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# THE EFFECTIVENESS OF INFRASTRUCTURE DESTRUCTION IN THE RUSSIAN-UKRAINIAN WAR AND ITS IMPACT ON STRATEGIC DECISION-MAKING

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***Abstract****: The author examines one of the key innovations of the Russo-Ukrainian war – the launching of massive airstrikes – in an attempt to determine the impact of damage to territorial infrastructure on state strategies and the future of warfare. The ratio of modern airstrikes to their deployment is determined primarily by economic considerations.*

*Although the Ukrainian strikes were carried out using relatively inexpensive systems - primarily unmanned aerial vehicles – they reached even the most remote Russian bases and oil terminals, causing colossal damage to the Russian economy.*

*Small drones, supported by artificial intelligence, are deployed in large numbers before the strike, creating a distributed air presence.*

*This approach to sequential countermeasures is expected to become more widespread in the future, as it represents one of the most effective ways to maintain air superiority.*

*Based on an analysis of data from various sources, a number of conclusions are drawn, arguing that the West as a whole continues to fund Ukraine – perhaps not fully, but nevertheless sufficiently and sustainably.*

***Keywords****: air supremacy; drone warfare; mass strike operations; military decision-making; combined strike operations; sixth generation warfare.*

## Introduction

The Russian–Ukrainian war has entered its fourth year, during which multiple operational domains have emerged alongside conventional ground operations. These domains have developed into distinct strategic components of a war of attrition. As attritional ground operations have failed to achieve decisive outcomes, infrastructure-destruction operations have assumed a central role, becoming the most consequential instrument and a primary determinant of strategic success.

The present article focuses on these operations and examines their influence on strategic decision-making. In the current phase of the conflict, they have become increasingly integrated with efforts to counter the “shadow tanker fleet”, and may ultimately prove its decisive factor in shaping the outcome of the war.

## 1. Mutual large-scale airstrikes

The Russian military began conducting mass airstrikes at the very outset of the war; however, in the initial phase, these strikes were not conducted on a large scale and relied on a limited number of expensive cruise missiles. Over time, however, the Russian side acquired low-cost strike systems from Iran. In May 2023, Russian forces launched approximately 400 Shahed-136/131 (Geran) strike unmanned aerial vehicles, accompanied by only a very limited number of higher-end aerial strike assets.

The tempo continued to increase, and in December of the same year, 780 Shahed-136/131 (Geran) strike UAVs (RBC.UA 2024) were launched, setting a new record. These strikes, however, were neither complex nor combined in nature; beyond the use of UAVs, they did not incorporate other advanced aerial strike assets, nor were they conducted with the integration of air and space reconnaissance and command-and-control systems. On 29 November 2023, the Russian Armed Forces carried out a significant large-scale combined strike**,** launching a total of 158 aerial strike assets**,** of which approximately 40 were strike UAVs**,** while the remainder consisted predominantly of air-launched cruise missiles**.** However, this was an isolated operation in which the emphasis was placed on the employment of high-cost cruise missiles.

The numbers increased rapidly, particularly in 2025, when the scale of these strikes reached unprecedented levels. At the same time, however, strikes by Ukrainian UAVs also intensified. These strikes were conducted using relatively low-cost systems – primarily UAVs – but they reached Russia's most distant bases and oil terminals.

On the night of 8-9 July 2025, the Russian military set a new record, launching 741 aerial strike assets. Of these**,** 728 were strike or fake UAVs**,** 7 were Kh-101/Iskander-K cruise missiles**,** and 6 were aeroballistic Kh-47M2 "Kinzhal" missiles (Prishlyak 2025)**.**

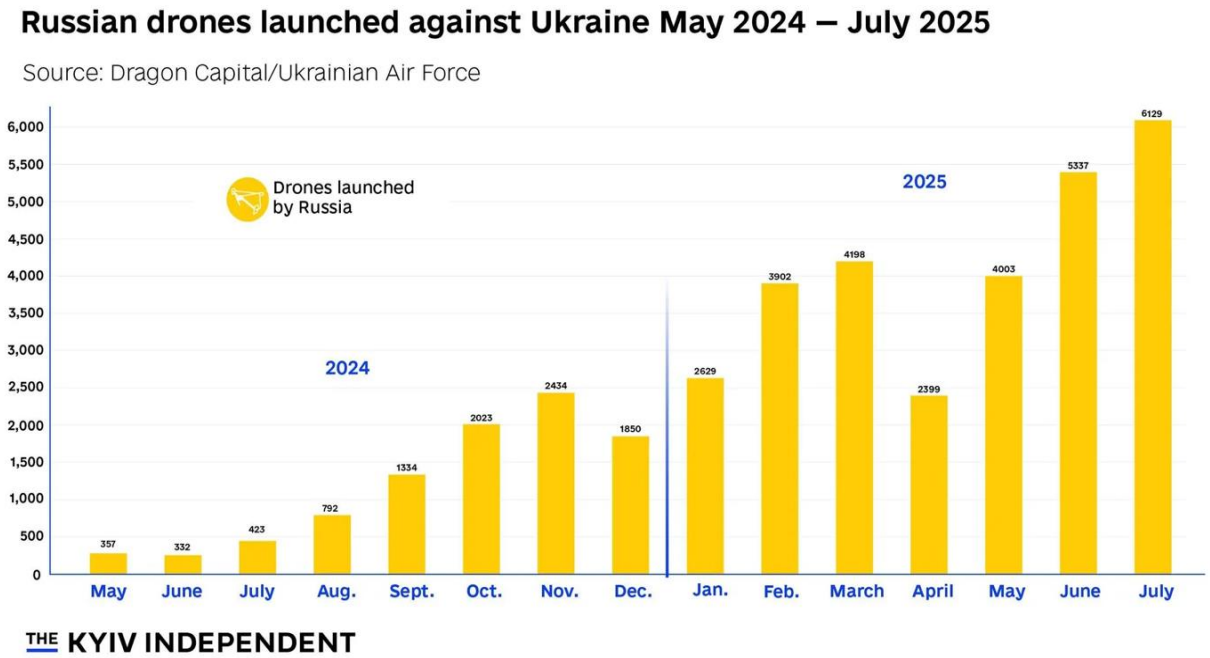


**Figure no. 1**: Graph illustrating Russian UAV strikes and their monthly growth

On 25 November 2025, the Russian Armed Forces launched a total of 464 UAVs and 22 missiles. Of these, 438 were UAVs**,** 1 Kh-47M2 "Kinzhal"**,** 5 Iskander-K**,** 5 Kalibr cruise missiles**,** and 3 Iskander-M ballistic missiles**.** This strike was notable for the disproportionately small number of high-value missiles compared to UAVs. On the same day, several Russian UAVs reached the airspace of Moldova and Romania**,** highlighting the extended operational reach of these systems (Shenderovskiy 2025).

On the same day, according to official Russian reports, Russian air defence forces intercepted more than 250 Ukrainian UAVs along with several missiles (1tv.ru 2025). According to Ukrainian sources, a successful strike was carried out against the Beriev Aircraft Plant in Taganrog, Russian Federation**,** where unique aircraft are produced and overhauled, including the A-50 airborne command-and-control aircraft**,** the A-60 flying laboratory (Frolov 2025)**,** Tu-95 strategic bombers and others. According to space-based intelligence data, after the strike, the A-60 flying laboratory

and the next-generation A-100 airborne command-and-control aircraft (Defense Express 2025) were set on fire on 29 November 2025, the Russian Armed Forces carried out another large-scale combined strike, during which a total of 632 aerial strike assets were launched. Of these, 596 were strike and fake UAVs, while the remaining 36 were missiles, including 5 Kh-47M2 "Kinzhal" aeroballistic missiles, 23 Kh-101/Iskander-K cruise missiles, 4 Iskander-M ballistic missiles, and 4 Kh-59/69 air-launched missiles (Girnik 2025). Once again, the Kh-47M2 "Kinzhal" proved to be the most effective aerial strike asset. This represented a rare complex and combined strike, characterised by the extensive use of high-value aerial strike systems. Monthly launch figures continued to rise steadily. In September 2025, the Russian Armed Forces launched approximately 6,900 UAVs (Mittal 2025), a pattern that persisted throughout the autumn and winter months.

Throughout 2025, Russia launched a total of 53,732 strike and fake UAVs, primarily Shahed-136/131 (Geran) systems. By comparison, in 2024, the number of such UAVs amounted to 10,849 (Shenderovskiy 2026).

At the same time, the Russian Federation produced approximately 120,000 conventional guided aerial bombs, which are employed by the air force and without which strikes against critical infrastructure targets would be largely ineffective (Hunder 2025).

Within military science, the issue of the large-scale, coordinated employment of UAVs enabled by artificial intelligence is now being actively debated, particularly in the context of the concepts known as the "UAV line" or "UAV wall." Within this conceptual framework, the "UAV wall" may comprise systems of varying types and sizes which, under a unified operational concept, can simultaneously perform different tasks.

While the notion of a "UAV wall" is currently more widely understood in the field of counter-UAS defence than in that of mass strike employment, the successful implementation of large-scale coordinated control would unequivocally enable its application across a wide range of missions.

"In military science, the issue of the large-scale, coordinated employment of UAVs through artificial intelligence is already being widely discussed, within the framework of the concepts of a «UAV line» or a «UAV wall»". "Within the concept of a «UAV wall», systems of various types and sizes may be involved, which, within a single operational design, can perform different tasks. It is true that the concept of a «UAV wall» is currently more readily understood in the field (Gardner) of counter-UAS defence than in that of their massed strike employment; however, if effective coordinated control of such large numbers is achieved, it will undoubtedly be employed for a wide range of purposes".

"During 2025, the Russian side launched a total of 1,898 missiles. Of these, 568 were ballistic and aeroballistic missiles, while 1,330 were cruise missiles and other types, mainly older surface-to-air missiles adapted for strike roles. In 2024, Russia launched 306 ballistic and aeroballistic missiles, along with 1,645 cruise missiles and other missiles (Shenderovskiy 2026).

Among cruise missile systems, the Kh-101 and Iskander-K were the most extensively employed. Over a six-month period, 451 missiles were launched, with their combined cost estimated at approximately 6.2 billion USD (Chernovol 2025).

This shows that in 2025 the use of ballistic and aeroballistic missiles increased, while the employment of cruise missiles and other missile types declined. This trend is primarily explained by the greater effectiveness of ballistic and aeroballistic missiles, whereas cruise missiles have proven less effective. Moreover, the production of cruise missiles is considerably more complex and costly.

As a result, in 2025 the total number of missiles launched by the Russian side, compared with the number of UAVs employed, amounted to an effective ratio of 1 to 28 in favor of UAVs. In 2024, this ratio was 1 to 10.

This ratio in the employment of modern aerial strike systems is primarily driven by economic considerations. The Russian Federation is simply unable to field larger numbers of aircraft with aeroballistic missiles. According to some experts, this ratio also reflects an ongoing shift in tactics. Despite being roughly ten to twenty times fewer in number, these missiles nevertheless pose

significantly greater challenges for Ukrainian air defence (Mittal 2025). Particularly that these missiles continue to be upgraded, becoming more intelligent and more accurate, thereby reducing the effectiveness of Ukrainian air defence from 37 percent to 6 percent (Financial Times 2025).

The table illustrates the launch dynamics of different missile types during Russian mass strike operations (Kulish 2025).

As can be seen from Table no. 1, the overall use of various Russian missiles – which are significantly more capable aerial strike systems – has declined year by year, particularly strategic cruise missiles. However, the use of certain ballistic missiles has increased, partly because they were also supplied from other countries.

This is a very significant fact and arguably the only reliable information provided by this table.

**Table nr. 1:** Year by Year Trends in Russian Missile Use

| **Year** | **The total number of missiles** | **Ballistic missiles only** | **Ukrainian air defence interception rates (%)** |
|---|---|---|---|
| 2022 | ~3000 | ~500 | 60-70% |
| 2023 | ~5000 | ~800 | 70-80% |
| 2024 | ~2500 | ~600 | 75-85% |
| 2025 | ~1900 | ~600 | 80-90% |
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- Cruise missiles (such as the Kh-101, etc.) more than 4,000 units. In smaller quantities, there are also exceptional cruise missiles, such as the Kh-22.
- Ballistic missiles (such as Iskander, Tochka-U, etc.) number over 2,700 units.
- Aeroballistic missiles (such as the Kinzhal) exceeded 100 units in 2025 alone.

## 2. The execution of the effectiveness of bilateral mass aerial strikes.

In our assessment, this ratio is not optimal for the execution of powerful, large-scale, multi-layered, and combined strike operations. We argue that if the proportion of diverse missile systems does not constitute at least one quarter of the overall strike package, the effectiveness of such operations is reduced – particularly when the total number of aerial attack assets exceeds 500 units. In operations involving smaller numbers, more limited objectives are pursued, and the operational dynamics differ significantly, depending on factors such as strike planning, coordination, and other organisational considerations.

These data show that Russian ballistic missiles, at best, achieve an effectiveness of approximately 50 percent in certain individual months, while their average effectiveness remains around 35-40 percent.

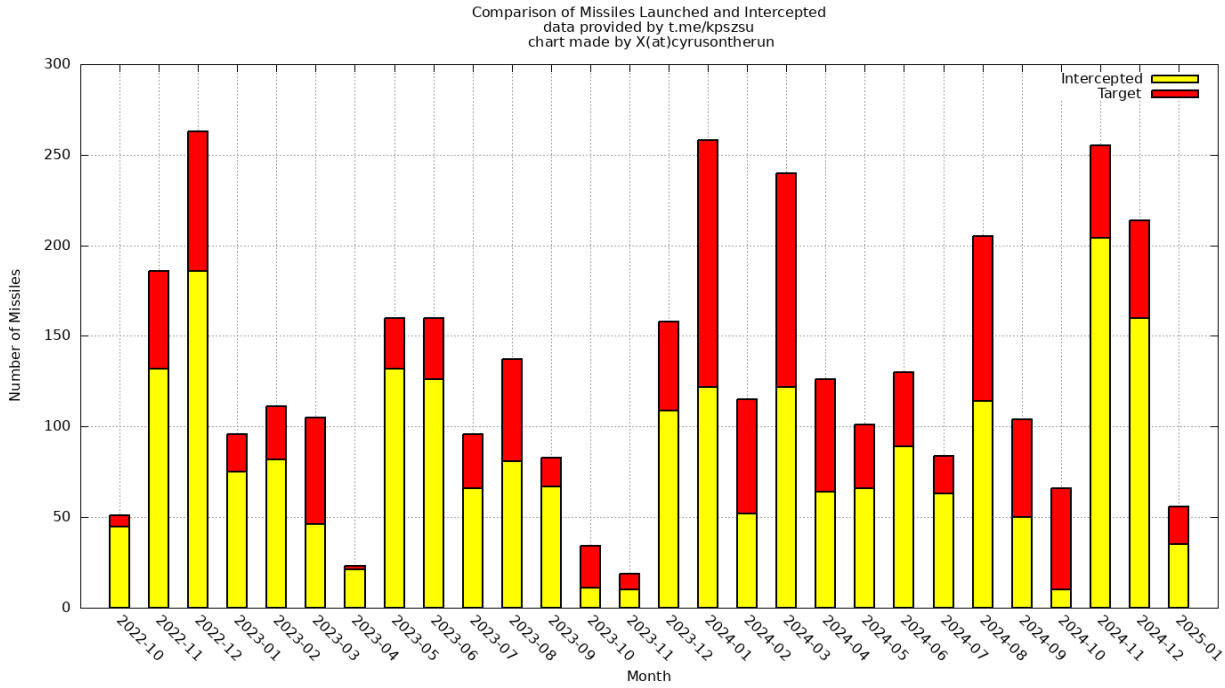


**Figure no. 2**: Comparison of Missiles Launched and Intercepted

In other cases, U.S.-supplied missile defence systems intercept the ballistic missiles. Among all Russian missile systems, the Kh-47M2 *Kinzhal* aeroballistic missiles demonstrate the highest level of effectiveness. In the field of countering ballistic and aeroballistic missiles, an interesting study suggests that Ukrainian forces were able to neutralise 19 of Russia's most advanced missiles through the use of electronic warfare (EW) capabilities (Kush 2025).

In 2025, Ukrainian air defence operations began to actively employ drones capable of intercepting larger UAVs. In September, one Ukrainian brigade reportedly destroyed 886 Russian UAVs using its counter-drone systems, which is 507 more than were neutralised in June. According to one officer, the counter-drone systems currently achieve approximately 50% effectiveness, compared to just 5% a year earlier (Macdonald 2025). This approach is receiving increasing attention in contemporary military practice. A similar concept has been demonstrated in Ukraine and tested by the French company *Alta Ares*. According to this concept, small drones are deployed in large numbers prior to an incoming strike, creating a distributed aerial presence. Supported by artificial intelligence-based control and coordination software, these small drones are then used to intercept and engage larger strike UAVs (Forbes.ua 2025).

In the future, this approach of sequential countermeasures is expected to become more established, as it represents one of the most effective ways to maintain air superiority. In 2025, only 14 percent of the unprecedented number of strikes against Ukraine were assessed as effective. This figure is, however, subject to debate: open Western and Ukrainian sources often report higher numbers for Russian precision strikes and lower effectiveness of Ukrainian air defences, whereas comparable data from Russian sources is not publicly available. Such data and analyses, when combined with information on the large number of Russian aerial attack assets, may create the impression that Russian strikes are also effective. In reality, however, the situation is markedly different. The overwhelming majority of Russian strikes are ineffective. If they were effective, no supplies would have entered Ukraine from Europe by any route over the past four years, and airports would have been completely paralysed (Zelenskyy 2026). The few strikes that do reach their targets do not inflict damage of a scale sufficient to be decisive. By the end of 2025, the British side has claimed that even the expensive British cruise missiles achieved an effectiveness of approximately 50 percent (Trouncer, Hudson and Boulte 2025, 14), which is entirely natural, as their numbers are

limited, they are not launched in large quantities, and they are not employed within the framework of combined, massed strikes. Consequently, by the end of 2025, in terms of both the number of UAVs deployed and their effectiveness, Ukraine was almost on par with the Russian Federation.

This assessment does not take into account the "Moscow Without Flights" project, which has reportedly caused damages amounting to billions of rubles for the Russian Federation, this assessment also does not take into account disruptions to the Russian logistics system, which has at times been paralysed for several days. Given the number of flights, Russian airlines in this case lose at least $1.5-2 million for every hour the Moscow air hub is down. Overall, if air traffic in Moscow is suspended or significantly disrupted for even one day, it could cost the Russian Federation $10-30 million in direct economic losses, according to estimates by international experts.

For example, following the so-called "Spiderweb" operations, freight transportation by truck reportedly came to a halt for a number of days. Leaving aside the psychological effects on the civilian population of Moscow - such as increased anxiety, stress, and growing uncertainty - and setting aside the heightened vulnerability of Russian military-industrial facilities and strategic infrastructure, a comparison limited solely to cost ratios already places Ukraine in a more advantageous position. A cost ratio of approximately one to ten is significant. This assessment is further reinforced by the fact that Ukraine produces its systems using comparatively lower-cost solutions, largely financed through European funding, whereas for the Russian Federation such production is considerably more complex and costly due to difficulties in procuring critical components. Russian officials and defence industry representatives themselves have repeatedly acknowledged rising costs and challenges associated with acquiring foreign components. At the same time, the damage caused by Russia forces Ukraine to rebuild its infrastructure and simultaneously provides an opportunity to do so better – through decentralisation (Rimutis 2024, 13). Effective implementation of recovery mechanisms – through institutional reforms, reconstruction of critical facilities, increased transparency, and stimulation of private investment – will not only restore lost potential but also strengthen international cooperation and increase the country's investment attractiveness and competitiveness in the post-conflict period (Zahorna and Bidiuk, 2025, 11). The effectiveness of these strikes is most clearly reflected in two indicators. First, according to a survey conducted by the Levada Center, 64 percent of Russians now support 'peaceful dialogue' (Levada Center 2025), representing an increase of 6 percentage points compared to March 2025, prior to the period of mass strikes (Popov 2025).

The second indicator is even more revealing: according to open-source reporting, in September 2025 fuel supply disruptions – particularly shortages of gasoline and diesel fuel – were reported in several regions of the Russian Federation (Gazeta.ru). Fuel prices rose sharply, and in some locations, individuals were reportedly limited to purchasing no more than 30 liters per day. According to open-source assessments, this situation was linked to strikes carried out by Ukrainian aerial attack assets, which reportedly reduced overall gasoline and diesel fuel refining capacity by approximately 18–20 percent (Loginov 2025). The situation continued to deteriorate, and by late October, three additional regions reportedly faced similar constraints, with civilian purchases limited to a maximum of 20 litres (Kanoshuk 2025).

In other words, although the Russian side conducted strikes of an unprecedented scale by its own standards, it was unable to ensure adherence to the six principles identified above (Hovhannisyan 2024, 6). It is therefore unsurprising that these strikes are not accompanied by video documentation or verifiable evidence of accuracy. Claims regarding their effectiveness rely primarily on eyewitness footage and, on occasion, on questionable assertions, such as the alleged destruction of a Ukrainian factory producing military uniforms (Ura.ru).

To summarise the question of the effectiveness of attacks on infrastructure, it should be noted that they have a certain impact on the strategic-political plane. However, they are not decisive for the course of the war.

## Conclusions

- When compared with Ukrainian strikes, the data on Russian strikes appear highly impressive at first glance; never before has the Russian air component conducted attacks of such scale. However, a detailed examination of these strikes shows that, as a military operation, they suffer from a number of structural shortcomings and are not effective, in particular.
- In terms of strike density, these attacks are not unprecedented in military history; however, they were conducted over extended time periods, indicating poor synchronisation. This, in turn, provided Ukrainian air defence with the opportunity to organise an effective and coordinated response.
- The strikes were not accompanied by large numbers of decoys, electronic warfare (EW) systems, or anti-radiation missiles. In other words, these were not complex, integrated attacks.
- The strikes were dispersed over a wide area, which consequently reduced their overall effectiveness.
- Naval-launched cruise missiles were frequently not employed in these strikes.
- The strikes were conducted exclusively against fixed targets.
- The strikes were not supported by continuous, accompanying reconnaissance.

In practice, since the end of the Cold War, neither Soviet nor Russian air forces – including during the Russo-Ukrainian wars of 2022-2025 – have conducted a single strategic operation in terms of the level of challenges addressed. Their actions have remained either at the tactical level, or, when they pursued operational and/or strategic objectives, these efforts were partial, incomplete, and ultimately failed to achieve their intended goals.

The forces and assets involved did not operate in a truly combined manner; coordination, interoperability, and command and control were, to put it mildly, deficient. The classical "symphony" of integrated operations – characteristic of U.S. air and naval forces – was absent. This issue has become particularly acute since the first days of January 2026.

Assessing the damage caused by Russian long-range precision strike systems, it can be concluded that Ukraine did not suffer the following types of damage or losses:

- Neither the air force nor the naval forces were neutralised. As of the end of 2025, the Ukrainian Air Force had lost roughly 100 aircraft but continued to maintain approximately 50 combat aircraft and remained operational, with its capabilities expanding due to Western support.
- The air defence forces were not neutralised or degraded to a non-operational level; instead, their capabilities have progressively strengthened due to continuous Western assistance.
- The command-and-control system has not sustained significant damage. There is no recorded instance of the command post of a major Ukrainian force being struck.
- The country's logistics network has not been disrupted and continues to function without major impediments. Western-supplied weapons reach their intended recipients without interruption.
- While the energy sector and economic infrastructure have been affected, the damage has not reached a level that is critical to national functioning.
- No force formation has been taken out of action, and no strategic arsenal has been destructed.

Thus, these mass strikes could become decisive only if their impact on the economy were to increase to such an extent that the financing of the war itself would be significantly undermined. In this respect, Russian strikes have not yet produced effects of strategic significance. While damage has indeed been inflicted, it has not been decisive.

Ukrainian industry is largely either inactive or militarised and relocated underground. Civilian infrastructure, which does suffer damage, is not decisive for the conduct of the war; and even where it is critical, civilian infrastructure can be more easily replenished from Europe, as such assistance is provided more readily under the guise of non-military aid.

As a final conclusion, it can be stated that the collective West continues to finance Ukraine – perhaps not to the full extent required, but nevertheless in a sufficient and sustained manner.

The same cannot be said of the Russian Federation. Even strikes of relatively smaller scale, when combined with sanctions, the seizure or destruction of armored vehicles, and other political measures, produce gradual yet meaningful strategic effects.

Strategic strikes against state infrastructure on both sides are not very effective because they are not organised with the necessary intensity and density. Russian strikes are certainly more massive, but they lack the necessary quantities of heavy strike weapons.

Significantly more ballistic and cruise missiles are required. Most of these are attack drones, which are insufficient to destroy such large targets. As a result, both sides inflict strategic damage on each other, causing inconvenience to the population and creating problems for public life.

However, at the strategic level, this is not a decisive factor: the maneuvers of large military groups, weapons production, and supplies are not significantly affected. Or if they are, they are not significantly affected, since the tempo of the war is so slow that even without them, high-intensity maneuvers are impossible. The war has slowed down for entirely different reasons. Complaints about power outages and cold in large Ukrainian cities are also being voiced by Russian society, but these complaints have no significant impact on the outcome of the war. But in an operational-tactical situation, where its impact is greater, it still negates any advantage. At the operational level, entire forces are deployed, entire military units are created to perform air defence tasks. This means that both sides expend aircraft, air attack assets, and air defence crews and resources that they could otherwise devote to other, more military-oriented tasks that would contribute to the success of the ground forces. However, both sides do this, and their potential is equally reduced, leaving both ground forces in the same state.

In other words, military art confirms the theory that the destruction of strategic infrastructure is a complex and often intractable problem unless significant resources and funds can be allocated to it.

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