

Northrop Grumman UK - Written evidence (IUD0007)

House of Lords International Relations and Defence Committee: Implications of the war in Ukraine for UK Defence

Return from Northrop Grumman UK

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1. What does the war in Ukraine tell us about the changing character of warfare? To what extent are the lessons from the war in Ukraine applicable to UK Defence?

There are a number of lessons UK Defence should draw from the war in Ukraine. First, Ukraine demonstrates why the West must focus on deterring a future conflict of this sort. Western pressure did not prevent Russia's invasion, demonstrating why the UK and NATO must strengthen deterrence, using deterrence by denial to constrain and compel our adversaries.

Effective deterrence depends on a broad range of credible capabilities, both nuclear and conventional. UK Defence requires effective defensive capabilities that can counter the threats it faces, as well as effective offensive capabilities that pose a credible threat to our adversaries' capabilities. This reinforces the importance of NATO, especially interoperability with NATO allies. At a technical level, UK deterrence is also strengthened through effective Command and Control. C2 that integrates every available asset – from aircraft to missile defence – is critical to ensuring the UK and its allies do not have to fight a future conflict like this.

Second, the war demonstrates why air superiority is critical. Without it, no side can operate with impunity, leading to the costly ground-based attritional conflict we have seen. Whilst air superiority will face limits, the war has demonstrated the importance and effectiveness of ground-based air defence systems, as well as Anti-Radiation Missiles required to defeat such systems. The UK has neither

and must invest in IAMD and Suppression and Destruction of Enemy Air Defence capabilities.

Third, Ukraine has shown why government and industry must work together more closely, to supply the capabilities and materiel needed to win a war. Despite the best efforts of the UK and its allies, Ukraine continues to face shortages that are significantly hampering its war effort. Shortages have revealed the international nature of supply chains, a key consideration for nominally sovereign capabilities, as well as the sheer amount of ammunition required by modern warfare. The UK should look to meet this future demand through building interoperable and international stockpiles, whilst also strengthening underlying industrial capacity – directly in the UK and with close allies.

Finally, underlying all of these points, Ukraine has shown us how digital technologies are changing the character of warfare. Embedding tech teams in its front line from the outset, Ukraine has leveraged digital technologies to an unprecedented degree. Using multiple sensors and sources on the battlefield, their military has successfully integrated data from crewed and uncrewed systems, and military and consumer sources, including mobile phones, to create actionable intelligence on the enemies' locations and movements. In this way, Ukraine has generated a meaningful Information Advantage over Russia, demonstrating why UK Defence must pursue Multi-Domain Integration and the digital technologies that underpin it.

2. Is there a need for the UK to increase investment in integrated air defence and missile defence in light of the war in Ukraine?

Yes. There is an urgent need for the UK to increase investment in integrated air defence and missile defence (IAMD). Current capabilities are very limited, to the point of being negligible, which is the result of long-term under-investment and an over-reliance on NATO partners' capabilities. This capability gap poses a significant risk to national security and the war demonstrates why IAMD is now a critical requirement.

For long periods of the war, Ukraine's air defences have successfully resisted Russia's air forces. This has made Russia's fourth generation tactical air forces largely irrelevant, whilst also offering protection to Ukraine's major population centres. Without robust air defences in place, it is clear that any state risks ceding Control of the Air to the enemy in any future conflict. In this situation, Control of the Air would only be possible through extremely expensive and non-persistent Air Based Air Defences.

As a recent RUSI paper published 17 April 2024 notes, "the UK must have a C2 architecture that controls an appropriate mix of sensors and effectors to function both across different parts of the battlespace and across the continuum from competition to conflict".¹ Put simply, the UK must strengthen investment in IAMD. This will require an investment in the architecture that delivers true integration, as Poland has done, alongside an investment in sensors and

¹ <https://rusi.org/explore-our-research/publications/occasional-papers/requirements-command-and-control-uks-ground-based-air-defence>

effectors. The investment required to protect military capability, government and CNI will require significant resources. However, Russia has shown itself willing to target all three in this war and the UK is within effective weapons range of Russian systems.

3. To what extent should the UK seek to increase its weapon stocks as a result of the war in Ukraine? What kind of weapons should it focus on procuring in greater quantities?

UK Defence has repeatedly adopted a high-risk strategy towards stockpiles, allocating resource to platforms instead of stockpiles. The current situation is critical, at a time of constrained production capacity and shortages. It would be prudent for the UK to replenish its current stocks with urgency, particularly given the deteriorating security environment. The UK will need to invest in its stockpiles, as well as the supply chains and production capabilities that sustain them.

Alongside investment, UK Defence should reconsider how it procures its weapons stocks. Traditionally the UK has bought a stockpile of weapons that are then stored for the weapon's lifetime. This is sub-optimal for a number of reasons. The main ones are that spiral upgrade of complex weapons is not undertaken, component supply ceases and in some cases, component suppliers cease to exist, making replenishment impossible. Above all, we must ensure that our weaponry is interoperable with allies. Ukraine has received vast quantities of ammunition from the UK and its allies. It is a reasonable assumption that our allies would supply the UK in time of need, as the US did in the Falklands Crisis. This aid will be worthless if we maintain bespoke systems.

In addition to these principles, there are a number of areas where UK Defence should specifically focus procurement. First, the UK has no Suppression (or Destruction) of Enemy Air Defence weapons in the air domain, having retired ALARM in 2013. Almost all of Europe is currently reliant on the US for this capability, which, as Ukraine has shown, is a critical capability in modern warfare. Finland has already decided to procure the Advanced Anti-Radiation Guided Missile – Extended Range (AARGM-ER), which is the best in-class. UK Defence should acquire a S/DEAD capability.

Second, the high rate of ammunition use in Ukraine emphasises the importance of increasing first shot accuracy. UK Defence should place a greater emphasis on guided weaponry in future procurement, which is more effective militarily and reduces logistics burdens. Whilst such weaponry comes with a higher initial cost, the war has revealed the true cost of inaccurate weaponry. Screw-in precision guided fuzes also allow existing 155 mm artillery shells to be transformed into guided smart weapons at a relatively low cost. Finally, the UK must continue to strengthen its stocks of more routine weaponry: 155mm heavy artillery will remain a priority, as will the ability to conduct long-range strikes from land and sea.

4. What steps should the UK take to strengthen its military-industrial base and upskill the relevant workforce in light of the war in Ukraine? What are the main challenges, and how can these be overcome? How does the UK's approach compare to that of its European allies?

The shortages faced by Ukraine demonstrate the importance of a strong military-industrial base. To strengthen its own base, the UK must build a new partnership that brings together government, industry and trusted allies. This should encompass more strategic procurement and closer collaboration.

The 2021 Defence and Security Industrial Strategy precipitated the move away from short-term market-driven procurement, which is sub-optimal and often incompatible with the timeframes required by industry to develop and sustain supply chains and skill bases. In the future, UK Defence must be more strategic in its procurement, by assessing broader concerns, including the sustainability of the supporting industrial supply base, alongside cost, deliverability and capability concerns. To offer a specific example, UK Defence should use major programmes like GCAP to strengthen its military-industrial base, by ensuring the economic benefits of such key programmes are shared beyond a small number of core firms.

Moreover, it is clear that procurement in isolation is unsatisfactory. UK Defence should strengthen its industrial collaboration with key allies, using more co-development to enable more rapid and effective progress in critical capability areas, such as MDI and IAMD. AUKUS offers transformational potential in this regard. The alliance is an opportunity to secure global supply chains. However, it should also be part of a more ambitious strategic vision to build an allied industrial base. This would allow the UK to strengthen its own industrial capabilities, whilst also drawing on the expertise of its allies, to build the industrial capacity that is needed at a more affordable cost.

a. a) How feasible is it for the UK and its European allies to maintain large stockpiles of weapons and munitions, and what are the trade-offs in doing so?

There are evident financial and practical challenges to maintaining large stockpiles. However, the current situation means UK Defence must increase stocks from current levels. Quite simply, the UK must replace the stocks it has provided to Ukraine, in addition to increasing its own stockpiles, in response to the increased threats the UK now faces.

Both Russia and Ukraine have used vast quantities of munitions in the war so far. The individual challenges of maintaining a stockpile sufficiently large for such a conflict means UK Defence should favour interoperable solutions in future procurement, which would facilitate the sharing of stocks with allies and provide an alternative supply base, in event of war. Interoperable weapons are also exportable, unlike bespoke exquisite solutions.

5. How can the UK Armed Forces update their training and exercises to incorporate the lessons from the war in Ukraine?

The war in Ukraine has shown the critical importance of establishing air superiority. The UK lacks two critical capabilities that support air superiority: IAMD and anti-radiation missiles used to prosecute Suppression and Destruction of Enemy Air Defence missions. As the UK lacks both, future training, exercises and planning assumptions should reflect this fact and be realistic about the

battle implications. In addition, the Ukrainian military has built up significant real-life experience of modern conflict. This is invaluable and the UK should retain the close relationships it has built with the Ukrainian military in the coming years in order to exploit this insight.

6. What progress has been made in increasing joint procurement and harmonising defence systems among NATO allies, especially among our European partners?

Despite the political imperative, there has been limited progress so far in increasing joint procurement and harmonising defence systems among NATO allies.

As the Chair of NATO's Military Committee Admiral Rob Bauer noted in October, 14 NATO states still reserve the right to deviate from the standard NATO 155mm ammunition, which means there are at least 14 different 155mm standards across the Alliance.² The Challenger 2 main battle tanks gifted to Ukraine notably fire a unique 120mm round. Even Archer, recently procured by the British Army, has limited interoperability with non-Archer users.

For Ukraine, this issue has practical implications. Whilst Ukraine has benefitted from allied contributions in the short term, the multitude of standards creates a significant logistical problem in the medium term, as varying capabilities must be sustained through bespoke means.

7. How have drones been used by both sides in the war in Ukraine and what has been their impact for the way the war has been fought? What lessons should the UK Armed Forces draw from the use of drones in Ukraine?

Ukraine has made significant and innovative use of uncrewed aerial vehicles. This has included using drones for force protection and reconnaissance, as well as an attritable means for delivering basic weapons. Whilst these deployments have been ground breaking, the war has revealed both the strengths and weaknesses of UAVs. This makes it especially important that UK Defence learns the right lessons from this war.

Drones are now an integral part of modern warfare. Ukraine has shown that infantry officers should not go to war without a drone for Force Protection or reconnaissance, as well as a robust counter UAS capability that includes C2 and EW. Rapid upgradeability is also essential given how fast the EW environment now evolves.

However, the war has also revealed the limitations of UAVs. Ukraine has lost vast numbers of drones, due to their inability to defend against electronic warfare threats and ground based air defences. Ukraine has had to concentrate on tactical deployments instead of strategic ones. As a result, the war demonstrates again the importance of establishing air superiority. Without it,

² <https://www.reuters.com/world/nato-urges-common-standards-curbs-protectionism-boost-artillery-output-2023-10-24/>

drones will prove highly vulnerable, unless they are specifically designed for the A2AD environment.

Finally, both sides have lost vast numbers of drones due to fratricide, as it is impossible for combatants to identify and distinguish between friendly and hostile systems. The UK and its allies must address from where it is most effective to command and control uncrewed systems, as well as counter uncrewed systems technologies. The sheer number of systems makes a centralised C2 system unworkable. As an individual infantryman is already trusted with short-range direct fire weaponry, it seems reasonable that they should also be trusted with a UAS, if it were being used in the same role.

8. What role has the space domain, including satellite communications, played in the war in Ukraine, and how has this differed from previous conflicts? What are the implications for the UK Armed Forces?

The Armed Forces have long relied on the space domain to deliver capabilities, particularly satellite imagery, Remotely Piloted Aircraft Systems Services and secure communications. The war in Ukraine has been distinguished by the major use of civilian space technologies for the first time, such as the use of SpaceX's Starlink internet constellation. This has evidently prompted debate about the role and influence of the private sector in modern warfare. The use of civilian technologies in future conflicts could accelerate technological developments, as we have seen in Ukraine, though the war also demonstrates why only military solutions remain totally dependable.

9. What lessons have the UK and NATO learned from the war in Ukraine about the management of escalation of force?

NATO and the UK must seek to understand better Russian tactics and strategy. Ukraine has demonstrated why we must learn to look at events from a Russian perspective and not assume that Russians follow our own, largely linear, thought process. Allied information operations prior to Russia's invasion proved useful, highlighting Russian aggression as a counter to planned Russian false flag operations. However, they ultimately failed to deter the invasion, even when the UK and NATO openly demonstrated to Russia that they understood the conflict was imminent. In the days and weeks that followed, the Russian invasion did not escalate in a meaningful sense. It arrived as a massive multi-domain force. The UK and NATO should now consider whether our usual scales of effort, for example the NATO Forward Presence in the Baltic States, still provides sufficient deterrence.

10. Is the hybrid threat to the UK posed by Russia evolving as a result of the war in Ukraine, and if so, how?

N/A

11. What other lessons can we draw from the war in Ukraine for UK Defence? What are the implications for the UK's defence priorities, including manpower?

The questions above cover the key lessons that UK Defence must learn. The UK must strengthen its deterrence; it must prioritise capabilities that support air superiority; and government, industry and allies must work together more closely. In recent years, it is clear that the UK has repeatedly taken risks on capabilities, allowing cost to override capability, interoperability and deliverability concerns, as well as relying on allies to deliver capabilities that it can no longer field.

Ukraine may have strengthened the imperative but these lessons are not new. UK Defence has faced previous repeated warnings on the need to strengthen stockpiles and address capability gaps in GBAD and S/DEAD. Prior to the invasion, the 2021 Integrated Review identified Russia as the “the most acute direct threat to the UK. It is surely now more important than ever that the UK finally act to strengthen its defence.

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