

The attack of the Russian Federation on Ukraine – Approach regarding the land logistics support of military actions

Lt. Robert-Cristian TRIF*

*"Nicolae Bălcescu" Land Forces Academy, Sibiu

e-mail: trif_robert_cristian@yahoo.com

Abstract

The current conflict on Romania's border is a genuine threat to national and European security, but above all to world security, given that one of the two belligerents possesses nuclear weapons and has always taken a hostile stance towards democratic circles. The Russian Federation's unprovoked and totally unjustified invasion of Ukraine will radically change the entire geopolitical and security environment both nationally and on NATO's eastern flank. Although the conflict is still ongoing, Russian logistical support to the war in Ukraine requires further approaches and is a critical area of research for several reasons. First, a thorough understanding of Russian logistical support can help develop effective strategies to counter Russian aggression in Ukraine. Second, an understanding of Russian logistical support can help policymakers assess the effectiveness of economic sanctions and other measures aimed at reducing Russian involvement in the conflict. Third, understanding Russian logistical support can provide insights into Russia's broader geopolitical strategy in the region, which could help to resolve the conflict diplomatically and promote stability in the region.

Keywords:

invasion; military actions; logistical support; NATO; logistics; special military operation.

On February 24, 2022, just after 2:00 AM Ukraine time, Vladimir Putin, the President of the Russian Federation, announced in a pre-recorded TV address that he would initiate a so-called “special military operation” in Ukraine (Bloomberg 2022). In Vladimir Putin’s view, this operation was one of stability and peacekeeping, but in the view of the whole world, this operation meant war. Within minutes, the bombing began, the sky brightened, and the Russian invasion of Ukraine had begun.

For many Ukrainians, however, this was perceived not as a beginning, but a continuation of the conflict that began some eight years earlier, in the spring of 2014 (Dyukarev 2018, 2496-2507). Since Russia and the rebels it supported overran Crimea and areas of eastern Ukraine, the country has maintained an extensive and active military presence along the borders of Ukraine. In 2017, for example, Russia re-established the famous but disbanded 8th Combined Arms Army in Novocherkassk (Wikipedia 2022b).

Revived under the pretext of being a defensive measure, this army has seen a significant increase in combat capabilities, including the addition of artillery, missile subunits, and, according to some analysts, the integration of separatists into its own ranks (Jałowiec 2021, 37-48). This is not a singular occurrence. Since 2014, Russian bases, staging posts, and overall military infrastructure have multiplied in number, gradually surrounding Ukraine, from Sevastopol at the southern tip of Crimea to Clints along the northern border.

This expansion of the Russian army starting in 2014 on the border with Ukraine (see fig.1) could only be possible by confiscating land from individuals, land where military bases appeared later. This military build-up along the border has been justified by the Kremlin as a response to NATO’s aggressive expansion and a possible retaliation by Ukraine to regain territories previously occupied by Russia (Posen 2021, 7-34).



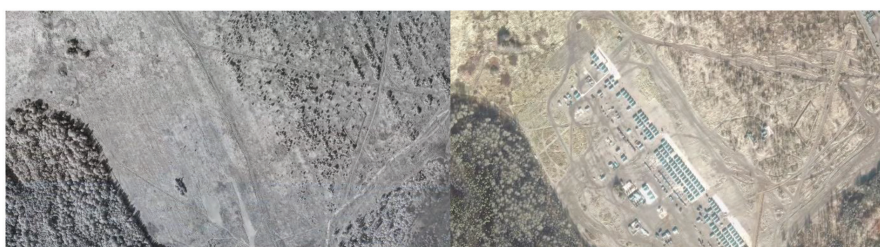
Figure 1. Development of Russian military bases from 2014 to 2022 (RadioFreeEurope 2022)

This expansion also paved the way for Russia to deploy 70% of their main combat units within a short distance of the border with Ukraine (NATO 2019; The Guardian 2022b). On November 3, 2021, the Ukrainian Ministry of Defense announced that 90,000 Russian soldiers surrounded the country’s borders and occupied territories (New York Times 2021), the Russian forces that were in the region for alleged

exercises were simply not leaving, and their numbers were increasing by the day (Coleman 2022). A satellite image outside the Russian city Yelena, shown in figure no. 2, from September, only showed us an empty field, while the exact same place, on November 1, became the waiting area of the Russian 41st Combined Arms Army (Wikipedia 2022a), with its headquarters approximately 3,000 kilometers away (Plokhly 2018, 111-126).

The 41st Arms Army deployed from the Central Military District 1,200 tanks, howitzers, self-propelled artillery and support vehicles.

Figure 2. The military base near the town of Yelena. First photo from September 2021/ Second photo from November 2021 (RadioFreeEurope 2022)



The month of November 2021 marked only the beginning of major activities organized by the Russian Federation. Satellite images and social media posts tracked soldiers and supplies arriving in southwestern Russia in December of that year. But what alarmed the military analysts the most was the fact that, along with soldiers and supplies, there were field medical units, these being also equipped with blood reserves, numerous tents (Reuters 2022) for hospitalizing the troops and considerable reserves of fuel, so the forces massing the entire range of logistical support necessary to initiate a large-scale invasion on the border with Ukraine, thus minimizing the chances that preparations for a so-called exercise would drop dramatically (King 2021, 27).

In January 2022, Russian forces entered Belarus for joint exercises. Weeks later, it was announced that soldiers would remain in the exercise areas to reinforce and deter a NATO offensive (The Guardian 2022a). Settlement areas, such as Yelena, expanded further, while new ones emerged, forming an increasingly ominous arc around Ukraine. What made possible this massive internal mobilization of troops, weapons and supplies was Russia's vast railway network (see fig. 3). The expansion of this rail network, gaining its status as the third largest in the world (Wikipedia 2022c), is a by-product of the country's size and the convoluted nature of the road network (Mitzer and Janovsky 2022). Meanwhile, the degree of state control over the public transport system is very high, with the government owning around 20,000 of the country's 21,000 locomotives, a legacy of the Soviet era.

This combination of control and expansion reveals that the Russian military is able to rely heavily on rail ground transportation. Trains were the primary means of logistics that transported troops, tanks and trucks to and from Yelena, into Kursk and across the Bryansk and Smolensk regions, but, as in previous cases, OSINT (Open-Source Intelligence) information showed that all it was the trains that moved supplies from

Figure 3. Railway map of the Russian Federation (Wikipedia 2022c)



eastern Russia to Belarus, a country close to the Kremlin regime, which was used as an access point and logistical hub for the Russian military (Gould-Davies 2022, 5-12). Thanks in large part to these trains, or Russia's dependence on them, foreigners were able to document the military build-up so precisely because dashcams were able to film the tanks in transit at railroad crossings, videos that then made their way onto social media and the Internet, from where they travelled around the world, proving that the trains only set the stage for what would be initiated on February 24, 2022 (Gould-Davies 2022, 5-12).

Initiation of special military operation. The Russian Federation, the invading state of the 21st century

In the first weeks of February 2022, the military base in Yelena was emptied while military equipment, troops and supplies began to move south. As these Russian forces moved closer and closer to the Ukrainian border, tank divisions appeared in Kursk, just 220 kilometres from Kharkiv, while additional troops and equipment were massed near Gomel in Belarus, 32 kilometres away from the border with Ukraine (Gould-Davies 2022, 5-12).

In the early hours of Russia's invasion of Ukraine, the invading forces initiated operations primarily to cripple Ukraine's military infrastructure (Aljazeera 2022). Some of the first targets engaged by Russian artillery and aviation involved strikes on Ukrainian air bases in an effort to help Russia quickly gain air superiority without strong resistance (Berkowitz and Galocha 2022). Eleven were destroyed in the first day of hostilities. By midday Ukrainian forces had shifted their line of effort from line defence to recapturing key points of interest, as dozens of Russian helicopters landed at Hostel Airport (New York Times 2022). just a few kilometres from Kiev. The effort was focused on creating an air bridge to take control of the airport to allow planes to bring in more troops to continue the offensive towards Kiev. An aerial supply

line could provide some level of logistical support regardless the ground conditions. However, recognizing this as well, Ukraine tasked the 4th Rapid Reaction Brigade to re seize the airport, which it successfully did by 20:00 of the same days ([Watling and Reynolds 2022](#), 3-4).

On the same day, as fighting reached the exclusion zone of the Chernobyl plant and troops came from all directions, logistical support activities continued behind the front lines to support the invasion to continue. In the Brest area of Belarus, Russian forces could be seen unloading supplies from wagons and gathering in a convoy formation facing south towards the war zone. However, despite all the well-planned war infrastructure built around Ukraine, military actions inside the area of operations are proceeding far below the level of expectation that Russian military leaders anticipated ([Korniichuk, Shkatula and Smaga 2019](#)).

Russian tanks were observed running out of fuel and ammunition, these being left abandoned especially in the area of operations in the north near Kiev ([Telegraph 2022](#)), the invading troops were seen looting shops and houses for food, possibly due to the lack of it ([Mitzer and Janovsky 2022](#)). Open source information has shown that Russian military rations are unavailable and existing ones have expired since 2015 ([Twitter 2022](#)). Stories have emerged of Russian forces asking Ukrainian civilians for supplies and directions, seemingly unaware of what the average person thinks of them in the country they are trying to conquer.

As Russian troops advanced into urban areas that can only be taken with the best tactical coordination, the Russian army demonstrated itself to be disorganized and unconnected, with only a few scattered units advancing with the task of breaking through Ukrainian lines to induce a quick and effortless surrender. The Ukrainian defence concentrated its offensive actions on what the invading forces appear to have neglected in this specific military operation: the significance of logistics ([Dalsjö and Jonsson 2021](#), 160).

Military logistics. Achilles' heel for the Russian Federation

In the famous words of General John J. Pershing, "Infantry wins battles, logistics wins wars," Ukraine has been banking heavily on striking Russia's logistics targets. On social media platforms adapted to organize the country's guerrilla-style defence, posts circulated emphasizing the value of destroying the fuel trucks. Ukrainian forces also destroyed two key bridges in Kiev, allowing them to focus on defending fewer key points, and similar tactics were used in other parts of the country. The Ukrainian military also destroyed all connections between the Russian and Ukrainian rail networks to prevent the invading force from using them and then being able to use them to augment their own supply lines. The logistics forces of the Russian army are not designed for a large-scale land offensive away from railways

(Barnes 2022). Within manoeuvre units, Russian logistics support units are vastly undersized compared to their Western counterparts (Watling and Reynolds 2022, 2-4).

Only brigades have an equivalent logistics capability, but it is not an exact comparison. Russian formations have only three-quarters the number of combat vehicles of their American counterparts, but almost three times as much artillery. On paper, not all brigades have a full number of battalions, Russian brigades have two artillery battalions, one missile battalion and two air defence battalions per brigade, as opposed to one artillery battalion and an attached air defence company per American brigade (see fig. 4). As a result of additional artillery and air defence battalions, Russian logistical requirements are much greater than those of American counterparts.

Figure 4. Equivalent logistics support structures between NATO and the Russian Federation
 (Warontherocks 2021)

Training manoeuvres	NATO support units	F. Russian support units
Battalion	Company	Platoon
Regiment	Battalion	Company
Brigade	Battalion	Battalion
Division	Brigade	Battalion
Corps	Brigade	-
Army/Joint Army	N/A	Brigade

The logistical challenges faced by the Russian army were not unexpected, but rather a longstanding problem. When examining the disastrous Soviet-Afghan War of the 1980s, inadequate logistical performance is frequently cited as a reason for the USSR's inability to meet its goals (Hilali 2005, 198). According to experts, the logistical support units were rigid and ill-equipped, resulting in the combat forces being insufficiently supplied to carry out their duties.

Naturally, owing to their extensive railway system, which is nearly entirely controlled by the government, the Russian military possesses an extraordinary capability for internal mobilization. In reality, roughly 30,000 military personnel work in the Russian railway troops, whose responsibility is to defend, operate, and construct railways for military applications (March 1996, 120). This force, which is larger than that of many nations, demonstrates how essential this infrastructure is to their military might. Nonetheless, this domestic advantage, this dependence on trains and carriages, is also a vulnerability when conflicts arise beyond the country's borders.

When the war extends beyond the support lines that have the railroads as their strong mode of action, Russian military logistics capabilities are mediocre at best. In the case of this invasion, the advanced rail yards used are in Belarus and Russia itself, so for any other supply lines, especially any stretch into Ukraine, Russia had to resort to trucks, and simply put: Russia does not have enough trucks (Warontherocks 2021; Forbes 2022). In a study conducted by Global Firepower in the year 2020, it was

shown that Russia benefits from 4,000 logistics transport trucks, an extraordinarily small number compared to the support needs. In comparison, the United States has 100,000 trucks specialized in logistics transport, containerization and evacuation tasks ([March 1996](#)).

The Russian military does not have enough trucks to meet its logistical requirements more than 130 kilometres beyond the supply points. To reach a range of 300 kilometres, the Russian army would have to double the allocation of trucks to 400 trucks for each of the logistics support brigades, each of these brigades is composed of about a thousand soldiers operating about 408 vehicles of transport capable of transporting 1,870 tons of cargo. In addition, the Russian army does not have enough support brigades, or material-technical support brigades, as they call them, for each of their armies. A look at the military balance sheet ([International Institute for Strategic Studies 2023, 205](#)), published by the International Institute for Strategic Studies, shows 10 materiel support brigades supporting 11 armies, one tank army and four army corps. Russia's Western ([Wikipedia 2022d](#)) and Southern Commands ([web.archive.org 2010](#)) each have three armies and three materiel support brigades to support them. The Russian Federation's strength is its 10 railway brigades, which have no equivalent in Western militaries. The brigades specialize in railway security, construction and repair, while rolling stock is provided by state-owned civilian companies.

The intense conflict characterized by rocket and artillery fire, which accurately depicts this war in Ukraine, requires even more resources from logistical support forces, as each individual missile requires a dedicated truck for transport to the launcher. With the frequency of artillery fire in the first days of the invasion, much of the capacity of the Russian materiel support brigade was certainly limited in providing ammunition to the launch sites. This general inability is apparently reflected in Russia's strategy in Ukraine. Currently, the prevailing view is that Russia believed that through a combination of air and ground attacks in the opening hours and days of the invasion, the Ukrainians would capitulate quickly. They would either surrender or Russian forces would quickly reach Kiev, overthrow the government and install a puppet government, a belief that was held by almost all independent analysts before the conflict began. The analysis suggests that when invading, Russian forces can operate largely autonomously without logistical support for about three to five days. So, when the conflict did not end in that time frame, the Russians had to regroup and resupply.

At the moment, most Western forces which are generally much better equipped logistically, operate on a demand-based (drag) logistics system where combat forces request supplies as needed based on what it actually happens in the field. This way of operating logistics offers flexibility, speed and receiving support based on real operational needs. Meanwhile, the Russian military operates predominantly on a push system, where forces are replenished on a more predictable basis, as is

determined by management. This leads in practice to strategic decision-making and prioritization regarding the forces that most need or warrant resupply and which materials are the most important to resupply, thus creating inefficient, stagnant, inflexible and which does not provide the necessary material support in the field.

So, in Ukraine, ammunition is likely to be prioritized over fuel for tanks in less strategically important directions. In the context of perpetual logistical constraints, as is the case with the Russian military, this is probably the more effective approach, but in the grand scheme of things, it is certainly less effective than the Western approach, which focuses on flexible logistics that adapt to actual conditions in land. So, Western forces let strategy drive logistics, while Russian forces let logistics drive strategy.

The only criterion that can best decide these issues is time. The Russian military has the capabilities to establish a war zone for a longer conflict. Its materiel support brigades include tactical pipeline battalions, for example, which can quickly build networks in Ukraine to bring fuel and water closer to active frontlines without the need for burdensome supply convoys. Russia's rail troops can do the same with rail infrastructure, repairing or building networks to support a long-term conflict or occupation. Russia can take a page out of the Soviet playbook by harnessing the full power of the public and private sectors to support military operations by requisitioning private assets needed to support the invasion. Regarding the area of Russian military logistics in the Russo-Ukrainian conflict, there is a significant amount of information available, but much of it is limited and controversial.

Some studies and reports by international organizations have focused on analysing the logistical capability of the Russian military and how it has influenced the conduct of operations in Ukraine. They revealed that Russia has been able to significantly improve the logistical efficiency of its military by modernizing its transport and supply infrastructure, but also by using advanced technologies such as communications and military movement monitoring systems.

Despite these reports, there is a continuing need for research in this area, as much of the available information is contradictory and not verifiable. Also, the exact impact of Russia's logistical capability on the Russian-Ukrainian conflict is still debatable given the ongoing nature of the conflict.

The problem described in the present article, namely the analysis of the land logistic support of military actions in the Russian-Ukrainian conflict, has not been approached in the same way, and it can make an important contribution to understanding the evolution of the situation in the conflict. It is important to note that analysing such an issue can be difficult due to the dynamic nature of many aspects of Russia's logistics capability, especially in an ongoing conflict.

Conclusion

Logistics capabilities are undoubtedly a major strategic advantage of many Western militaries, particularly NATO, whose global network of military bases and large sea and air transport capabilities enables it to properly supply a conflict anywhere on earth. With this invasion, the Russian army lost one of the greatest strategic advantages it had until now. Russia unleashed its dreaded "Red Army," which, according to propaganda and Vladimir Putin, was capable of winning over Ukraine in no more than 24 hours. However, the entire military and analysis community could see the reduced logistical support capability and the dependence of the Russian army on the national railway system. Any future adversary of the Russian Federation within the North Atlantic Treaty Organization can hope that conventional military operations will not be carried out on its territory at the moment.

Russian logistics in the war in Ukraine played a critical role in determining the outcome of the conflict. The Russian military was able to capitalize on its logistical advantages, including superior military equipment, advanced communication systems, and well-trained troops, to gain the upper hand in many battles. However, it's important to note that the conflict is ongoing, and the exact impact of Russia's logistical capabilities on the conflict is still debatable.

However, the logistical challenges facing Russia in Ukraine cannot be overlooked. Supply lines are vulnerable to attack, and the Russian military must navigate complex terrain and difficult weather conditions. In addition, Russia's aggressive actions in Ukraine have brought significant international pressure, including economic sanctions and political isolation, which have further complicated Russia's logistical situation. Overall, the logistics of Russia's military operations in Ukraine have been a critical factor in the ongoing conflict. While Russia's superior logistical capabilities have allowed it to gain the upper hand in many battles, logistical challenges have also placed significant obstacles in the way of Russian operations in Ukraine.

In conclusion, Russia's poor logistics in the Ukraine war had a significant impact on the current situation on the ground. Limitations in logistical support led to inefficient deployment of resources, inability to sustain prolonged operations, and vulnerabilities in supply lines, making it easier for Ukrainian forces to disrupt Russian operations. The ultimate outcome of the conflict will depend on a wide range of factors, including military strategy, diplomacy and logistics.

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