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Issue Brief

Exhaustion and Endurance: Contrasting US-Russian Defence Industrial Resilience and Lessons for India

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Summary

The US's emergence as the sole superpower after the dissolution of the Soviet Union in 1991 led to a strategic shift from conventional warfare to counter-insurgency operations, fostering increased reliance on "exquisite" high-end weaponry. Russia, despite being one of the most heavily sanctioned states, has managed to sustain a large-scale, protracted war since 2022. The contrasting experiences of the US and Russia highlight important lessons for India's defence preparedness and industrial strategy.

The ongoing war between the United States (US) and Israel with Iran, code-named Operation Epic Fury by the US, has exposed significant weaknesses in the US defence manufacturing base, leading to growing concerns about sustainability in a protracted war. While the US retains overwhelming technological superiority, its ability to sustain high-intensity operations is increasingly constrained by industrial and supply chain limitations.

The US armed forces have expended certain advanced munitions at an extremely rapid rate due to the high tempo of operations, especially in the initial days of the war. According to a report presented to members of the US Congress, the US is estimated to have expended approximately US$ 5.6 billion worth of munitions within the first 48 hours of its military operations against Iran.[1]

A major concern is the rapid depletion of the stockpile of advanced munitions. In a study which tracked 35 munition types after 96 hours of fighting, 21 were found to have a healthy inventory state with 'mature production lines', while 14 displayed 'critical strain'.[2] The 14 systems that displayed critical strain are part of the US's credible air defence (AD) and long-range strike capabilities.

Israel too maintained a very high tempo of operations in the initial days of war, expending at a rapid rate certain types of advanced munitions. Among the munitions whose stock has depleted at a very fast pace are Arrow interceptors. The inventory of Arrow interceptors has been reduced by half in the first four days of the war. It will take Israel 32 months, at the current production rates, to replenish its inventory. As regards the US ground-launched Army Tactical Missile System (ATACMS) and the new Precision Strike Missile (PrSM), the inventory has been reduced by 33 per cent.[3] In recent years, the US Army has been replacing ATCAMS with PrSM. According to a *Defense News* report, the army procured 26 PrSM missiles in 2024 and another 54 in 2025, a total of 80 missiles.[4]

In comparison, the US and Israeli armed forces fired more than 3,000 precision-guided munitions and interceptors in the first 36 hours of the war.[5] Also, in the first 96 hours of the war, eight GBU-57 Massive Ordnance Penetrators were used, reportedly a quarter of the inventory, and are not likely to be replenished before

[1] Rajeshwari Ganesan, **"$5.6 Billion Worth Munitions Spent in 48 Hours: Cost of Trump's Iran Campaign Troubles US Lawmakers"**, *News 9 Live*, 10 March 2026.

[2] Macdonald Amoah, Morgan D. Bazilian and Jahara "FRANKY" Matisek, **"Over 5,000 Munitions Shot in the First 96 Hours of the Iran War"**, Foreign Policy Research Institute, 16 March 2026.

[3] Ibid.

[4] Jen Judson, **"Army Sccelerates PrSM Output as ATACMS Nears Sunset"**, *Defense News*, 14 October 2025.

[5] Macdonald Amoah, Morgan D. Bazilian and Lieutenant Colonel Jahara Matisek, **"The First 36 Hours of War Consumed Over 3,000 U.S.-Israeli Munitions"**, RUSI, 5 March 2026.

2028.[6] The figures above indicate limited inventory and constrained production capacity for certain advanced munitions. Replenishing these systems, which President Donald Trump has termed "Exquisite Class Weaponry",[7] is slow, and any surge in production, despite best efforts, can take several months and even years to impact supply to the units and formations at war significantly.

The war has also highlighted cost asymmetry: Iran's reliance on cheaper drones and missile forces the US to expend far more expensive interceptors, accelerating depletion rates. These dynamics turn industrial capacity into a decisive factor, leading to stockpile shortages that could take years to rebuild.

Arthur Herman, in *Freedom's Forge*, has underscored a critical reality of war: military power depends not only on battlefield capability but also on the resilience and scalability of defence manufacturing. He notes that when World War II began, the US lacked the industrial capacity needed to sustain a major war effort. Fortunately, it had not yet entered the war, giving it valuable time to prepare. The country took roughly 18 months or about a year to construct new facilities and retool existing ones, followed by six months for conversion—a luxury no nation at war can afford in today's time.[8]

This brief examines the causes of the rapid depletion of advanced munitions in the US inventory during the ongoing war. It analyses how the US's emergence as the sole superpower after the dissolution of the Soviet Union in 1991 led to a strategic shift from conventional warfare to counter-insurgency operations, fostering increased reliance on "exquisite" high-end weaponry. The brief also explores how chronic underinvestment in conventional weapon systems weakened the industrial base, resulting in limited surge production capacity that may take months or even years to scale. Additionally, the issue brief considers how Russia, despite being one of the most heavily sanctioned states, has managed to sustain a large-scale, protracted war since 2022.

United States

Weakening of the Defence Industrial Base

Following the dissolution of the Soviet Union in 1991, President George H.W. Bush and Prime Minister Margaret Thatcher popularised the slogan 'peace dividend', which

[6] Macdonald Amoah, Morgan D. Bazilian and Jahara "FRANKY" Matisek, **"Over 5,000 Munitions Shot in the First 96 Hours of the Iran War"**, no. 2.

[7] Valerie Insinna, **"Defense Companies to Quadruple Production of 'Exquisite' Weapons: Trump"**, *Breaking Defense*, 5 March 2026.

[8] Arthur Herman, ***Freedom's Forge: How American Business Produced Victory in World War II***, Random House Trade, 2013.

described the economic benefits of reducing defence spending.[9] William Perry, the then deputy defence secretary, presided over 1993's infamous 'Last Supper', where he hosted the CEOs of leading defence firms and warned that declining defence budgets would necessitate consolidation across the industry.[10] Defence spending was reduced by 67 per cent[11]; as a result, out of the 51 primes[12] in 1993, there are five today.

Following the end of the Cold War and the swift victory in the Gulf War, decision-makers increasingly assumed that future conflicts would be short, decisive and heavily dependent on advanced technology. The demonstrated effectiveness of precision-guided munitions, stealth platforms, and networked command-and-control systems fostered confidence that wars could be won quickly through overwhelming initial force and information dominance. This outlook encouraged a shift towards high-end, "exquisite" capabilities designed to deliver rapid battlefield effects, while placing less emphasis on stockpiles, redundancy, and the capacity for prolonged, large-scale conventional warfare.

The absence of a credible state adversary and military threat in the early 1990s led to a major drawdown of US military forces in both composition and posture. The significant size reduction is most clearly reflected in the decline of active-duty personnel and major platforms. According to a RAND study, during the period 1990–2018, total US active-duty military personnel reduced from over 2.1 million to over 1.3 million. During the same period, the US Army's main battle tanks decreased from over 15,000 to approximately 2,000, the total number of navy ships decreased from approximately 600 to 300, and the USAF's manned combat aircraft decreased from approximately 4,000 to 2,000.[13]

In the last three decades, the US shaped its defence-industrial base around the belief that future wars would be short and swift, driven by advanced technology. Influenced by the precision strikes of the Gulf War and the display of technological superiority in Iraq, US planners built a force geared towards conflicts decided by superior sensors, communications and precision targeting rather than protracted

[9] **"Peace Dividend"**, Wikipedia.

[10] Aaron Mehta, **"30 Years: William Perry — Reshaping the Industry"**, *Defense News*, 25 October 2016.

[11] Shyam Sankar, **"The Defense Reformation"**, *Palantir*, 31 October 2024.

[12] The term Prime is often used to refer to a handful of very large companies that hold contracts for major DoD systems and programmes. Technically, the term "prime" means anyone who has a direct contractual relationship (in this case, with a DoD government entity). These generally include companies such as Lockheed Martin, Boeing, Northrop Grumman, Raytheon and General Dynamics.

[13] Forrest E. Morgan and Raphael S. Cohen, **"Military Trends and the Future of Warfare: The Changing Global Environment and Its Implications for the U.S. Air Force"**, Research Report, RAND, 11 May 2020, pp. 5–11.

conventional wars characterised by high-volume 'traditional' firepower and large-scale manpower deployment.[14]

Following the launch of Russia's 'special military operation' in Ukraine in 2022, the US and its allies confronted the reality that their defence-industrial base was ill-prepared to sustain the demands of a high-intensity conventional war against a peer adversary. In response, they have begun pursuing systemic efforts to rebuild capacity, expand production, and strengthen resilience in defence manufacturing. Yet, as things stand today, a lot is left to be desired.

As of 2025, the US produced about 40,000 artillery shells per month, an increase of 178 per cent over pre-war levels, yet this output does not meet Ukraine's rate of consumption.[15] As of February 2024, Ukraine's stated minimum requirement was 356,400 shells per month, with a capacity to fire 594,000 per month.[16]

The US' capacity to manufacture 'Exquisite Class Weaponry' when compared to the rate of consumption is equally concerning. In 2025, Lockheed Martin and Raytheon produced approximately 740 Patriot PAC-2/PAC-3 missiles, with plans to increase production to 1,100 by 2027.[17] In the first 36 hours of Operation Epic Fury, Iran fired over 1,000 munitions across West Asia. In response, US, Israeli and allied forces fired more than 3,000 precision-guided munitions and interceptors.[18]

Assumption of Short, Swift Wars

The erosion of the US industrial base reflects the combined effects of the Pentagon's procurement policies, premised on the expectation of short, swift wars dominated by 'exquisite' high-end weaponry, and the rational business decisions of defence contractors. Within this framework, contractors gravitated towards high-value, low-volume systems, while facilities that once produced conventional systems such as artillery shells were shut down or repurposed. Over time, the skilled workforce needed to produce conventional munitions has also steadily declined.[19]

One of the most consequential outcomes of post-Cold War shifts in US warfighting doctrine, alongside force reductions and declining defence spending, has been the relocation of large segments of the defence supply chain to China. Today, many

[14] Mohammed Soliman, **"America's Scale Problem"**, Foreign Policy Research Institute, 1 October 2025.

[15] **"Fact Sheet on Efforts of Ukraine Defense Contact Group National Armaments Directors"**, US Department of War, 10 January 2025.

[16] Wilson Beaver and Jim Fein, **"America Must Remedy Its Dangerous Lack of Munitions Planning"**, The Heritage Foundation, 26 February 2024.

[17] Mike Fredenburg, **"By the Numbers: US Missile Capacity Depleting Fast By the Numbers: US Missile Capacity Depleting Fast"**, *Responsible Statecraft*, 11 November 2024.

[18] Macdonald Amoah, Morgan D. Bazilian and Lieutenant Colonel Jahara Matisek, **"The First 36 Hours of War Consumed Over 3,000 U.S.-Israeli Munitions"**, no. 5.

[19] Mohammed Soliman, **"America's Scale Problem"**, no. 14.

critical capabilities, ranging from the mining and refining of key minerals to the production of sub-systems, major systems and platforms, are increasingly concentrated there. In 2012, the US Senate Armed Services Committee issued a report[20] documenting 1,800 instances of counterfeit electronic components made in China found in Air Force aircraft, special operations helicopter assemblies, and a Navy surveillance platform. Beyond the risks of supply chain compromise, China has also secured global dominance in rare earth elements, controlling about 90 per cent of processing capacity within its borders and effectively ensuring US reliance on these critical minerals for weapons systems.[21]

The US assumption of short, swift wars has not held up over time.[22] Russia's 'special military operation' in Ukraine exposed the limitations of this preposition. While the US may prefer short, decisive conflicts, adversaries are not bound to fight on the same terms. Instead, they may be better prepared for prolonged, attritional warfare that relies on large-scale manoeuvre and sustained firepower. Iran's military response to Operation Epic Fury is aligned with this concept.

Predicting the future of warfare is extremely difficult. However, ongoing wars in Ukraine and West Asia offer certain constants and indicators that can help inform our understanding. Ben Connable, in his book *Ground Combat: Puncturing the Myths of Modern War*,[23] has argued that, despite rapid advances in sensors, communications, drones and precision weapons, the fundamental nature of ground combat has changed little since World War II. He asserts that despite advances in military technology, tanks, artillery and infantry remain central to how war is waged on land and emphasises that combat remains chaotic and human: units break under stress, terrain disrupts plans, morale falters, and communication fails. Decisions at the point of contact are shaped more by fear and judgement than by technology.[24]

In a *War on the Rocks* article, General Nick Carter (Retd), former CDS of the British military, observes that the battlefields of Ukraine reflect a blend of World War I and

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[20] **"Senate Armed Services Committee Releases Report on Counterfeit Electronic Parts"**, US Senate Committee on Armed Services, 21 May 2012.

[21] Evan Hanson, **"If Hephaestus Doesn't Answer: Supply Chains and Modern War"**, Modern War Institute (MWI), 10 December 2024.

[22] For decades, US decision-makers have assumed wars would end quickly, but history tells a different story. At the Civil War's First Battle of Bull Run, onlookers expected a swift resolution, yet the conflict lasted four years. In November 1950, Gen Douglas MacArthur predicted troops in Korea would be home by Christmas, but the war continued for years. Likewise, the wars in Iraq and Afghanistan far exceeded initial timelines, underscoring repeated misjudgements. Truly short US wars have been rare, mostly limited to smaller interventions against weaker states such as Grenada and Panama. For details, see Raphael S. Cohen and Gian Gentile, **"America's Dangerous Short War Fixation"**, Blog, RAND, 31 March 2023.

[23] Ben Connable, ***Ground Combat: Puncturing the Myths of Modern War***, Georgetown University Press, March 2025.

[24] Antonio Salinas, **"Molten Visions, Broken Blades: The Challenge of Forecasting the Character of Future Combat"**, Modern War Institute (MWI), 3 July 2025.

what possibly could be classified as World War III. Both sides are combining traditional methods with emerging technologies—unmanned systems, robotics and artificial intelligence. In his assessment, since 2024, the battlefields in Ukraine have "become remarkably static, attritional and reminiscent of World War I".[25]

Operation SINDOOR and India's Defence Preparedness

In view of the foregoing, it is important to contextualise military engagement such as Operation SINDOOR involving the armed forces of India and Pakistan. The 87-hour technology-driven military conflict, which witnessed one of the biggest air battles from stand-off ranges of 100–150 km between peer adversaries, besides extensive use of missiles, drones and AD systems and culminating with the Indian Air Force establishing its supremacy by targeting Pakistani airfields and other military targets using some of the most advanced missiles available anywhere in the world today. The question that merits deliberation is: Is Operation SINDOOR the template for all future India–Pakistan conflicts? And, how should India prepare for future wars?

India shares borders with two adversarial neighbours—China and Pakistan—while also contending with ongoing proxy wars and insurgencies. In this context, India's armed forces and its supporting defence-industrial ecosystem must prepare for the most demanding contingency: a protracted, large-scale, two- or even two-and-a-half-front conventional war. Scenarios short of this threshold can be managed within the existing capabilities of the Indian armed forces.

How is Russia Fighting a Protracted War?

Two important factors underpinning Russia's capacity to sustain a prolonged war are its doctrinal approach to warfare and the resilience of its defence industrial base, despite continued economic pressure from Western sanctions. Its war effort has been supported by strong energy revenues, careful financial management, and the willingness of several countries to continue trading despite the threat of sanctions. Additionally, Russia has been able to procure weapons and equipment from partners such as North Korea.

Sanctions and Export Control Regimes on Russia

Russia has been subjected to multiple rounds of sanctions since the annexation of Crimea in 2014, and today it is one of the most sanctioned countries in the world. In response to Russia's 'Special Military Operation', the US implemented a two-pronged economic pressure strategy. The first aimed to restrict Russia's ability to use its

[25] Gen Nick Carter, **"A New Way of Warfare Requires More Than New Tech"**, *War on the Rocks*, 5 January 2026.

financial resources to acquire military supplies, while the second sought to cut the revenues available to President Putin to finance the war and sustain Russia's economy.[26] The European Union likewise imposed a series of sanctions intended to erode Russia's economic base by limiting access to critical technologies and markets, thereby significantly reducing its capacity to wage war.[27]

In pursuance of their policy of economic coercion, the US and its allies and partners imposed vast-ranging sanctions.[28] The sanctions were imposed to impose long-term stress on Russia's financial system and economy by restricting its access to global financial markets and key trade channels, limiting its ability to obtain essential technologies and inputs, and curbing the financial resources available to fund the war in Ukraine.[29]

In addition to sanctions, the US and its allies also imposed a complex regime of export controls—very similar to one used to isolate, contain, and ultimately defeat the Soviet Union.[30] These measures were intended to cut off more than half of Russia's high-tech imports, limit access to critical technological inputs, weaken its industrial base, and undermine its ambitions to project influence globally. The Russian defence sector faced broad restrictions, including the denial of access to sensitive technologies, such as items manufactured abroad using US-origin software, technology, or equipment. As a result, Russia was targeted with controls on semiconductors, telecommunications, encryption security, lasers, sensors, navigation systems, avionics and maritime technologies.[31]

Sanctions and export control measures are two very different tools. While sanctions are typically aimed at financial institutions, banks and trade, their effects on the targeted country are often immediate. In contrast, export controls take longer to produce results, as they restrict access to key technologies and commodities. Over time, however, such measures can severely weaken the target country's domestic industry.[32]

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[26] **"Remarks by Deputy Secretary of the Treasury Wally Adeyemo on International Sanctions Against Russia"**, US Department of Treasury, 21 February 2023.

[27] **"Timeline: EU Restrictive Measures Against Russia Over Ukraine"**, Council of the European Union, 2022.

[28] Sanctions are penalties imposed by one country on another to stop them acting aggressively, or breaking international law. They are among the toughest actions nations can take, short of going to war. See, **"What are the Sanctions on Russia and Are They Hurting Its Economy?"**, *BBC News*, 30 September 2022.

[29] FPC Briefing, **"U.S. Sanctions on Russia"**, US Department of State, 18 March 2022.

[30] Maria Shagina, **"Technology Controls Can Strangle Russia—Just Like the Soviet Union"**, *Foreign Policy*, 22 August 2022.

[31] **"FACT SHEET: Joined by Allies and Partners, the United States Imposes Devastating Costs on Russia"**, Press Statement, The White House, 24 February 2022.

[32] FPC Briefing, **"U.S. Sanctions on Russia"**, no. 29; Maria Shagina, **"Technology Controls Can Strangle Russia—Just Like the Soviet Union"**, no. 30.

Russian Concept of Operations and Employment of 'Exquisite Class' Weapon Systems

Russia's concept of operations in Ukraine has evolved significantly since the initial invasion in February 2022. It has transitioned from an early attempt at rapid regime change and a decisive military victory to a prolonged attritional campaign centred on making incremental gains and consolidating territory in eastern Ukraine and degrading Ukrainian military capability through sustained strikes on command-and-control networks, logistics hubs and industrial infrastructure.

Russian offensive operations are primarily conducted by infantry formations supported by mechanised units, sub-units and irregular forces. Defensive operations, by contrast, rely on layered and heavily fortified positions built around both natural terrain and engineered obstacles. These defensive systems are reinforced through extensive minefields and other artificial obstacles. In both offensive and defensive operations, Russian forces rely heavily on massed fires and are willing to absorb heavy casualties in pursuit of incremental territorial gains.

In the air and missile domain, Russia employs a combination of air power, cruise missiles, ballistic missiles and loitering munitions to strike Ukrainian infrastructure and military targets. Recognising the limited availability of "exquisite class" weapons systems, Russia uses these capabilities selectively for strategic rather than attritional purposes. They are primarily directed against critical energy infrastructure, such as power grids, substations, and oil and energy facilities, as well as command-and-control nodes and logistics hubs, with occasional strikes against high-value military or symbolic targets. Targeting decisions for these systems are made carefully, with an emphasis on shaping political will and affecting civilian morale.

Russian employment of large-scale drone and missile salvos is an attempt to overwhelm Ukrainian AD systems by combining low-cost munitions with more advanced capabilities. The objective is to continuously strain and saturate Ukrainian AD over time, and make prudent use of scarce and expensive weapon systems. Unlike the US, which has often employed exquisite-class systems to enable decisive operational effects, Russian forces use them primarily as force multipliers within a broader attritional framework. Rather than enabling systemic collapse, they are used for selective disruption and targeted pressure.

Overall, Russia's concept of operations in Ukraine can be characterised as an adapted attritional strategy supported by selective precision-strike capability. Its core features remain defence in depth, massed fires, incremental territorial gains, and sustained pressure on Ukrainian infrastructure. In this construct, exquisite systems function more as enabling and signalling tools than as decisive war-winning assets.

Mobilisation of the Russian Defence Industrial Base

The Russian government has undertaken sustained and coordinated efforts—both before and after the onset of the war—to shield its defence industrial base from the effects of Western sanctions and export controls. The mobilisation of the defence industrial sector is part of this broader strategy, alongside the development of sanctions-evasion mechanisms to secure critical resources and maintain the supply of military equipment necessary for a protracted war.

Russia anticipated Western sanctions well in advance and prepared through its 'Fortress Russia' strategy,[33] supported by the Central Bank's effective crisis response, which blunted the expected economic shock. It also strengthened economic ties with China and other non-Western partners. After sanctions were imposed, Moscow adopted additional counter-measures, including sanctions-evasion networks. These involved the use of front companies in third countries, along with alternative mechanisms such as cryptocurrencies and barter trade, to access restricted goods and sustain economic and military resilience.[34]

Governmental Focus on Defence Industrial Base

Since the start of the war, President Putin has prioritised strengthening Russia's defence industrial base by increasing funding and implementing supportive policy measures to boost production capacity. In 2025, Russian military spending is estimated at around 16 trillion roubles, or approximately 7.5 per cent of GDP.[35] While this represents a substantial commitment, it remains considerably lower than Soviet-era defence expenditure in the mid-1980s, which reached about 13 per cent of GDP.[36] Regarding its capacity to sustain ongoing operations, Russia has extensively mobilised its defence industrial base by increasing work shifts, expanding production lines at existing facilities, and reactivating previously dormant plants. These measures have collectively resulted in a substantial increase in overall production.[37]

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[33] The 'Fortress Russia' strategy describes efforts by Russian authorities implemented since sanctions were first imposed after Russia's annexation of Crimea in 2014. The aim was to insulate the country's economy from potential additional measures. See Maria Demertzis, Benjamin Hilgenstock, Ben McWilliams, Elina Ribakova and Simone Tagliapietra, **"How Have Sanctions Impacted Russia?"**, *Bruegel Policy Brief*, 26 October 2022, pp. 14–15.

[34] For details, see Rajneesh Singh, **"Sanctions on Russia: A Study of Economic Coercion in the Contemporary World"**, Monograph No. 82, Manohar Parrikar Institute for Defence Studies and Analyses (MP-IDSA), September 2023.

[35] Julian Cooper, **"A Budget for a Fifth Year of War: Military Spending in Russia's Budget for 2026"**, SIPRI, March 2026.

[36] Christina Harward, Angelica Evans, Nicole Wolkov, Riley Bailey and Frederick W. Kagan, **"Russian Offensive Campaign Assessment, May 15, 2024"**, Institute for the Study of War (ISW), 15 May 2024.

[37] At the beginning of 2023, for instance, Russian production of Iskandr 9M723 ballistic missiles was six per month, with available missile stocks of 50 munitions. By the beginning of 2024, not only had Russia used a significant number of these missiles each month since the summer of 2023, but it had increased its stockpile to nearly 200 Iskandr 9M723 ballistic and 9M727 cruise missiles. A similar

Russia's Production of Some Defence Products is Faster than that of the West

In March 2024, CNN reported that Russia was producing three times more artillery shells than the US and Europe for Ukraine.[38] Russia has achieved a higher artillery ammunition production rate than many Western countries, primarily through a different industrial model and wartime prioritisation rather than technological superiority.

First, Russia operates a highly centralised, state-directed defence industrial base that can be rapidly mobilised. Since 2022, it has shifted factories to wartime schedules, introduced multiple shifts, expanded existing production lines, and reopened dormant Soviet-era facilities. This has significantly increased the output of "legacy" systems, such as artillery shells, which are simpler and faster to produce at scale. Second, Russia relies heavily on standardised, mass-produced designs, allowing large-scale, low-cost production without frequent redesigns or complex certification cycles.

Reliance on Stockpiles to Maintain Force Levels

Drawing on International Institute for Strategic Studies (IISS) assessments in *The Military Balance*,[39] Russia's ability to sustain a protracted war despite sanctions rests on adaptation, scale and resource depth. Russia has offset heavy battlefield losses by drawing extensively on vast Soviet-era stockpiles, refurbishing older equipment to maintain force levels.[40] At the same time, it has expanded defence production—particularly drones and munitions—while balancing expenditure with replenishment capacity. Crucially, Russia has shifted towards a war-of-attrition model, leveraging manpower mobilisation and industrial resilience rather than technological superiority. Despite sanctions constraining access to advanced systems, Russia has adapted by substituting, sourcing externally, and adopting lower-tech solutions, enabling it to sustain operations over time.

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picture can be observed across other core missile types like the Kh-101. See Jack Watling and Nick Reynolds, **"Russian Military Objectives and Capacity in Ukraine Through 2024"**, Commentary, RUSI, 13 February 2024.

[38] Katie Bo Lillis, Natasha Bertrand, Oren Liebermann and Haley Britzky, **"Russia Producing Three Times More Artillery Shells Than US and Europe for Ukraine"**, *CNN*, 11 March 2024.

[39] For details, see **"The Military Balance 2026"**, IISS, 24 February 2026.

[40] The Military Balance 2024, estimated Russian losses of 3,000 armoured fighting vehicles in 2023 alone and close to 8,800 since February 2022. Despite losing hundreds of armoured vehicles and artillery pieces per month on an average, Russia was able to keep its active inventory numbers stable. For 2023, the study estimated that Russia was able to reactivate at least 1,180 to 1,280 MBTs and around 2,470 IFVs and APCs from storage. On top of that, Moscow was able to manufacture new tanks and other armoured vehicles, though precise numbers were not available. Russia has 10 Central Tank Reserve Bases, at least 37 mixed equipment- and armaments-storage bases, and at least 12 artillery-storage bases. An assessment by the IISS of 2023 showed equipment replenishments were roughly keeping pace with battlefield attrition and Russia will be able to sustain its assault on Ukraine at current attrition rates for another 2–3 years, and maybe even longer. See Yohann Michel and Michael Gjerstad, **"Equipment losses in Russia's war on Ukraine mount"**, IISS, 12 February 2024.

Russia is Trading Quality for Quantity

In its war in Ukraine, Russia has lost thousands of tanks across different generations. However, it retains extensive Soviet-era stockpiles of tanks and other armoured vehicles, which it is using to replace battlefield losses.[41] This reliance on stored equipment allows Russia to sustain the conflict for several more years, effectively prioritising quantity over quality in its force structure.

Lessons for India

The contrasting experiences of the US and Russia highlight important lessons for India's defence preparedness and industrial strategy.

Sustainment should be elevated to a Formal Principle of War

Armed forces worldwide confront several challenges in sustaining large-scale combat operations, whether offensive or defensive. To address these, sustainment should be elevated to a formal principle of war, highlighting the strategic importance of logistics and reinforcing the need to integrate the defence industrial base more effectively into deterrence and defence strategies.[42]

Defence Industry Cannot be Turned On and Off at Will

In civilian markets, fluctuating demand rarely proves catastrophic because producers serve multiple customers and can absorb losses. Military procurement differs: often, the government is the sole buyer, so reduced orders can shutter production lines or close firms. Rebuilding capacity is difficult due to a limited workforce, labour-intensive systems, and fragile supply chains, including vulnerable sub-contractors and foreign dependencies.[43]

India Requires a Hybrid Mode—Combining Advanced Capabilities with Robust Mass-Production Capacity and Strategic Reserves

The post–Cold War decline in US peer-adversary competition contributed to a lean, technology-intensive defence industrial base optimised for precision, "exquisite" systems and short-duration wars. While highly capable, this model has proven less

[41] By February 2024, Russia had reportedly lost more than 3,000 tanks in the war. However, it was able to compensate by drawing thousands of older vehicles from storage, at times reactivating up to around 90 tanks per month. In February 2024, Russia was assessed to have about 1,750 active main battle tanks, ranging from legacy T-55 models to modern T-80 and T-90 variants, with a further approximately 4,000 held in reserve storage. See Stanislav Pohorilov, **"Russia's Focus on Quantity Over Quality Leaves It With Enough Tanks for Another 3 Years of War – Report"**, *Ukrainska Pravda*, 13 February 2024.

[42] Antulio J. Echevarria, **"It's Time to Recognize Sustainment as a Strategic Imperative"**, *War on the Rocks*, 15 February 2023.

[43] Alex Vershinin, **"The Return of Industrial Warfare"**, RUSI, 17 June 2022.

suited to sustained, high-intensity attritional warfare that requires large-scale ammunition and platform replacement.

By contrast, Russia's approach in Ukraine has emphasised mass, depth and endurance. In this construct, advanced systems are often enabling tools, while warfighting effectiveness depends heavily on volume, stockpiles and industrial throughput. Russia has sustained operations through continuous defence spending, expanded production shifts, reactivation of dormant facilities, and large-scale refurbishment of Soviet-era equipment, thereby offsetting heavy battlefield losses.

For India, the key lesson is the importance of balancing technological sophistication with scalable industrial capacity. A defence ecosystem optimised only for high-end platforms risks constraints in prolonged war scenarios. Equally important is maintaining depth in ammunition stocks, surge production capability, and resilient supply chains that can be rapidly mobilised in wartime.

A hybrid model—combining advanced precision capabilities with robust mass-production capacity and strategic reserves—offers the most credible path for sustaining high-intensity operations over time.

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