



Ukraine Russia War – Lessons Imbided & the Endgame

As the conflict between Ukraine and Russia enters its fourth year, the prospect of a resolution—though uncertain—may not be as remote as it once seemed. Previously, both sides were firmly entrenched in their military objectives, with their respective allies offering unwavering support. Neither party showed any willingness to compromise. Russia aspired to annex all of Ukraine, while Ukrainian forces remained determined to expel Russian troops from all occupied territories, including Crimea, which Russia had annexed in 2014.

However, with Donald Trump now taking over the U.S. presidency, American policy has undergone a dramatic shift. Rather than simply providing arms and aid to Ukraine, the new administration is pressuring President Volodymyr Zelenskyy to moderate his demands, sit down with President Vladimir Putin, and negotiate a ceasefire.

Under Trump's persuasion, Putin appears to have tempered his ambitions. Instead of seeking to control the entirety of Ukraine, he may now be prepared to settle for the 20% of Ukrainian territory already under Russian occupation. For

Putin, any further concessions could be politically disastrous, as it might provoke domestic unrest and questions about the heavy toll of the war.

For Zelenskyy, however, this represents a significant climb down from his earlier stance of reclaiming every inch of Ukrainian land, including Crimea. With the U.S. threatening to halt military aid and European allies unable to match American support, Ukraine's military finds itself stretched thin. Faced with the risk of needless loss of life, Zelenskyy appears increasingly inclined to pursue peace talks.

From Trump's perspective, securing a ceasefire would be a major political victory. One of the Republican Party's central campaign themes has been the claim that during Trump's previous presidency, the world did not witness major wars, unlike under President Biden's tenure, which saw violent conflicts erupt in Europe and the Middle East. Trump's impatience with both Zelenskyy and Putin underscores his urgency to seal a deal quickly.

At the heart of the conflict lies Ukraine's aspiration to join NATO, seeking the security guarantees the alliance provides. Russia, unwilling to tolerate the prospect of American troops on its doorstep, launched a pre-emptive invasion before Ukraine's membership could be formalized. Trump has now made it clear that Ukraine's entry into NATO cannot be a precondition for ceasefire negotiations, delivering yet another blow to Ukrainian hopes.

Regardless of the eventual outcome, this conflict—unfolding in an era dominated by drones and AI—has captivated military strategists, economists, and geopolitical analysts alike. The prolonged war has also spurred significant technological innovation and adaptation on both sides.

Lessons drawn by military experts

A well-trained and highly motivated military can turn lost battles around

Regardless of Ukraine's current situation, the world has been compelled to recognize the remarkable effectiveness of its armed forces during the initial stages of the conflict. The Ukrainian military has demonstrated exceptional agility, coupled with the ability to unleash devastating firepower with unprecedented tactical brilliance. Despite being ranked 18th in the Global Fire Power index, Ukraine's military not only defended its territory but also recaptured two-thirds of its lands from the world's second most powerful military force, a testament to the leadership and bravery of its soldiers. While the war in Ukraine may appear to be tilting towards a Russian victory, it is important to acknowledge that this outcome does not diminish the courage and resilience exhibited by the Ukrainian military.

The demise of the tank as an effective platform of choice for invading armies

Among the pivotal lessons learned by military strategists from this conflict is the apparent obsolescence of the armoured tank as a formidable instrument for penetrating enemy territories. Once heralded as a strategic marvel, especially in the hands of the Germans during the Second World War through their blitzkrieg tactics, the tank found itself sorely outmatched against the onslaught of drones and loitering munitions. These cost-effective weapons,

combined with anti-tank missiles such as the Javelin wielded adeptly by Ukrainian infantry, effectively rendered Russian tank units immobile.

In the initial months of the conflict, a vast convoy of hundreds of Russian tanks advancing into Ukraine from Belarus in the north was swiftly immobilized by Ukrainian drones and loitering munitions. Targeting both lead and rear tanks, these precision strikes induced chaotic traffic jams, halting the entire convoy of tanks and supply vehicles. Armed with satellite imagery provided by Western allies, Ukrainian forces methodically selected their targets, dispatching them with Turkish Bayraktar drones. Stranded without fuel to power their engines, some Russian tank crews reportedly froze to death as their tanks' air conditioning systems ceased to operate.

Beyond the utilization of tanks themselves, global experts attributed fault to Russian military planners for their haphazard deployment strategies. Initially intended to spearhead an incursion into Northern Ukraine from Belarus and swiftly seize the capital city Kyiv, the operation was marred by inadequate logistical foresight. Critical supply lines were neglected, and crucial bridge crossings leading to Kyiv were left unsecured. Ground commanders were left uninformed about the operation's intricacies, resulting in confusion and a lack of cohesive planning at the tactical level.

However, it's essential to note that other tank engagements throughout this conflict also witnessed substantial attrition of these costly assets. Not limited to Russian tanks alone, even renowned Western tanks such as the German Leopard and the American Abrams being used by the Ukrainian army proved vulnerable targets to cheap Iranian Shahed -136 drones.

Focus on low-cost weapons for the infantry soldier

The conflict has imparted a crucial lesson to military strategists: the imperative need for thorough research in equipping infantry soldiers with not only cost-effective but also intelligent weaponry. Beyond the devastating impact of low-cost combat drones on battle tanks, the Ukrainian infantry's weapon of choice was the shoulder-launched Javelin missile. Produced by Raytheon Technologies in the USA, each missile carries an approximate price tag of two hundred thousand dollars. In contrast, a modern Russian T90 tank commands a cost of roughly 3 million dollars. This stark cost differential underscores the immense advantage of outfitting infantry soldiers with cheap and intelligent weapons like Javelin missiles.

The conflict serves as compelling evidence that judicious deployment of infantry units, utilizing spotter drones and shoulder-launched missiles, can effectively halt any armoured assault in its tracks.

Artillery is supreme

The conflict between Ukraine and Russia has underscored the enduring effectiveness of artillery systems on the battlefield. While the Russians initially suffered significant losses, particularly in the early stages of the conflict, their artillery ultimately proved instrumental in thwarting the famed Ukrainian counteroffensive during the summer of 2023. This demonstration highlighted the pivotal role of concerted and well-directed artillery fire in halting invasions and military offensives, particularly when the artillery superiority over the enemy is established.

In light of the outcomes of this conflict, there is a burgeoning global research effort aimed at developing smarter artillery systems. Three key factors distinguish superior artillery: the range of the guns, the rate of fire, and the mobility of the weapons. The modern battlefield environment imposes constraints on the use of cannons firing from fixed positions, as they are susceptible to detection by gun-finding radars and subsequent targeting by enemy artillery or aerial platforms. Therefore, artillery systems must possess the capability to swiftly relocate from conflict zones after firing, commonly referred to as "shoot and scoot."

Recently, the Russians unveiled their latest self-propelled artillery complex, the Koalitsya-SV. This advanced system boasts an impressive range of 70-80 kilometres (with rocket-assisted ammunition) and a remarkable rate of fire of 16 rounds per minute. By comparison, the most modern artillery gun in Europe, the PzH 2000 self-propelled artillery system manufactured by Rheinmetall, Germany, offers a firing range of 54 kilometres and a maximum firing rate of 10 rounds per minute.

Concentrate on creating effective ammunition supply chains & stockpiling

A prolonged conflict like this has led to a profound realization worldwide; the imperative need for continuous supply lines of ammunition and artillery shells. Foremost among the challenges confronting the Ukrainian army is the relentless pursuit of ensuring a steady flow of artillery shells to its units stationed in the heart of battle zones. The outcome of wars pivots on the availability of ammunition. In this ongoing conflict, the Russian forces hold a decisive advantage in the realm of artillery shells. Given its vast resources, Russia undoubtedly boasts significantly larger capacities for manufacturing ammunition compared to Ukraine. Moreover, a consistent influx of North Korean and Iranian artillery shells into Russia further fortifies their arsenal. While China publicly refutes any involvement, suspicions linger in the West regarding Chinese support in supplying ammunition to the Russian army.

Conversely, Ukraine finds itself wholly reliant on Western assistance for artillery shells and missiles. With recent political turmoil in the United States leading to a halt in weapon shipments, Ukraine now looks solely to Western Europe for even the most basic ammunition supplies. A coalition comprising France, Germany, and certain Eastern NATO nations has emerged to provide artillery shells to Ukraine, albeit in numbers incomparable to the Russian arsenal. For instance, on any given day, Russian forces rain down nearly 10,000 ammunition shells upon the Ukrainian front lines, while Ukrainian retaliation manages only 2,000 to 3,000 artillery shots daily.

The capacity to stockpile ammunition shells and keeping supply lines open has emerged as a paramount concern in long-drawn conflicts.

Use of innovative ideas like the Sea Drones

As the war enters its third year, it has spurred opportunities for scientists and engineers in Ukraine, as well as Russia, to innovate new weaponry and strategies. Among these developments is the creation of the Magura V5 sea drone by Ukrainian forces. The Magura V5 is essentially a compact vessel, measuring 5.5 meters in length and weighing approximately 1000 kilograms. Powered by batteries, these drones boast an impressive range of 800 kilometres and can carry up to 200 kilograms of explosives, designed to detonate upon impact.

Ukrainian Magura V5 Sea Drone and its control unit



Sources: Ukraine Defense Forces

The method of deploying these drones against Russian naval targets is simple yet effective. Typically, a swarm of five to six drones is dispatched after a Russian warship. While Russian vessels may detect approaching drones, their response time is often limited, hampering the effectiveness of the ship's defences. Moreover, the ships are primarily equipped to detect and counter torpedoes and airborne threats and are not designed to check potential dangers posed by small surface drones. Travelling at speeds of around 80 kilometres per hour and blending into the waves, especially at night, these drones present a formidable challenge to detect. Consequently, even if most of the approaching drones are intercepted by onboard weaponry, there remains a significant probability of one or two evading detection and inflicting substantial damage. It is no surprise, then, that Ukraine has successfully sunk three Russian warships utilizing these drones.

Experts around the world are wary about this innovative concept of low-cost sea drones as they may be adopted by terrorists and pirates, posing a significant risk to the global shipping business.

Rise of Starlink as a prominent channel for communications

One of the most significant technological advancements gaining prominence in the Russia-Ukraine conflict is the use of Starlink, a highly secure communication channel. Developed by Elon Musk's company, Starlink enables data sharing through a constellation of satellites, providing connectivity between any two points on Earth. This technology serves as a vital alternative to cellular phone systems, which are vulnerable to destruction in war zones due to their reliance on cell towers.

At the request of Western powers, Musk disabled access to his satellites for Russian users, granting exclusive use to Ukrainian soldiers. These soldiers utilized handheld Starlink devices for encrypted communications and connected them to laptops for drone control. This secure communication capability gave the Ukrainian military a significant advantage over their Russian adversaries. However, recent reports indicate that Russian forces have begun using powerful jammers to disrupt these communication channels, rendering the Ukrainian systems ineffective.

Regardless of the outcome, Starlink has demonstrated its potential as a future mode of communication for militaries worldwide.

Glide Bombs

The Russians have recently intensified their use of Glide Bombs, a weapon that leverages a simple yet effective principle. Released from high-altitude aircraft, these bombs employ a wing and fin contraption to glide long distances towards their targets. Glide Bombs are precision-guided munitions, equipped with advanced systems such as GPS, laser guidance, inertial designators, or remote control. Unlike cruise missiles, they lack internal propulsion systems, eliminating heat signatures and minimizing radar cross-sections. This makes them extremely difficult to detect and intercept. Their small size and lack of heat signature render surface-to-air missiles ineffective, as these missiles rely on heat-seeking devices. The only viable countermeasure is to target the releasing aircraft or destroy it on the ground. However, most Glide Bombs have a range of nearly 200 kilometres, allowing the releasing aircraft to remain within their country's airspace and evade incoming surface-to-air missiles.

The true advantage of Glide Bombs lies in their cost-effectiveness, ease of manufacture, and destructive power. Unlike cruise missiles, which allocate 70% of their weight to propulsion material, Glide Bombs dedicate over 98% of their weight to munitions. The Russian Glide Bombs, weighing nearly 3 tons, have a kill radius of approximately 1000 meters, making them a formidable weapon.

Although the concept of Glide Bombs dates back to World War II, militaries have only recently come to realize the significant threat they pose. With destructive capabilities rivalling those of tactical nuclear weapons, glide bombs have become a formidable concern. Their potential to inflict widespread damage on both civilian populations and military installations is particularly alarming, especially given their relatively low cost. As a result, these inexpensive yet potent weapons have become a pressing concern in conflict scenarios.

Spiralling Economic Consequences

This conflict has unveiled profound economic repercussions that extend beyond the borders of the two conflicting nations or even Europe. It commenced with the imposition of US sanctions on Russia, which swiftly spiralled into a complex web of critical issues, ranging from food crises in third-world nations to global fluctuations in oil prices. Initially intended to target Russia, the consequences of the severe economic sanctions were not fully anticipated by Western actors, igniting a chain of events that minimally impacted Russia's ability to wage war against Ukraine while triggering an economic crisis in regions far removed from the immediate theatre of conflict.

Weaponization of the Dollar

The conflict has ushered in a profound repercussion; the weaponization of the dollar through the imposition of economic sanctions on Russia. The dollar, serving as the cornerstone of global financial transactions, found itself manipulated by the Biden administration's strategy aimed at severing Russian banks and financial institutions from the international monetary system. Essentially, this move sought to deplete Russia's access to its dollar reserves, thereby impairing its capacity to sustain a military campaign against Ukraine.

The initial salvo in this economic warfare was the blocking of sovereign Russian assets, amounting to a staggering \$300 billion stowed in depositories across the West. At the outset of hostilities, Russia purportedly possessed a formidable

\$612 billion in sovereign assets, inclusive of foreign currency and gold reserves, the latter of course securely held within Russian territory.

However, the Biden administration's manoeuvre didn't halt at freezing assets; and the steps that followed marked a significant escalation, reverberating alarm worldwide. The US ensured the disconnection of several major Russian banks from SWIFT (Society for Worldwide Interbank Financial Telecommunication), which was aimed to cut off Russia's access to this vital secure messaging system facilitating interbank transfers and exchanges. The objective was clear; to effectively immobilize Russia's ability to conduct international financial transactions.

This weaponization of the dollar has sparked widespread concern, prompting nations globally to reconsider their reliance on a system vulnerable to political manipulation. Many fear that today's target is Russia, but tomorrow, any nation diverging from the US agenda could face similar punitive measures.

Thus, the urgent question arises: Is it time to explore alternative exchange currencies that safeguard nations' interests during times of crisis?

Move by Central Banks to shift from Dollar holdings to Gold

Central bank leaders worldwide observed closely as US sanctions targeted the core assets of the Russian economy by freezing its foreign exchange dollar deposits. This action highlighted the vulnerability of dollar deposits held by central banks globally. To protect themselves from similar future crises, central banks have begun converting their dollar reserves into gold. Following the Russian attack on Ukraine, there was a significant increase in gold purchases using dollars.

This shift has undeniably diminished the prominence of the US Dollar as a reserve currency.

Failure of Sanctions against Russia & Threat to the US dollar as Universal Currency of Exchange

When the conflict commenced, Russia faced stringent economic sanctions, including the weaponization of the dollar against its economy. The prevailing notion was that Russia, heavily reliant on exports to Western nations, would swiftly succumb to these sanctions, potentially within a matter of months, if not days. However, reality unfolded quite differently. Despite the initial onslaught, Russia not only weathered the storm but emerged stronger. It strategically leveraged its resources, such as selling discounted Russian Ural crude to major consumers like China and India, while also supplying low-cost food grains to the global south. Notably, these transactions were conducted using currencies such as the Chinese Yuan, Indian Rupee, and various African currencies.

This resilience not only bolstered Russia's position but also prompted countries worldwide to reconsider their reliance on the US Dollar, Euro, or British Pound for international transactions. Discussions are already underway regarding the establishment of a currency within the BRICS framework (comprising Brazil, Russia, India, China, and South Africa) as a viable alternative to the US Dollar.

Remarkably, the Western sanctions intended to isolate Russia seem to have had the unintended consequence of undermining the hegemony of the USD, signalling a profound shift in global economic dynamics.

Russian Oil and Global Oil Prices

Russia, boasting the largest land area globally, is abundantly endowed with natural resources, among which oil stands out prominently. With the world's largest oil reserves, surpassing even Saudi Arabia and the United States, Russia's oil production historically served as the economic backbone of Soviet Russia. It not only fuelled the Soviet military growth but also underpinned its strategic weapons stockpiles and military R&D efforts. Geopolitically, the formation of OPEC was partly in response to the challenge posed by Russia's abundant and competitively priced oil flooding the global market.

Following the dissolution of the Soviet Union, oil comprised a staggering 80% of Russia's hard currency exports. Europe emerged as a major buyer of Russian oil, crucial for heating homes during harsh winters. Recognizing the pivotal role of oil revenue in Russia's capacity to wage war, Zelenskyy advocated for halting imports which was perceived to be one of the most effective tools that could impact Putin's military endeavours.

Yet, halting Russian oil imports posed its challenges. It would inevitably trigger a surge in demand for oil from other OPEC nations, culminating in a worldwide hike in Brent Crude prices. The price of Brent Crude surged from \$74.17 per barrel in December 2021 to \$85.58 per barrel by March 2022, showcasing the significant influence of Russian crude on global oil markets.

European nations, cautious of the repercussions of imposing sanctions on Russian crude, sought a phased reduction in imports rather than an abrupt cessation. However, as the conflict intensified, it became increasingly apparent that containing the rise in oil prices without Russian oil in the market would be a daunting task.

In this tumultuous landscape, China and India, the world's largest oil importers, emerged as pivotal players. Despite US pressure to cease purchasing Russian oil, both countries asserted their sovereign right to procure affordable Russian oil as it was offered at a considerable discount by Putin. Over time, China and India have become the primary importers of Russian oil, reshaping global oil dynamics.

Moreover, a curious trend has emerged where Indian refiners import Russian crude, refine it, and export the finished products to Europe and America. This may look illegal but it is not so since the sanction is against purchase of Russian crude oil and not refined products. This practice also ensures that the cap of \$60 per barrel of crude oil set by G7 finance ministers in December 2022 is maintained which was aimed at curtailing Russian profits to fund military campaigns.

Despite the conflict's ramifications, the global oil market has found relative stability, thanks in large part to India's and China's continued purchase of Russian oil.

World food grains crisis

The ongoing conflict between Ukraine and Russia has triggered a significant ripple effect, particularly in the realm of food grain prices, which has disproportionately impacted African nations. Ukraine and Russia, collectively known as the world's food bowl, play a pivotal role in producing and exporting staple grains like wheat and corn, primarily to third-world countries, particularly in Africa. In addition to grains, Ukraine stands out as a major producer of sunflower seeds, oil, and meat products. A key strategic aim for Russia in its aggression towards Ukraine is to gain control over its expansive agricultural sector, thereby securing a dominant position in the global food grain market. However, as the conflict unfolds, it becomes apparent that Russia is deliberately targeting Ukraine's agricultural infrastructure, including transportation networks, irrigation systems, and storage facilities, to dismantle its ability to compete in the global market.

The timing of this crisis could not have been more detrimental for the global south, already reeling from the impact of the COVID-19 pandemic, which depleted food grain stocks and heightened the urgency for imports. The disruption in the supply of Ukrainian grains has led to a sharp increase in food prices. Capitalizing on this opportunity, Putin has orchestrated the influx of cheap Russian grains into Sub-Saharan countries, effectively leveraging Russian soft power in the region, where Ukraine had previously held a dominant position as a supplier.

An unplanned consequence of the conflict is the blockade of the Black Sea by the Russian Navy, which has rendered the traditional route for Ukrainian grain shipments to Africa via the Mediterranean Sea impassable. In response, Ukraine sought permission from the European Union to reroute its grain convoys through neighbouring countries such as Poland, Slovakia, Romania, and Hungary. Despite initial objections, the EU, in a gesture of solidarity, granted passage for the grain-laden trucks. However, a clash of interests emerged when a significant portion of Ukraine's grain found its way into European markets, driving down prices and causing disruption. European farmers were furious with this unforeseen turn of events forcing tensions between Ukraine and the affected EU member states, and exacerbating existing divisions within the bloc.

The fallout from the conflict underscores the interconnectedness of global food supply chains and highlights the vulnerability of countries, particularly in regions already facing economic challenges. As geopolitical tensions continue to unfold, it is imperative to seek collaborative solutions that mitigate the impact on vulnerable populations and uphold principles of international cooperation.

Geopolitics & Ukraine Russia Conflict

Rearrangement & firming of national groups

The war has led to significant shifts in international alliances, solidifying new groupings among nations. Foremost among these developments is the emergence of a pronounced anti-West alliance comprising Russia, China, North Korea, and Iran. This coalition, whose existence was hinted at previously, has now crystallized, notably bolstering Russia's logistical support for artillery shells and loitering suicide drones on the battlefield. Moreover, it appears

increasingly likely that this alliance will remain steadfast, particularly in the event of a potential conflict between China and the US concerning Taiwan.

Conversely, on the opposite end of the geopolitical spectrum, prior to Trump taking over as president again, the US, along with its NATO allies, Japan, and Australia, remained resolute in its anti-Russia stance, forming a formidable coalition. But now with Trump distinctly leaning towards Russia this alliance is in a jeopardy.

An intriguing third faction is characterized by its neutral stance, endeavouring to maintain amicable relations with both Russia and the United States. This group includes nations such as India, the UAE, Saudi Arabia, South Africa, and several Latin American countries. Many of these countries have historical ties with the former Soviet Union, which have persisted into the present era with Russia. Of particular interest is the relationship between South Africa and Russia. The current South African government, led by the African National Congress party, relied on the Soviet Union for arms and ammunition during its struggle against the apartheid regime. In those tumultuous times, South Africa was aligned with the United States, becoming one of the global arenas where the Cold War rivalry between the US and Soviet Russia played out.

Expansion of NATO

An immediate consequence stemming from the conflict is the expansion of NATO membership, marked by the hurried inclusion of Finland and Sweden. These nations, which share common borders with Russia, though aligned to the Western democracies, historically maintained a neutral stance during the Cold War. However, Putin's invasion of Ukraine swiftly altered this status quo. Recognizing the imperative to safeguard against potential territorial ambitions harboured by Putin in the future, both Finland and Sweden sought NATO protection, a strategic move they deemed essential to their security interests. The underlying principle of NATO is that an attack on any member state is deemed as an attack on all members of NATO, leading to the collective defence of its members.

The Endgame

To understand the potential outcome of the Russia-Ukraine war, it is crucial to grasp the mindset of Vladimir Putin and the Russian elite. Putin believes that Russian statehood and culture originated in Ukraine, making it inconceivable for Ukraine to be separate from Russia. He has often confided to his associates that the creation of a separate Soviet republic of Ukraine by Lenin and Stalin was a grave mistake. According to Putin, Ukrainians, by their culture, religion, traditions, and language, see themselves as part of Russia, with shared ancestors who lived together for centuries. He argues that it is the West that is trying to drive a wedge between Russia and Ukraine.

Conversely, Ukrainians feel they have the right to be a free and sovereign republic, a stance supported by the international community. However, they acknowledge that Russia currently has the upper hand in the conflict. Given the situation, what lies ahead for Ukraine?

To complicate the situation, Trump wants Ukraine to be ready to pay for the billions of dollars of US military aid by handing over large territories expected to be rich in rare earth elements. Zelinskyy is grudgingly ready for this deal,

but would like US to provide future security against Russian invasions. Though the US is not ready for Ukraine to join NATO, it seems it is ready for a NATO equivalent unified European military force to be placed in the country. Putin so far has not made any objection to this, but would definitely like to have a clear idea about the nature and size of this force.

Hopefully the conflict ends soon. The cessation of the conflict will of course give rise to new headaches like rebuilding a devastated Ukraine. But that's nothing compared to the bloodshed now.