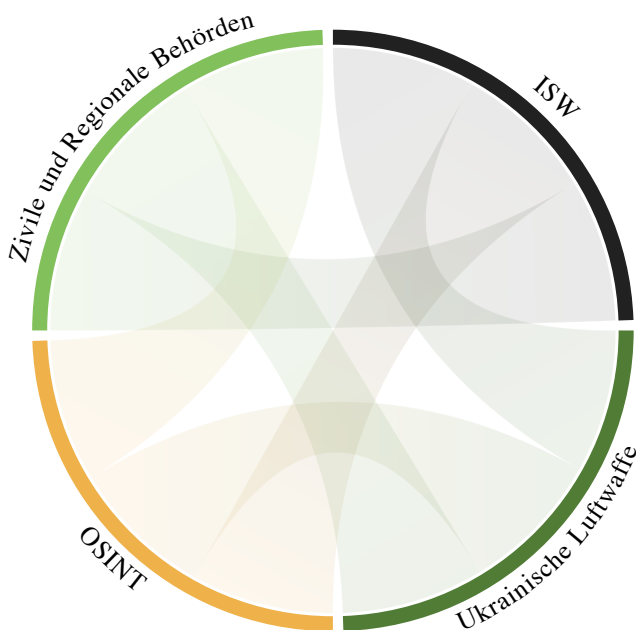
The monthly **UKRAINE AIR WAR MONITOR** is a crowdfunded effort and depends on financial contributions. If you would like us to continue our English language version, please consider supporting us [↗ here](#).

METHOD

The airstrike database is regularly cross-referenced with daily reports from the **Institute for the Study of War (ISW)** in Washington ([↗ ISW](#)).

Launch records originate from the **Ukrainian Air Force** reports ([↗ KPSZSU](#)), and data on regional targets and damage—if available—is supplemented with **civilian and military administration sources**.

These figures are further verified using additional **OSINT sources** and are considered highly reliable.



Data sources of the database

Accurately quantifying **airstrike damage** during an active war is inherently challenging. Providing overly precise information could aid Russian military planning, which is why certain reporting restrictions apply ([↗ Expro, 2.1.2025](#)).

Consequently, this analysis **focuses on attack patterns and dynamics** rather than detailed damage assessments.

With over **34 months of data and around 48,500 documented attacks**, robust trends have emerged. Monthly missile counts are approximate values, as irregularities have been noted in Ukraine's reporting system. Discrepancies with other OSINT sources remain within a 10 % margin, often below 3 %.

A comparison with the missile and drones assessment by the Center for Strategic and International Studies (CSIS) in Washington over a period of more than two years shows a deviation of only 1.6 % ([↗ CSIS](#)).

For attacks lacking definitive quantification, the lowest plausible estimates have been used. Due to possible underreporting in high-intensity phases, actual interception rates may be slightly higher, with an estimated deviation of less than 5 %.

ABOUT US

ABOUT THE AUTHOR

Marcus Welsch is a freelance analyst, documentary filmmaker, and publicist.

Since 2014, he has specialized in OSINT journalism and data analysis, focusing on the Russian war against Ukraine, military and foreign policy issues, and the German public discourse.

In cooperation with Kyiv Dialogue, he has conducted research and panel discussions on Western sanctions policy since 2023.

Since 2015, he has been running the data and analysis platform [↗ Perspectus Analytics](#).

ABOUT KYIV DIALOGUE

Kyiv Dialogue is an independent civil society platform dedicated to fostering dialogue between Ukraine and Germany.

Founded in 2005 as an international conference format addressing social and political issues, it has moved to support civil society initiatives aimed at strengthening local democracy in Ukraine since 2014.

Since Russia's full-scale invasion in 2022, the focus has shifted to social resilience, cohesion, and security policy—including military support for Ukraine and Western sanctions policy.

Kyiv Dialogue is a program of the European Exchange gGmbH.

CONTACTS

Kyiv Dialogue

c/o Europäischer Austausch gGmbH

Erkelenzdammm 59, D-10999 Berlin

+49 30 616 71 464-0

info@kyiv-dialogue.org

www.kyiv-dialogue.org



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Konrad Adenauer Foundation Ukraine

Bogomoltsja St. 5, Wh. 1, 01024 Kyiv / Ukraine

+38 044 4927443

office.kyiv@kas.de

www.kas.de/de/web/ukraine



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Represented by:

Stefanie Schiffer (European Exchange gGmbH)

Thomas Vogel (European Exchange gGmbH)

Dr. Jan-Philipp Wölbern (Konrad Adenauer Foundation)

Editing and Design:

Matthias Meier

Translation

Michael Larry Dempsey

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