The Future of NATO’s European Land Forces: Plans, Challenges, Prospects

Ben Barry, Henry Boyd, Bastian Giegerich, Michael Gjerstad, James Hackett, Yohann Michel, Ben Schreer and Michael Tong

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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>ABCT</td>
<td>Armored brigade combat team</td>
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<tr>
<td>AFSB</td>
<td>Army field support brigade</td>
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<td>AFSBn</td>
<td>Army field support battalion</td>
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<tr>
<td>AFV</td>
<td>Armoured fighting vehicle</td>
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<tr>
<td>APC</td>
<td>Armoured personnel carrier</td>
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<td>APS</td>
<td>Army prepositioned stocks</td>
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<td>ARRC</td>
<td>Allied Rapid Reaction Corps</td>
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<td>ASAP</td>
<td>Act in Support of</td>
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<tr>
<td>ATMOS</td>
<td>Autonomous Truck Mounted</td>
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<tr>
<td>CAESAR</td>
<td>Camion Équipé d’un Système d’Artillerie [Vehicle-mounted artillery system]</td>
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<tr>
<td>CAMM</td>
<td>Common Anti-air Modular Missile</td>
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<tr>
<td>CAMM-ER</td>
<td>Common Anti-air Modular Missile – Extended Range</td>
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<tr>
<td>CS</td>
<td>Combat support</td>
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<tr>
<td>CSS</td>
<td>Combat service support</td>
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<td>C2</td>
<td>Command and control</td>
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<tr>
<td>DEP</td>
<td>Defence Equipment Plan</td>
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<tr>
<td>DSK</td>
<td>German rapid forces division [Division Schnelle Kräfte]</td>
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<td>eFP</td>
<td>Enhanced Forward Presence</td>
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<td>EUCOM</td>
<td>[US] European Command</td>
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<tr>
<td>EW</td>
<td>Electronic warfare</td>
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<td>GBAD</td>
<td>Ground-based air defence</td>
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<tr>
<td>HIMARS</td>
<td>High Mobility Artillery Rocket System</td>
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<td>HVM</td>
<td>High Velocity Missile</td>
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<td>IBCT</td>
<td>Infantry brigade combat team</td>
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<tr>
<td>IFV</td>
<td>Infantry fighting vehicle</td>
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<tr>
<td>INDPACOM</td>
<td>[US] Indo-Pacific Command</td>
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<td>IRIS-T</td>
<td>InfraRed Imaging System Tail/Thrust Vector-controlled</td>
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<tr>
<td>IRIS-T SLM</td>
<td>[IRIS-T] Surface-launched Medium-range</td>
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<td>ISR</td>
<td>Intelligence, surveillance and reconnaissance</td>
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<td>LANDCOM</td>
<td>[Allied] Land Command</td>
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<tr>
<td>MANPAD</td>
<td>Man-portable air defence</td>
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<td>MBT</td>
<td>Main battle tank</td>
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<td>MIV</td>
<td>Mechanised infantry vehicle</td>
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<td>MFP</td>
<td>Mobile Fires Platform</td>
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<td>MLRS</td>
<td>Multiple Launch Rocket System</td>
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<td>MNC-NE</td>
<td>Multinational Corps Northeast</td>
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<td>MNC-SE</td>
<td>Multinational Corps Southeast</td>
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<tr>
<td>MRL</td>
<td>Multiple rocket launcher</td>
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<tr>
<td>NASAMS</td>
<td>National Advanced Surface-to-air Missile System</td>
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<td>NFIU</td>
<td>NATO Force Integration Unit</td>
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<td>NFM</td>
<td>[NATO] New Force Model</td>
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<td>NLR</td>
<td>NATO Readiness Force</td>
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<td>NRI</td>
<td>NATO Readiness Initiative</td>
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<td>NSPA</td>
<td>NATO Support and Procurement Agency</td>
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<td>PrSM</td>
<td>Precision Strike Missile</td>
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<tr>
<td>PULS</td>
<td>Precise and Universal</td>
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<tr>
<td>RCH</td>
<td>Remote Control Howitzer</td>
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<tr>
<td>SACEUR</td>
<td>Supreme Allied Commander Europe</td>
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<td>SAMP/T-NG</td>
<td>Sol-Air Moyenne-Portée/Terrestrée de Nouvelle Génération</td>
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<tr>
<td>SHORAD</td>
<td>Short-range air defence</td>
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<td>SIGINT</td>
<td>Signals intelligence</td>
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<tr>
<td>SP</td>
<td>Self-propelled</td>
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<tr>
<td>UAV</td>
<td>Uninhabited aerial vehicle</td>
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<td>USAREUR–AF</td>
<td>US Army Europe and Africa</td>
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<tr>
<td>VL/MICA</td>
<td>Vertical Launch Missile d’Interception, de Combat et d’Autodéfense</td>
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<tr>
<td>VJTF</td>
<td>Very High Readiness Joint Task Force</td>
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Cover

*Eastern Ukraine, 15 June 2022. Ukrainian troops fire a French-manufactured CAESAR artillery piece towards Russian positions. (Aris Messinis/AFP/Getty Images)*
The prospect of major land warfare involving NATO forces has returned to Europe. Russia’s full-scale invasion of Ukraine in February 2022 has provided a wake-up call in European capitals. Before then, many held the view that major land forces and land manoeuvre capabilities, including heavy armoured formations, would not be a dominant feature of future conflict. This view persisted even after Russia seized Crimea in early 2014 and subsequently fomented and supported separatist activity in Eastern Ukraine. After decades of downsizing capabilities, some European armies drew up plans after 2014 to once again build forces for major land operations; they continued, however, to fall short in many areas important for high-intensity war.

The June 2022 NATO Summit in Madrid saw allies agree on a new Strategic Concept. This not only identified Russia as ‘the most significant and direct threat to allies’ security’, but also provided a mandate to improve NATO’s deterrence and defence posture. NATO’s New Force Model (NFM) is intended to provide a larger pool of high-readiness forces than envisaged under the NATO Response Force (NRF). The recapitalisation of European land forces is now high on the agenda for NATO’s European allies.

However, an important question is whether European allies are more serious now, in regard to the investments needed to develop more capable and integrated land forces, than they were after Ukraine was first invaded in 2014. To help answer this question, this paper assesses important elements of the emerging plans and capability developments in key European ground forces. It focuses on those allies most likely to be directly affected by a contingency on NATO’s northern and eastern flanks. The paper identifies strengths and shortfalls in the development of European land warfare capability, and looks at the implications for the NFM. It recognises that any high-intensity conflict in Europe will likely be a multi-domain fight; this is the eventuality for which Europe’s land forces need to prepare.

Our analysis provides a mixed picture. Positive steps include:

- **The recognition by European land forces of weaknesses.** These include operational overstretch, limited training and ageing equipment. Many of these factors combine to erode combat readiness from the levels that NATO defence plans and the NFM will demand. This recognition has led to debate on how to activate and/or build-up reserve components and regenerate combat mass, with this also spurred by the reality of combat attrition in Ukraine. Furthermore, European land forces are aware of the need to improve defence infrastructure, such as training areas, and address industrial production needs, for instance in terms of refilling stockpiles.

- **More procurements are the most readily apparent means countries have pursued to try and boost readiness deficits and strengthen capability.** While some procurement plans pre-date 2022, there is now greater focus on heavy manoeuvre capabilities, such as in Poland. Additionally, medium-weight formations are being developed in a number of states, potentially improving strategic and operational mobility.

- **Current and planned investments in rocket artillery and surface-to-surface strike should deliver systems capable of engaging targets at longer range than before, such as forces in the rear and enemy logistics and headquarters.** Fully benefiting from these systems, however, depends also on improved training and integration with intelligence and command and control capabilities.

- **Ground-based air defence (GBAD) has long been an area of relative weakness for European armed forces.** Investments have picked up here also. GBAD could protect a range of potential targets, from civilian and industrial sites to headquarters, as well as mobile forces. However, allies will need to carefully consider interoperability and integration requirements,
while the war in Ukraine is a reminder that munitions requirements for GBAD can be substantial during high-intensity war.

However, implementation has been modest and several challenges lie ahead:

■ **There is general support for the NFM at the political-strategic level, but there remains uncertainty over how much alignment there will be in practice between national policy and capability development plans and NATO planning, particularly concerning regional commands such as Multinational Corps Northeast (MNC-NE) in Szczecin, Poland. Moreover, it is unclear whether all nations perceive the threat in the same way. For instance, differing threat assessments concerning Russia may lead nations to develop different land modernisation plans. Frontline states will base their planning on worst-case assessments, but the same might not be true for European allies further away. Also, it will be important for European land forces and political leaders to maintain focus on these capability requirements, even if the intensity of fighting in Ukraine abates.**

■ **NATO members should make contributions to the NFM clear and declare their land contributions before or at the upcoming Vilnius Summit in July 2023. This will help strengthen allied cohesion, enhance deterrence vis-à-vis Russia, publicly tie governments to these commitments, and also facilitate better planning. Moreover, current limitations within nations should not stop innovative ideas: some could opt to make a two-phase offer at the summit, committing some forces now and indicating what they will commit once new capabilities come online.**

■ **At present, apart from a select few allies, Europe’s land forces are not increasing in size. National plans are a key factor behind this. Nonetheless, recruitment and retention will remain challenging for most without either significantly improved ‘offers’ to personnel, or innovations in force design, or perhaps even the (re)introduction of conscription. Meanwhile, a larger force will have a significant budgetary impact and – without sustained budget increases or the use of other funding mechanisms – will likely reduce the ability to invest in other critical areas.**

■ **The size of the commitments required by the NFM’s three tiers means that forces fielded at scale will need to be multinational by design. Multinationality, however, brings its own difficulties, with some nations historically showing greater confidence in some partners than others. Furthermore, with nations often bringing national caveats and rules of engagement to operations, more multinationality may add more risk.**

■ **As European land forces seek to quickly improve readiness, allies, and NATO itself, need to scrutinise evaluation standards. For instance, are current national and NATO evaluation standards realistic and optimised to produce uniform combat capability across the Alliance? If not, do readiness benchmarks for personnel, organisations and also equipment storage need to be refined?**

■ **European land forces will need to obtain the optimum balance between a focus on manoeuvre formations, and combat support (CS) and combat service support (CSS). At present, CSS remains a national responsibility and none of the NATO corps HQs have any organic combat support. So, should CS and CSS be assigned to the NATO corps-level? If they prefer to keep those functions at the national level, allies must consider that under current circumstances they would struggle to rapidly deploy and sustain land forces forward by air, land and sea.**

■ **Some European land forces have ambitious development plans, but it is unclear if funding levels will enable their full implementation. Even if funding increases, land forces will face difficult financial trade-offs between more personnel, weapons systems, stockpiles, logistics and digitisation. This tension is currently exacerbated by the large volume of equipment and ammunition provided to Ukraine.**

European land forces have, again, acknowledged the need to respond to Russia’s threat. The pressure to do so appears greater than in 2014, and some positive steps have already been taken. However, it remains to be seen whether the momentum can be sustained. German leadership will be key in driving European land-warfare capability development in order to meet NFM objectives, not least because of Berlin’s stated ambition to provide the core of European conventional capability.
The prospect of major land warfare involving NATO forces has returned to Europe, because of Russia’s full-scale invasion of Ukraine in February 2022. In many European capitals the view had prevailed, even after Russia first invaded Ukraine in 2014, that major land forces and land manoeuvre capabilities, including heavy armoured formations, would not be a dominant feature of future conflict. In the previous two decades, the perception of a limited need for heavy land warfare capabilities elevated the role of smaller, lighter forces to accompany and assist operations mostly conducted from the air. Moreover, the increased adoption of precision-guided weapons in modern warfare and the focus of European land forces on stabilisation operations seemingly further reduced the relevance of large land formations. In the past twenty years, within the context of contributions to operations in the Balkans, Iraq, Afghanistan and crisis management in Africa, many European land forces were optimised for counter-insurgency and stabilisation operations at the expense of preparation for potential conflicts with major adversaries. Doing so, they also neglected an eternal principle of strategy, namely that the ability to conquer, hold, or defend territory on land has remained fundamental to conflict throughout the ages.

Russia’s illegal annexation of Crimea in March 2014, and its subsequent military activity in Ukraine’s east, should have been a wake-up call for European countries to prepare their own land forces for major military conflict in Europe. NATO formulated ambitions to refocus land forces on potential future land battles in Europe in the face of a resurgent Russia. Many European armies also drew up plans to build up, equip and train their forces for major land operations after decades of downsizing capability. Alas, in most cases, these ambitions failed to translate into real capabilities. In many Western European NATO countries, the threat of a full-scale Russian invasion of a European neighbour or even an allied country still seemed remote. Despite the ‘Crimea shock’ of 2014, they continued to consider ‘wars of attrition with large-scale artillery battles a thing of the past’. Before Russia launched its full-scale invasion of Ukraine, this meant that they also fell short in other areas important for high-intensity war, such as not meeting the Alliance’s weapons stockpiling targets. Moreover, defence spending in many European NATO nations remained modest and modernisation efforts in nations often prioritised the air or maritime domains.

Most European NATO forces were therefore confronted with the reality of serious manpower, equipment and munition shortages. It became clear, for instance, that many allies would run out of munitions in days, not weeks, if they were engaged in a fight with Russian forces at the level of intensity observed in Ukraine. They further suffered from low readiness levels and an inability to deploy significant and sustainable mass in a very short time period. The Chief of the German Army Lieutenant General Alfons Mais stated shortly after Russia’s attack that his forces were ‘more or less bare’. He further remarked that ‘[w]e all saw it coming and were not able to get through with our arguments, to draw conclusions from the Crimean annexation and implement them’. Germany, however, was far from alone with this problem.

Since then, the ambition of NATO to reconstitute land forces to deter and, if necessary, defeat Russian aggression has only grown. NATO Secretary-General Jens Stoltenberg stated that the Alliance would defend ‘every inch’ of NATO territory in response to any Russian aggression. Many European members declared, once again, that deterrence and territorial defence against external threats, specifically Russia, were their top priorities. NATO’s Enhanced Forward Presence (eFP) has been expanded from four multinational battlegroups in Estonia, Latvia, Lithuania and Poland to eight – with new battlegroups in Bulgaria, Hungary, Romania and Slovakia. Canada, France, Germany and the United Kingdom also indicated that they would pre-assign forces to reinforce their existing eFP battlegroups.
Moreover, at NATO’s June 2022 Madrid Summit, allies agreed on a new Strategic Concept that not only identified Russia as ‘the most significant and direct threat to allies’ security’, but also provided a mandate for improving NATO’s deterrence and defence posture. This included a ‘substantial and persistent presence’ on land; forward defence; combat-ready forces; enhanced command and control (C2) arrangements; prepositioned ammunition and equipment; and ‘improved capacity and infrastructure to rapidly reinforce any ally, including at short or no notice’. Moreover, allies agreed on the development of a new NATO Force Model (NFM) to replace the old NATO Response Force (NRF), with the aim of providing a ‘larger pool of high readiness forces across all military domains’, including on land. This highly ambitious model foresees the deployment of ‘well over’ 100,000 forces (Tier 1 Forces) within ten days; ‘around’ 200,000 troops (Tier 2 Forces) within 10–30 days; and ‘at least’ 500,000 troops (Tier 3 Forces) within 30–180 days (see Figure 1). The transition to the NFM is planned to be completed by 2023. That said, details of the composition and scale and commitment of forces are still being discussed, and the required proportion of land forces is not specified.

Many NATO members pledged significant increases in defence funding, including Germany where Chancellor Olaf Scholz declared a ‘Zeitenwende’ (turning point) in the nation’s foreign and security policy. Berlin also provided a €100 billion special fund to modernise the armed forces, the Bundeswehr, and promised further increases in defence spending. Finland and (prospectively) Sweden joining the Alliance also offers additional opportunity for NATO to strengthen its collective military capability against Russian aggression, including in the land domain.

However, the critical question is whether European NATO allies are serious this time – as opposed to post-Crimea in 2014 – about developing more capable and integrated land forces. After all, the NRF, the accompanying NATO Readiness Initiative (NRI) and other Alliance defence plans post-2014 all seemed to succeed on paper, but it is now much less clear whether, despite an increase in NATO exercises, those forces were indeed available and sufficiently equipped to deploy and be employed in a real-world conflict against a serious adversary such as Russia.

The stakes for NATO are now even higher than post-2014 in the face of a full-scale war of attrition in Ukraine and the high likelihood of a long-term conflictual relationship with Russia. While European states might continue to deploy land forces on a variety of international missions outside the continent (such as UN peacekeeping or EU- and NATO-led crisis-management operations), the focus of activities

Figure 1: NATO’s New Force Model

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<thead>
<tr>
<th>Tier 1 Forces</th>
<th>Up to 10 Days</th>
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<td>Well over 100,000</td>
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<table>
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<tr>
<th>Tier 2 Forces</th>
<th>Around 10-30 Days</th>
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<tr>
<td>Around 200,000</td>
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<table>
<thead>
<tr>
<th>Tier 3 Forces</th>
<th>Up to 30-180 Days</th>
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<tr>
<td>At least 500,000</td>
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Source: adapted from NATO, www.nato.int
for most NATO countries must be to implement the NFM, including by building credible land forces. This will be essential since in the future, the majority of any NATO land forces allocated to defend Europe – and to meet the NFM requirements – must be European. While United States (and Canadian) land forces will continue to play an important role in the defence of the Euro-Atlantic area against mutual threats, European NATO allies should no longer expect them to assume the majority of the burden. In particular, US forces are increasingly focused on the ‘pacing challenge’ China poses to Washington’s interests in the Indo-Pacific. While the impact on the US Army’s heavy manoeuvre forces is probably relatively limited, a more significant problem would be securing the transport, logistical and force elements to lift and sustain a significant US heavy land force to US European Command (EUCOM) if there was a competing demand from US Indo-Pacific Command (INDOPACOM). The US expects that Europe should supply at least half of the modern forces needed to defend the Euro-Atlantic area.\textsuperscript{9}

US land forces are not expected to disengage entirely from the European theatre. Indeed, since Russia’s attack on Ukraine, the US has ‘added a Corps Headquarters, Division Headquarters, Infantry Brigade Combat Team (IBCT), Armored Brigade Combat Team (ABCT), High Mobility Artillery Rocket System (HIMARS) battalion, and multiple enablers’ to the existing US Army forces deployed in Europe.\textsuperscript{10} That said, the overall US force posture in Europe is unlikely to increase significantly, and any future US government will naturally expect European forces to play the leading role in defending their own territory against external attack, particularly in the initial phase of the conflict. This is also because deploying additional US land forces across the Atlantic will take time that might not be available, especially if strategic warning time was significantly reduced. In addition, given Russia’s atrocities against civilians in Ukraine and the apparent Russian disregard for the laws of armed conflict, the willingness of eastern flank NATO members to trade space for time is now even lower than it was before. The bulk of land forces for the NFM must therefore come from European allies.

**US Land Forces in Europe**

The US Army’s permanent and rotational deployments to Europe include HQ V Corps, two divisional HQs, two armoured brigades, a Stryker brigade, an airborne brigade, an air assault brigade and two understrength combat aviation brigades. Combat support includes a rocket-artillery brigade, two military intelligence brigades, an air-defence brigade and an artillery group that includes a multi-domain task force. V Corps is the most modern formation in Europe, with the highest level of collective training. It could act as a US national corps or the framework for a multinational corps. US Marines are also committed to deployments in Norway. These deployments link the NATO land component to wider US deterrence, a powerful political signal, as is the assignment of the Commanding General US Army Europe and Africa to command NATO Land Command.

**Aims and Scope**

Against this background, this paper provides an analysis of the emerging plans and capability development in key European militaries regarding their respective land forces. Its aim is to identify strengths and shortfalls in European land-warfare capability development with a view to determine the implications for the NFM. It does so by addressing several key questions based on the available open-source information:

- What are the requirements for European land forces to fight and sustain a large-scale war in Europe? What are the main emerging lessons from the war in Ukraine in this context?
- What are the requirements to operationalise the NFM in the land domain, including at the level of command and control?
- What are currently the major strengths and limitations of European land forces in key areas of land warfare, including critical enablers?
- What current plans for land-force capability development exist in European land forces and how aligned are they with the NFM?
- What are the implications for NATO’s ability to implement the NFM objectives and European allies’ capacity to conduct large-scale land warfare in the future?
While the focus of this paper is the ability of European land forces to defend Europe against a large-scale attack, it is beyond the scope to analyse all European land forces. Instead, the focus is placed on those allies that would most likely be directly affected by a contingency on NATO’s northern and eastern flanks: the Baltic nations, the Czech Republic, Denmark, Finland, France, Germany, Hungary, the Netherlands, Norway, Poland, Slovakia, Sweden, the UK and the US (US Army Europe and Africa, USAREUR–AF). Importantly, the paper also recognises that Europe’s future land forces will operate as part of multi-domain forces.

To begin, the first chapter sets out the strategic context. This includes the current and future threat posed by Russian forces to NATO territory, the different phases of battle, and an assessment of the capabilities required to implement the NFM. This is followed by an overview of current NATO land forces’ capabilities, with a focus on the countries identified above. Chapter two analyses the national capabilities and future plans for the land forces of these actors: what do their current plans suggest in terms of future goals? How likely are they to meet their targets and what are the shortfalls to address, including political issues? Importantly, the paper moves beyond military hardware to include other critical enablers such as C2, logistics, and personnel. Moreover, it also deals with some political-strategic issues such as whether national land forces are actually assigning force packages to the NFM.

The third chapter deals with the specific implications for the German Army. Much has been written, in the context of the proclaimed Zeitenwende and Germany’s position as the largest and economically most powerful Central European nation, and about the potential for Germany to provide the future backbone of conventional deterrence and war-fighting capability among NATO’s European member states, particularly in the land domain. In this context, Scholz suggested publicly and boldly in May 2022, that Germany would soon possess the largest conventional armed forces among NATO’s European members, which would ‘significantly strengthen’ German and allied security. In September 2022, this unrealistic goal was modified when Scholz stated that the Bundeswehr had to become the ‘pillar’ of Europe’s conventional defence and the best equipped force in Europe – still a rather tall order. Germany’s first National Security Strategy, published in June 2023, stated the objective for the Bundeswehr to become ‘a cornerstone’ of conventional defence in Europe and further downscaled the ambition somewhat: now the armed forces would be turned into ‘one of the most effective conventional armed forces in Europe’. That said, Germany was the first country to publicly outline its offer to the NFM. By 2025, Berlin aims to provide 30,000 troops, 65 aircraft and 20 naval vessels, all able to deploy within the designated 30 days. The land component of this is described as 1,500 troops already deployed as part of its eFP, and 22,000 reinforcing army personnel encompassing a division of two brigades, in turn comprising 40 battalion-sized units of which 25 would be combat units. The German Army has also formulated the objective to stand up three fully equipped and deployable divisions by 2032 at the latest. This paper provides an assessment of these plans and the prospects of overcoming some of the main challenges of implementing the military dimension of the Zeitenwende a year on.

The final section summarises the findings and discusses the main conclusions for NATO’s ability to develop credible land forces that can engage in and sustain major land battles in Europe against a determined state adversary. Published shortly before NATO’s important summit in Vilnius in July 2023, it provides observations and recommendations for the Alliance in regard to future allied land forces. The paper ends with some reflections on the defence-industrial and funding dimensions, which will also be significant for determining the success of European aspirations to develop a land-warfare capability suitable for high-intensity war.
1. Strategic Context

This section assesses the strategic context within which the European land forces under consideration will likely operate in the future, a context which should influence factors including force planning, training and equipment. It first discusses some emerging land-capability lessons from the war in Ukraine, before outlining assumptions about the likely future threat posed by Russian forces to NATO territory and forces. This is followed by an assessment of the implications for European land forces, including a ‘Three Battles’ conceptual framework.

1.1 Lessons from Russia’s War in Ukraine

To date, the war in Ukraine has demonstrated key features of modern high-intensity land war, though it has also demonstrated features familiar from earlier wars. Moscow’s attack was based on inadequate intelligence and excessive optimism. Poor execution by underperforming Russian forces hampered by a military system eroded by corruption, when combined with external support to Ukraine, has entangled Moscow in an unexpectedly extended campaign. At the same time, Ukrainian forces displayed advantages in motivation, leadership and tactical skill when compared to Russian forces. They were also able to make use of their knowledge of terrain; for instance, the Russian advance on Kyiv was significantly frustrated by targeted flooding of key areas by Ukrainian forces. This reinforces the value of investing in personnel and in realistic training, without which investments in equipment can be wasted.

The war has also shown how important it is for land forces to be able to adapt. For example, Ukraine rapidly incorporated foreign weapons and technology, such as the US M142 HIMARS precision rocket artillery, and further developed its capability to use small commercial uninhabited aerial vehicles (UAVs). The war suggests that UAVs are now an essential component of the modern combined-arms team, right down to company level. But adaptation works both ways, and has also been demonstrated by Russian forces, with their integration of foreign weapons in the form of Iranian UAVs and direct-attack munitions.

Moscow’s shortage of intelligence, surveillance and reconnaissance systems has hampered its campaign, while Kyiv has benefitted from intelligence supplied by the United States (including private companies), the United Kingdom and other nations. Moreover, Ukraine successfully used signals intelligence (SIGINT) to target Russian command and control with artillery. On the other side, Russia made extensive use of SIGINT and electronic warfare (EW) capabilities – at times greatly disrupting Ukrainian command and control and the radio links to its UAVs. This demonstrates the need for land formations to systematically integrate and employ SIGINT and EW capabilities.

In addition, both sides have made extensive use of indirect fire, mortars, guns, and rocket launchers. Concentrated indirect fire inflicted heavy casualties on both sides, not just to personnel but also to light-armoured vehicles. This situation resulted in both sides having to operate while ‘dispersed’, though still looking to generate mass effects when necessary, for instance by making use of improved communications and situational awareness; Ukrainian artillery operations being a good case in point.

Russian difficulties in crossing rivers have highlighted the crucial roles of military bridging capabilities and combat engineering more generally. For instance, Ukrainian armed forces utilised mine warfare as part of their defensive operations to great effect. Some observers have assessed that Russia has likely lost more armoured fighting vehicles (AFVs) to mines than direct or indirect fire systems. In regard to military bridging, the UK’s Chief of the General Staff, General Sir Patrick Sanders, observed that ‘you can’t cyber your way across a river’.

Ukraine’s armed forces also created a layered air-defence system that has deterred Russian manned aircraft from operating much beyond the front line.
The high density of Russian air defences has, however, similarly limited Ukrainian manned aircraft. This illustrates the importance of ground-based air defences in not only defending static military and civilian sites, but also in enabling ground forces to deploy and manoeuvre.

Other lessons regarding land forces are hardly novel. The Ukraine war has reinforced the importance of conventional land forces, especially infantry, tanks and armoured vehicles, artillery and combat engineers. Both sides have made extensive use of armoured formations for offensive operations. They have expended a significant quantity of ammunition and have lost large numbers of personnel. It is a stark reminder of how costly a high-intensity conflict can be, in personnel and materiel terms. Furthermore, achieving mass at decisive points has depended on both sides being able to move forces, concentrate them and sustain their key supplies of fuel, ammunition and spare parts. The requirement for large-scale stockpiles has been amply demonstrated by high usage rates of artillery ammunition and heavy attrition of armoured vehicles. Similarly, both sides have made heavy use of guided missiles and precision artillery. As such, any future land campaign relying on precision weapons would thus need to complement very expensive guided munitions with cheaper unguided systems. Generally, the war demonstrates the importance of adequate national stockpiles.

1.2 The Current and Future Russian Military Threat

Russian land forces have suffered considerable attrition in Ukraine. Any initial numerical and qualitative superiority was squandered by poor planning, command and control problems, and inadequate logistics. Weaknesses in some, but not all, Russian land equipment were exposed. So far, Russia’s air force and navy have suffered less attrition, although they have expended a considerable amount of their conventional, long-range land-attack missile arsenal, reducing their offensive capabilities, at least in the short-term. Nevertheless, they pose a greater short-term threat to NATO than Russian land forces.20 In 2023, a conventional land attack by Russia on a NATO state is unlikely. Still, while the chance of a miscalculation resulting in a Russia–NATO war is low, this cannot be ruled out.

The full extent of Russia’s future land warfare threat to Europe and the speed at which it will develop is difficult to predict. The duration and outcome of the Ukraine war will surely have an impact. A comprehensive Russian victory would likely remove the possibility of future fighting in Ukraine. A defeat, on the other hand, may make a future Russian challenge there less likely, or it may simply defer it, depending on the speed of Russian reconstitution and Moscow’s political-military ambitions. Nonetheless, any defeat there could lead to the redeployment of surviving Russian land forces from Ukraine to areas from which they could threaten the territory of NATO member states. However, even if the war ends quickly, rebuilding Russia’s land equipment and ammunition levels to pre-war holdings would require the full offtake of its defence industry for some years. Rebuilding numbers of trained personnel and conducting sufficient training to restore combat readiness would also take considerable time.21 Key ‘known unknowns’ include the extent to which Russia might draw on its partners, such as Iran and China, both for supplies during the war and post-war rearmament. If fighting in Ukraine continues, however, Russian land forces will suffer further attrition. In addition, any ceasefire, stalemate or ‘frozen conflict’ situation in which Ukraine maintains the ability to generate significant ground combat power and leaves Russia in de facto possession of any occupied territory is likely to force Moscow to retain the majority of its remaining ground forces in theatre, or risk defeat in any subsequent resumption of hostilities.
Regardless of how the war in Ukraine ends, under the current regime in Moscow, Russia will remain hostile towards Europe and NATO. In the short term, Russia’s land capabilities would likely be able to achieve only a limited incursion into NATO territory, though the potential for this will still concern smaller allies bordering Russia. In the long run, however, Russia’s capabilities for a land attack will certainly increase. Russia will also continue to sustain and develop its nuclear capability. In the short term, Russia’s capabilities to conduct proxy and hybrid warfare, cyber and grey-zone challenges are likely to concentrate on directly supporting its objectives in Ukraine. Should the conflict escalate or end, Russia may use these means to pose wider long-term strategic threats to Europe.

1.3 Implications for European Land Forces

Conceptually, the role of NATO’s European land forces in deterring and defending against potential Russian aggression can be seen through a ‘Three Battles’ framework:

- **Battle Zero**: This encompasses deterrence in peace and responses to any proxy, hybrid or grey-zone Russian threats that fall short of triggering NATO’s Article 5. Forward deployed forces in NATO frontline states contribute to this, as do reinforcing forces, particularly when this capability is regularly demonstrated. Countering such threats may often be led by other government ministries and agencies, but armed forces will have an important supporting role.

- **Battle One**: This is the initial response to any armed attack on NATO territory. National forces of the NATO frontline states that are attacked will play an important role, as will NATO forces forward deployed in peacetime and reinforcements that can rapidly arrive. NATO land forces’ aim will be to limit territory ceded and prevent allied states from being fully occupied by Russian forces. Battle One might last for between 10 and 30 days.

- **Battle Two**: Following any successful land grab by Russian forces, NATO would have to mount a counter-offensive to recover lost territory. The longer it takes for NATO to start its counter-offensive, the better prepared Russian defences are likely to be.

- **Battle Three**: If Battle Two failed to eject Russian forces, a large-scale strategic counter-offensive would need to be launched. A Russian nuclear threat may be present from the outset of a war but would be particularly acute in Battle Two where a NATO counter-offensive would be likely to trigger Russian threats of the use of nuclear weapons to ‘escalate to de-escalate’.

Arguably, for NATO the primary rationale would be to develop a demonstrable and credible capability to fight and win Battle One since this might offer the best chance of deterring Russia from undertaking military action against the Alliance in the first place, thus minimising the threat faced. This means also having enough forces and movement capacity, as well as political will and commitment to act at the Battle Zero stage in order to deter a Battle One scenario. Of note, the risk of nuclear escalation is potentially present at all stages. Below is a simple NATO preference chart with Battle Three being the least desirable outcome.

From the outset of Battle One, NATO land forces would require strong offensive capabilities, both to deliver counter-attacks and to rapidly recapture any territory gained by Russia. This is reinforced by the utility of offensive operations on land by both sides in the Ukraine war. These capabilities are also required in forces that would join Battles Two and Three.

As mentioned, after February 2022 NATO’s Enhanced Forward Presence (eFP) in frontline states expanded. These pre-assigned forces are up to brigade-level strength. Germany, the UK and the
US have all practiced the reinforcement of Estonia, Lithuania, and Poland by additional units, but it is unclear if reinforcement of other eFP contingents has been practiced.

In any event, the challenges for European land forces to meet the requirements of ‘forward defence’ at its eastern and northern flanks are significant. Indeed, there is an illuminating comparison between these lessons from the Ukraine war with NATO’s previous plans for forward defence of Central and Northern Europe in the 1980s, when NATO land forces faced many similar challenges to those that NATO would likely face in Battles One and Two. There is a high degree of convergence between the land capabilities which were required for forward defence against potential large-scale Soviet attacks on Denmark, West Germany, and Norway, and those required for deterrence and defence of NATO frontline states today. Lessons from the Cold War and recent fighting in Ukraine suggest that land forces with the greatest combat power are armoured formations with modern heavy armoured vehicles – tanks, infantry fighting vehicles (IFVs), armoured engineer vehicles and self-propelled (SP) artillery. However, these capabilities can be limited by soft ground, are relatively slow to deploy over large distances and impose the highest demand on logistic support – particularly for fuel and spares. That said, contrary to conventional wisdom they can be of high utility in urban terrain.

In addition, medium-weight combined arms forces can be more rapidly deployed over strategic distances than heavy armoured forces, particularly if they include a high proportion of wheeled AFVs. If they have sufficient numbers of anti-armour weapons they can successfully defend against enemy heavy forces, particularly if they can exploit urban areas, wooded terrain or natural and artificial obstacles. Requirements for fuel and spare parts will be lower than those of heavy armoured forces. A good example of such a formation is the US Army Stryker Brigade Combat Team concept, one of which is based in Europe.

Light forces are usually organised around dismounted infantry and unprotected combat support. They are most rapidly deployed by transport aircraft and helicopters. They can have short-range tactical mobility advantages in urban and wooded terrain, but their lack of inherent protection makes them more vulnerable than armoured or mechanised forces – unless they have had time to prepare well-fortified fighting positions. Their logistic footprint is lowest.

Against the emerging lessons of the war in Ukraine, relevant insights of Cold War military planning and exercises, and other research, the assessment here is that the NFM requires NATO to be able to deploy a complementary mix of heavy armoured forces, medium-weight mechanised forces and light forces. These all require organic artillery and engineer capabilities, as well as logistical support. Whilst demand for fuel and spares will reflect the weight of the force, once combat begins, all types of formations are likely to rapidly expend ammunition, including missiles.

It is likely that the Supreme Allied Commander Europe (SACEUR) will recommend the land force packages that are required to best execute NATO’s regional plans. The details will depend upon the plans themselves, relevant terrain and existing national land forces already present in the region. Light forces will have great value in holding complex and difficult terrain. Medium weight mechanised forces have more firepower and protection, and the ability to rapidly deploy at range along roads. Heavy forces are slowest to deploy and are most expensive, both financially and
in terms of logistic support. They do have, however, the highest levels of firepower and inherent protection, giving them the greatest capability to defeat other heavy forces and to conduct counter-attacks.

The IISS therefore assesses that the blend of light, medium and heavy forces required for the NFM is probably best structured as at least one third heavy and at least one third medium, with the remainder being light forces. Of these, the heavy and medium elements are of higher priority than light forces.

NATO land forces also require protection by organic ground-based air defence, sufficient to allow them to move and manoeuvre against the anticipated air, missile and UAV threat. They will also need organic intelligence, surveillance and reconnaissance (ISR) capabilities, including manned ground reconnaissance, UAVs and signals intelligence. EW is an essential capability at formation level.

Finally, European land formations will require integral battlefield helicopters for a wide range of combat and logistic roles, including casualty evacuation. Whilst attack helicopters will continue to have great utility as part of the combined-arms team, deep strikes into the midst of dense enemy air-defence networks may well be very difficult.
2. Current Capabilities and Future Plans

Of the 16 countries under consideration, so far only Germany has made accountable public statements on its NFM force assignments and the timeline by which the assigned forces will be ready in-place. It is a reasonable assumption that classified discussions are underway between NATO Headquarters and other member states, not least because similar discussions on force assignments already take place as part of the NATO Defence Planning Process. Nonetheless, a key problem for higher-level NATO formations, such as NATO’s Multinational Corps Northeast (MNC-NE), is that it is difficult to finalise plans without confirmation of the forces assigned by nations. Furthermore, these plans (and perhaps also national force assignments) will have to adjust in tandem with assessments of Russia’s progress in reconstituting its military power. More broadly, analysis of whether these states will likely be able to meet NFM commitments is problematic without evidence of these commitments. Nonetheless, these questions can be explored by looking at the capabilities significant for any future land warfare in Europe, including armoured vehicles, engineering, artillery, ground-based air defence, mass and sustainability, and modernisation plans for ground forces.

2.1 Modernisation and Capability Generation: Evolution Since 2014

In the aftermath of Russia’s invasion of Crimea in 2014, many European armed forces continued their focus on crisis-management missions or on out-of-area operations, though a number of the countries in this paper reassessed existing modernisation plans and looked at tackling perceived deficiencies. At the same time, four new battlegroups were agreed under the NATO eFP which, from 2017, saw NATO member states deploy forces to the Baltic states and Poland. As a result, a greater focus by the Alliance and its member states was given to force integration. This was especially visible on an organisational level with the introduction of NATO Force Integration Units (NFIUs), and by some member states – such as France, Germany, the United Kingdom and the United States – earmarking forces to meet the obligations of these battlegroups’ framework on a national routine basis. Following Russia’s further invasion of Ukraine in February 2022, a further four battlegroups were established.

From 2014 onwards, most armies in these European countries reduced their headcount (in many cases continuing the trajectory seen since the end of the Cold War) and made organisational changes, either independently or in partnership with others. However, since 2022, there has been a visible acceleration in procurements and transformation projects, as countries look to build capability more urgently. There is also greater awareness of the risk that some nations have taken as they have looked either to modernise their forces or to seek efficiencies in areas like logistics.

2.2 Change Since 2022

Readiness is being reappraised. For NATO, this is particularly important as the Alliance moves to a force generation model where there are assigned and dedicated forces at tiered readiness states. In turn, this will place additional focus on NATO’s and member states’ evaluation processes, designed to measure combat readiness, and whether these require modification.

Some states had explicitly focused on readiness just after 2014, with concern also regarding decreasing force size. In 2014, Latvia announced an increase in readiness of National Guard units and Lithuania increased readiness in its Rapid Reaction Force. Finland’s 2017 Government’s Defence Report called for higher readiness in light of a deteriorating security environment. France, for its part, saw readiness suffer due to continuous operations in Africa and also domestic Operation Sentinelle tasks.

From 2022, additional measures are evident. The Zeitenwende marked by Germany’s Chancellor Olaf Scholz for instance, and redoubled commitments under Minister of Defence Boris Pistorius, may help Germany’s Bundeswehr finally tackle longstanding
Force Mobility and Equipment Readiness.

Force mobility, of personnel and equipment, is essential to readiness. Armed forces need to move in a range of situations including in the absence of a crisis, when governments discern that a threshold for deployment has been reached or that a crisis is brewing, and also once hostilities have broken out.

Reinforcement during crisis or war is not easy, not least because of adversaries’ area-denial and air-defence capabilities. There is a risk that civil as well as military logistics hubs will be targeted both in peacetime and in war. Mobility is complicated before and during conflict because of pressure from other forces, and the civil sector, on road and rail routes as well as on air and sea transport. Placing additional military equipment and personnel in continental Europe or close-to potential front lines could be one way of easing these challenges. However, forces in-place risk being in the wrong location, of becoming targets, and also creating additional challenges for the deploying and host states including stresses on force structure, on infrastructure, and on maintenance and funding.

Moves to improve military mobility in Europe have accelerated after February 2022 – one example is the EU’s latest ‘Action Plan on Military Mobility’. Of course, much depends on governments and armed forces triggering the movement of forces and equipment so that these are in place, and in time, for any contingency. Much depends also on forces and equipment being ready to move and being mission-capable.

In 2023 an illustration emerged of such challenges during reporting from US defence officials on equipment drawdowns from the army prepositioned stocks (APS)-2 equipment set in Germany. APS-2 has four sites, one in Belgium, two in Germany and one in the Netherlands. In March 2022, US troops including from the 1st Armored Brigade Combat Team, 3rd Infantry Division deployed to Europe, with the unit drawing equipment from APS-2 sites at Mannheim and Dulmen in Germany. Although troops were ‘on the ground in Germany starting live-fire exercises with tanks drawn from APS in Europe’, with this having taken ‘less than one week after receiving deployment orders’, the equipment issue was not without some challenges. In a review published in February 2023, the Department of Defense’s Inspector General noted that some vehicles were not fully mission capable. It is unclear from this source how much equipment was employed in these live-fire exercises.

Equipment movements took place from storage to the US Army Base in Grafenwöhr, Bavaria. According to the Inspector General’s report, the Army Field Support Battalion (AFSBn)-Mannheim commander estimated that the APS-2 issuance needed 75 days, although Army Materiel Command leaders expected ‘issuance to be complete within 45 days of official authorization’. The commander in Mannheim said the APS equipment was ultimately delivered to the 1st Armored Brigade Combat Team (ABCT) ‘26 days after receiving the official authorization for its release’.

However, some of the procedures applied to the equipment did not meet Army maintenance standards. Indeed, the report found that ‘the 405 AFSB could not exercise APS equipment during storage, as required in TM 38470 and in equipment technical manuals, because their facilities do not have exercise tracks’. The issue of equipment that was not mission capable ‘presented maintenance and readiness challenges, lowering the 1 ABCT’s overall mission-capability rates for combat and tactical vehicles’.

No armed force is without readiness challenges. Some will likely be similar to those referenced in the US report and some may be worse. That the document contains a number of recommended improvements and, indeed, that it is in the public domain, reflects accountability. More generally, it indicates also that armed forces need to focus on the storage and maintenance of equipment as well as on other factors including their ability to move it (which includes civil as well as military capacities), in order to improve combat readiness.
seen as important for the NFM’s Tier 3 forces. There had been moves in this direction after 2014, but they generally remained modest. Active force levels remain relatively low. In 2014, Latvia announced an increase in the size of its armed forces and in early 2015 neighbouring Lithuania reintroduced conscription. In 2015, Norway opened conscription to women as well as men, Sweden reintroduced conscription in 2017, and in 2022, Latvia reintroduced National Defence Service in order to build both overall force size and the size of the reserve. Poland has also seen significant change. Warsaw is increasing its personnel component in order to staff its new division formations and established a Territorial Defence Force in 2017 (with an aim of reaching 50,000 personnel). In 2022, Poland developed a new one-year salaried personnel model to help bolster personnel numbers and, arguably,

Figure 3: Active personnel numbers, 2014 and 2023

*Cited land forces and ground forces. Does not include joint forces or other formations including cyber.

Source: Military Balance+
act as a feeder for regular recruitment while also developing a broader reserve (see Figure 3).

**Munitions stockpiles.** The duration of the war in Ukraine, and the volume of ammunition expended, has sharpened attention on stockpiles of munitions, production capacity and logistics. Nations have scrutinised their own capacities and given new orders to industry, while both the EU and NATO have produced initiatives designed to increase supply. Stockpile shortages are nothing new. In the 2011 campaign in Libya, allies ran low on stockpiles of precision-guided munitions, leading to initiatives on munitions procurement that were agreed at NATO’s Wales Summit in 2014. The focus is now broader, including stocks and production capacity for munitions including artillery shells and anti-armour weapons. NATO Armaments Directors met in late 2022 to discuss ways of boosting production, while the EU’s Act in Support of Ammunition Production (ASAP) in early May 2023 introduced measures such as financing to increase production and stockpiles. While a number of countries have produced internal reports critical of their respective situations, the volume of munitions expended would arguably challenge any existing interoperability mechanism. Furthermore, aside from incentivising companies to widen their production, it will also be important for nations to reconsider their understanding of what constitutes a sufficient stockpile. As significant volumes of munitions continue to be transferred to Ukraine, there is ever-rising awareness of risk if stockpiles are not replaced at the same rate.

### 2.3 Inventory Modernisation

There are similar concerns over potential capability gaps in countries that are transferring Soviet-era equipment to Ukraine, even if this may provide them with an opportunity to accelerate inventory modernisation. The European Peace Facility, an EU instrument, will contribute reimbursement to states for equipment supplied to Ukraine, while there is also support from partners, such as German bilateral support to select donor states. For instance, in 2022 the Czech Republic began to receive Leopard 2A4 main battle tanks (MBTs) and BPz-3 Büffel armoured recovery vehicles as replacements for T-72 MBTs delivered to Ukraine (an industry order to replace BMP-2s with CV90s is currently under negotiation). Slovakia is also receiving Leopard 2A4s from Germany as replacements for BMP-1s delivered to Ukraine.

The 2022 Russian invasion has highlighted the importance of artillery, including precision-guided rocket artillery. In order to hasten their increase in capability, some countries have sought new suppliers and adopted new procurement strategies. For instance, Denmark in early 2023 decided to replace the CAESAR systems it donated to Ukraine by splitting the procurement between multiple rocket launchers (MRL) and self-propelled (SP) artillery. Copenhagen selected the Israeli PULS MRL and ATMOS truck-mounted artillery pieces, similar to Poland, which decided to split its intended procurement of US-origin M1 Abrams MBTs and M142 HIMARS MRLs with the South Korean K2 MBT and K239 Chunmoo MRL respectively. Estonia has ordered HIMARS in small numbers while Latvia and Lithuania also intend to acquire HIMARS, though at the time of writing they had yet to sign contracts for the system. The Netherlands has ordered PULS and, in February 2023, received US State Department approval for a possible Foreign Military Sale of HIMARS launchers.

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The UK transferred AS90 SP artillery systems to Ukraine and announced that its Mobile Fires Platform (MFP) programme will be accelerated, with deliveries now scheduled around 2027. The Swedish Archer system has been selected as an interim capability until MFP can be brought into service. The UK Ministry of Defence may also buy the US-designed Precision Strike Missile (PrSM) system to improve the army’s deep-strike capability. Other developments include Norway’s order for additional K9 SP artillery pieces from South Korea in 2023, while Lithuania has ordered CAESAR artillery pieces from France. Germany has earmarked a possible procurement of the Boxer-based RCH 155mm wheeled platform to make up three artillery battalions as part of its NFM commitment. Other nations, such as the Czech Republic, Hungary, Latvia and Slovakia, continue to integrate systems ordered prior to 2022 (see Figure 4).

European armies’ out-of-area operations in relatively low air-threat environments led to a de-prioritisation of ground-based air defence (GBAD) capability. For instance, in Norway the retirement of the RBS-70 short-range system in 2004 left the army without an organic GBAD capability, relying instead on the air force’s National Advanced Surface-to-Air Missile System (NASAMS). Some NASAMS were later transferred to the army, but the GBAD capability is now being addressed more formally with a plan to incorporate NASAMS and IRIS-T systems (understood to be NASAMS C2 and IRIS-T missiles) onto a tracked vehicle. In November 2022, Norway signed a contract for Poland’s Piorun man-portable air defence (MANPAD) system, completing a procurement for a lower-tier system that began in late 2021.35

The Military Balance+ indicates that only four states in the countries under examination have signed GBAD contracts since February 2022: Latvia with Saab’s RBS-70 NG; Poland with the MBDA CAMM system for its Narew project; and Estonia and Norway contracting for the Piorun MANPAD system from Poland’s MESKO.36 Nonetheless, more projects are underway to address perceived deficiencies in GBAD and missile defence. Germany and Israel are reportedly in talks about the Arrow 3 upper-tier system, part of Germany’s long-running but now accelerated plan to improve its air defence and which may lead to an Arrow 3, Patriot, and IRIS-T SLM architecture.37 Germany is also leading in the pan-European Sky Shield project; in May 2023 Estonia and Latvia selected the German IRIS-T SLM system for medium-tier air defence. In April 2023, Finland announced that it had selected the Israeli David’s Sling system for upper-tier air defence. France is partnering with Italy on a 2021 order for the long-range SAM/T-NG system. The VL/MICA system is also understood to be planned as France’s replacement for the short-range Crotale systems that were delivered to Ukraine, although no order had been placed at time of writing. Earlier, in 2021, the UK announced that it would procure a new SHORAD system to partner with the Starstreak HVM and Sky Sabre (CAMM-ER) systems.

Change is also underway in manoeuvre formations (see Figures 5 and 6). In many cases, transformation plans precede 2022 and the NFM agreement,
Selected Capability Assessments of European Land Forces in the Context of the New NATO Force Model

Combat Capabilities and Force Readiness: On paper, Europe has no shortage of land brigades and divisions. It has a range of heavy, medium and light forces, including air manoeuvre and amphibious units. It also has much modern land equipment. For example, NATO European armies and Sweden collectively have around 2,000 Leopard 2 tanks, over 800 CV90 infantry fighting vehicles (IFVs) and over 3,000 self-propelled (SP) artillery pieces. An open question is which of these forces can meet the NATO Force Model (NFM) readiness requirements. The Chair of the NATO Military Committee, Admiral Rob Bauer, has described effectiveness as ‘about much more than numbers. You need speed and scale as well as flexibility and a wide range of capabilities’. The IISS assesses that NATO’s European land forces are currently not at sufficient readiness to meet the requirements of the NFM by the end of 2023. Achieving required readiness levels will need ambitious improvements to collective training, equipment availability, and logistic stockpiles.

Interoperability and Collective Training: NATO enhances interoperability by its programme of standardising weapons, ammunition, and logistics as well as tactical procedures. This integration is a ‘force multiplier’, as demonstrated by the ability of national forward observers to control artillery, helicopter and air strikes from a wide variety of NATO forces across Afghanistan. However, large-scale high-intensity combat operations require a much higher level of interoperability. Given the considerable US Army investment in digitisation, C2 interoperability with US formations will be a demanding benchmark for European formations. This argues for a high level of bilateral training between US and European NATO land forces. Most European land forces appear to have adequate training up to company level. The US Army has a high tempo of higher-level training, featuring demanding brigade exercises. For example, 10 heavy brigades train at the National Training Center each year. It is not clear if this sustained level of combined-arms training is reached by any other European land forces.

Strategic Deployment: Having generated forces to the timelines required by the NFM, NATO must be able to rapidly deploy them where they are needed, both for pre-planned and unforeseen contingencies. In the Cold War, movement of NATO forces into and across Europe was well practiced, including strategic deployments of US reinforcements of up to corps size. This has greatly atrophied. Both NATO and the EU have recognised this as a weakness, which reduces both deterrence and flexibility. The EU PESCO ‘Military Mobility’ project is intended to address this. In addition, Germany’s framework leadership of the NATO Joint Support and Enabling Command should add value. It is not clear, however, whether sufficient progress is being made – and at sufficient speed – to achieve the rapid deployment of reinforcements required by the NFM.

European Stockpiles and Defence Industrial Capacity: Europe contains many globally significant defence manufacturers of land equipment and ammunition. Many European forces, however, depend on US production lines for key munitions, such as the Javelin anti-tank weapon system and guided multiple launch rocket systems (MLRS). Furthermore, many European manufactured munitions are produced in single facilities, such as the Saab NLAW missile assembled in Belfast. Perhaps understandably, the size of European nations’ stockpiles of ammunition, missiles and spare parts is subject to operational security measures. Available evidence points to European land forces having insufficient stockpiles of combat supplies. For example, despite having a heavy mechanised division, the British Army appears not to have sufficient stockpiles to sustain more than three battlegroups in combat. Both COVID-19 and the Ukraine war have suggested limitations in NATO states’ industrial capabilities to surge production of weapons and ammunition. Rebuilding stockpiles to levels required for high-intensity conflict will take years.

Artillery Capability: The Ukraine war shows that concentrated artillery fire can cause considerable attrition to personnel, weapons and armoured vehicles. Before the war Russian brigades had at least twice as much organic artillery as most NATO brigades. NATO artillery is often outranged by Russian systems. This overhang of artillery can be partially countered by camouflage, concealment, and dispersion, but the battles in the Donbas have shown that, where there is no alternative to positional defence, NATO forces would suffer heavy casualties from Russian artillery. Precision guidance can be incorporated in mortar bombs, artillery shells and rockets. This has considerable utility in attacking enemy artillery and a wide variety of other static targets – as demonstrated by the successful Ukrainian use of guided MLRS rockets. This suggests that precision artillery is a potential NATO asymmetric advantage. European forces, however, do not currently have a sufficient stockpile of precision artillery munitions.

Ground Based Air Defence and Missile Defence Capability: The Russian Army has organic air-defence capabilities at every level of command from battalion
Figure 5: Selected equipment capabilities, 2014 and 2023

Main battle tanks

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Armoured reconnaissance vehicles

Self-propelled artillery

Note: these charts contain IISS assessments of the relative capability level of certain equipment types, based on a set of technical characteristics. For land domain equipment, these characteristics include the level of protection, main armament, and fire control and optics. Platform types assessed in this fashion are described as having either an 'obsolete', 'obsolescent', 'ageing', 'modern' or 'advanced' level of capability when compared with other designs within the same category of equipment. This should not be taken as an assessment of the physical age or remaining service life of a given platform or whether it can actually be employed in military operations.

Source: IISS Military Balance+
to corps and above. Some modern Russian systems, such as the S-400 (RS-5A-21 Growler), pose challenges to NATO air power, as does the high density of different systems that Russia can deploy. In comparison, there are much less modern air defences available to NATO land forces. Against a large-scale Russian attack, the limited amount of available long-range air and missile-defence capability would be just sufficient to cover NATO front-line air bases. Land forces moving forward would require air- and missile-defence capabilities to protect their routes and deployment areas.

The current shortfall of this capability means that land forces’ assembly areas will have to be located at some distance from the combat zone. The Ukraine war has demonstrated the requirement to protect cities and critical national infrastructure from missile and air attack. The war also demonstrated the need to counter a wide range of uninhabited aerial vehicles (UAVs) capabilities, from commercial drones to theatre level UAVs and loitering munitions fielded by Russia. Some NATO armies are fielding such systems, but it is not clear if European land forces have sufficient close air defence to protect themselves from this threat. NATO air power is a potential asymmetric advantage against Russia. This advantage will increase as the F-35 Lightning II is fielded in greater numbers by European air forces. But weaknesses in NATO air defences mean that early in a war with Russia, the NATO air component will have to make a major contribution to Alliance air defence, reducing its ability to support the land battle.

Military Engineering Capability: The Ukraine war has seen both sides create and breach military obstacles including minefields and anti-tank ditches. Both sides have exploited rivers as defensive barriers and used military bridges to cross them. Combat-engineer capabilities have been essential to this. IISS data indicates that European land forces have insufficient military bridges and ferries. Maintenance of tempo in armoured manoeuvre warfare depends on armoured engineer vehicles and bridge layers. IISS data suggests that the only NATO land forces with an adequate ratio of armoured engineers to armoured vehicles are those of the UK and US.

Intelligence, Surveillance and Reconnaissance (ISR) Capability: Whilst the UK’s participation in the Five Eyes intelligence partnership is a potential force multiplier, Europe appears to have insufficient ISR capabilities to support a large-scale land component, especially medium and heavy ISR and signals intelligence aircraft.

Electronic Warfare (EW) Capability: Russia has a substantial array of EW systems, used to great effect in Ukraine since 2014. By mid-2022, Ukraine found Russian EW very difficult to counter. It is unclear if any European land force has sufficient organic EW capability to achieve overmatch in the electro-magnetic spectrum.

notwithstanding subsequent adjustments, with an apparent trend towards not only heavy-armour recapitalisation, but also the generation of medium wheeled armour capabilities and higher-readiness formations. There are several plans to modernise heavy armour and tracked infantry fighting vehicles (IFVs) and armoured personnel carriers (APCs). There has, however, already been a trend over the past decade for the introduction of wheeled armour, both artillery pieces and also IFVs and APCs, reflecting a move to generate mobile mechanised medium-weight formations. Variants of the Patria 6x6 and Boxer are seen, as are national systems such as the Centauro II, the Freccia in Italy, and the Jaguar and Griffin in France.

A number of structural changes are also underway, including in the UK, where the 2015 defence review and the 'Army 2020 Refine' document envisaged the formation of two rapid-reaction Strike Brigades based on the Ajax and mechanised infantry vehicles (MIVs). This was adjusted in the 2021 Defence Command Paper to produce a force of six combined arms brigade combat teams. Special-operations capabilities were boosted with a new Ranger Regiment, while the Specialised Infantry Group was to become an Army Special Operations Brigade. The UK re-entered the Boxer programme and has signed a contract with RBGL (a Rheinmetall-BAE Systems joint venture) to upgrade and modernise 148 MBTs to a new Challenger 3 standard. UK plans may be adjusted again under the forthcoming 2023 Defence Command Paper. For its part, Sweden decided in late 2020 to expand the army with two additional brigades and create a division by 2030, comprising three mechanised and one motorised brigade, and Battlegroup Gotland. Stockholm also plans to have two artillery battalions in the 2030 timeframe along with divisional combat support and combat service support. As part of Poland’s force transformation, Warsaw is developing two new divisions to be based in Central Poland as part of its ‘Model 2035’ plan, in addition to the
Figure 6: Selected combat battalions, 2015 and 2023

Note: Data does not include battalions permanently stationed overseas or those comprising primarily of reserve forces, while some nations do not deploy tanks and MRLs as separate battalion formations.

Source: Military Balance+
 Deploying And Supplying an Armoured Division - Operation Desert Storm 1991

Between December 1990 and February 1991, the 1st UK Armoured Division arrived by sea and air in Saudi Arabia. It then had to move itself and its supplies some 320 km from its arrival points before fighting a battle that took it a further 300km into Iraq and Kuwait. The operation is a useful illustration of the deployment and logistical challenges that may have to be met by a NATO heavy division deploying in an Article 5 scenario.³⁸

During Operation Desert Shield, the US-led coalition operation to defend Saudi Arabia, the UK deployed an armoured brigade to eastern Saudi Arabia to assist US marines. Following the subsequent US decision to deploy additional forces capable of liberating Iraqi-occupied Kuwait, Operation Desert Sword, the UK increased its land component to an armoured division. This consisted of:
- two armoured brigades with a total of three tank regiments³⁹ and three armoured infantry battalions
- an artillery group of a reconnaissance regiment, an MLRS regiment, a regiment of M110 SP artillery pieces, three regiments of M109 SP artillery pieces and an air-defence regiment
- an engineer group of three engineer regiments, two of which were armoured
- an aviation regiment and a support helicopter force
- three light infantry battalions
- a combat service support group including a supply battalion, transport regiment, three maintenance battalions, a medical regiment and two field hospitals

The division had 25,000 troops and about 6,000 vehicles, 800 of which were armoured.

Following arrival by sea and air at the dock and airfields in Al-Jubail, the division moved west to join the VIII US Corps in the ground attack into Iraq. A divisional force maintenance area and assembly area were established 320 km to the northwest of Al-Jubail. It was to hold combat supplies sufficient for the division to advance 300km during its attack and for 21 days of intense combat.³⁹
This required forward deployment of approximately:
- 21,000 tonnes of ammunition
- 590 tonnes of rations
- 5,450 tonnes of materiel and stores
- 1,800,000 litres of fuel.

To move the division, tracked armoured vehicles were carried by tank transporters and civilian low-loaders, with their crews travelling by air in C130 Hercules to a desert airstrip. The remaining vehicles, supplies and personnel travelled by road. This was a single road used for the movement and supplies of the British division and VII US Corps of three armoured divisions. Overcrowding of the route constrained deployment time.

Moving the division and supplies required four transport regiments, with most vehicles making 17 round trips. A round trip took 24 to 36 hours, depending on the density of the traffic. It took three weeks to complete the logistic build-up and two weeks to move the division. There was a week’s overlap between these two activities, so the total deployment took about four weeks. The daily British Army convoy that departed Al-Jubail was 65 km long.

Once the ground war began the division moved another 320 km in combat. The division consumed 10,000 litres of fuel per kilometre and 300,000 litres of water per day. During this ‘100-hour war’, the lower-than-expected level of Iraqi resistance resulted in lower expenditure of tank and infantry ammunition than planned.

Potential Lessons for NATO Land Forces: This example is a useful illustration of the support and deployment of a NATO division. There were no prepositioned supplies to draw upon, nor were any railways or fuel pipelines available. However, there were no air attacks nor special-forces attacks on the deployment. All British armoured fighting vehicles were tracked, so they had no wheeled fighting vehicles that could self-deploy. The division had only two armoured brigades, whilst most NATO divisions have three manoeuvre brigades.

recently formed 18th Mechanized Division based in the country’s east. If fully fielded, these will give Poland six divisions.³⁶ Norway plans – by 2026 – to create a fourth manoeuvre battalion under Brigade Nord, reflective of its greater focus on the Arctic. Oslo earlier created the Finnmark Land Command (with two battalions).

Hungary is looking to generate improved artillery capabilities, with its PzH 2000 artillery battalion understood to be earmarked for allocation to a higher formation, possibly NATO’s multinational field artillery brigade. It is likely that Hungary considers it cannot sustain units at division-scale on its own. Indeed, Hungary is the location for NATO’s HQ Multinational Division Centre, activated in 2022 at Szekesfehervar, with this taking over operational control from MNC-NE of the NATO Force Integration Unit based there. 2026 is reportedly the date for Hungary’s Leopard 2A7-equipped armoured battalion to reach initial operating capability. This will form part of a heavy brigade due to stand-up in 2028 and to be equipped also with the KF41 Lynx IFV.
The Hungarian Ministry of Defence plans to fully digitise these new formations. Hungary also set up a new Special Operations Command in late 2022. Budapest is considering a post-2030 plan for a home-defence focused medium-weight brigade.

Germany’s rapid response forces will form the core of immediate assignments to the NFM, but a ‘Division 2025’ plan has also been identified to provide NATO with a heavy warfighting capability in the east. A new medium wheeled force of three brigades is being generated (the first is due to be re-equipped in 2027) mainly based around the Boxer. Meanwhile, the Netherlands and Germany continue plans to integrate forces – arguing that this streamlines procurement and training. This has been a long-running initiative. 1995 saw them collaborate on the rapid deployment 1 German-Netherlands Corps, while in 2014 the Dutch 11th Air Mobile Brigade integrated with the German Rapid Forces Division (DSK). In 2016, the Netherlands’ 43rd Mechanised Brigade integrated with Germany’s 1st Armoured Division, and the trajectory continued into 2023 with the integration of the final Dutch combat brigade, the 13th Light Brigade, with the German 10th Armoured Division. Other formulations have been adopted, such as under NATO’s Framework Nations Concept. For instance, in 2017 the Czech and Romanian defence ministries agreed to affiliate the Czech 4th Rapid Deployment Brigade and the Romanian 81st Mechanized Brigade with the German Army’s 10th Armoured Division and DSK respectively.

Europe’s headquarters and combat support capabilities

Currently, ten different multinational European corps HQs are available to NATO. They are required to command a force of up to 60,000 troops:

- Allied Rapid Reaction Corps (ARRC) HQ in Gloucester, UK
- German-Netherlands Corps HQ in Munster, Germany
- NATO Rapid Deployable Corps-Italy HQ in Solbiate Olona, Italy
- NATO Rapid Deployable Corps-Greece HQ in Thessaloniki, Greece
- NATO Rapid Deployable Corps-Spain HQ in Valencia, Spain
- NATO Rapid Deployable Corps-Turkiye HQ in Istanbul, Turkiye
- Rapid Reaction Corps-France HQ in Lille, France
- Multinational Corps Northeast (MCN-NE) HQ in Szczecin, Poland
- Multinational Corps Southeast (MNC-SE) HQ in Bucharest, Romania
- EUROCORPS HQ in Strasbourg, France

EUROCORPS HQ has a different international military status and is available to NATO through a technical arrangement with Allied Command Operations.

Throughout the Cold War, most armies were organised with combat support available to each level of tactical formation from brigade to corps. This allowed divisional and corps commanders to apply formation artillery, engineer, and aviation capabilities to shape the battlefield and directly support their scheme of manoeuvre. The US continued to do so throughout the Iraq War, where their corps had organic aviation, ISR, engineer and artillery brigades. NATO’s corps HQs were previously optimised for command of enduring stabilisation operations. Currently most of these corps HQs rotate through various roles including land component HQ for the NATO Response Force and Warfighting Corps HQ.

NATO’s MNC-NE in Poland is deployed as the Regional Land Component Command on the north-eastern flank of NATO. Its assigned area of operations includes the Baltic states and Poland. A relatively new MNC-SE is forming in Romania. All these corps have integral signals and life support capabilities. But there is little evidence that they have dedicated corps-level combat support formations. The IISS assesses that for the implementation of the NATO Strategic Concept and NFM, Europe has too many corps HQs, but insufficient corps-level combat support capabilities.

Currently, Allied Land Command (LANDCOM) acts as a land component HQ for NATO. It is commanded by the Commanding General US Army Europe and Africa. NATO describes LANDCOM as providing:

... a deployable land command and control capability in support of a Joint Force Command running an operation larger than a major joint operation. It can also provide the core land capability for a joint operation (major or not) or a deployable command and control capability for a land operation.
Force assignments to NATO’s NFM remain mostly unclear in the public domain, but nonetheless, assumptions can be made that rapid reaction forces already assigned to formations including the NATO Response Force (NRF) and, in particular the brigade-sized Very High Readiness Joint Task Force (VJTF) will form a key part of at least Tier One of the NFM. At the same time, NATO’s existing structures will be vital to its effectiveness, such as its multinational corps and divisions. As the Alliance’s ground formations and headquarters in the centre and east of Europe adapt to a posture that is effectively one of deterrence by denial, there will be additional considerations regarding basing and logistics, but the NFIUs – designed after 2014 to receive incoming formations – will remain important given their focus also on force integration. Exercises will be important, not just in reinforcement training but also in re-familiarising NATO forces with operating under higher levels of command. Military officials have in private conversations indicated a lack of familiarity among staff with operations at division-and-upward levels of command. France’s Orion exercise in early 2023 was reported to be the largest in 30 years, reportedly including divisional command assets, while reinforcement exercises in Europe’s east will be important as NATO scales up to the new NFM.\textsuperscript{11} And it will also be important for NATO and its larger member states to continue providing a framework for exercises in capabilities and formation-sizes that may be otherwise difficult for smaller nations, such as in integrated air and missile defence or exercises at the division level.\textsuperscript{42}

Even with the lack of public announcements about force assignments, it is clear that some force transformation plans are intended to produce greater readiness, more mobility and improved striking power. The latter developments, in longer-range strike and a focus on battle in the deep should, in theory, lead to systems suitable to assignment to the higher-level military formations likely to be called on in a notional large-scale conflict with Russia. Questions remain over whether forces will be numerous enough and large enough or whether procurements, such as in rocket artillery, will also be numerous enough to be suitable for a high-intensity war of the type and duration seen in Ukraine. It remains unclear whether industry will be funded long-term to sufficiently increase production and maintain stockpiles and expansion capacity. As such, the practical outcome of these procurements and plans depends as much on defence budgets and the urgency with which governments view the perceived threat or the timeline for Russian force reconstitution. This question of political will and long-term commitment is important for the NFM on other levels too. If deterrence by denial is to work most effectively, and if nations do not maintain standing forces in-theatre, they need the capability – and the political will – to move at the Battle Zero stage. Reinforcement drills are underway even during the current period of heightened tension, but conversations are still needed about what would trigger a deployment during ‘Battle Zero’ that may prepare forces for ‘Battle One’. 
In 1990, the Bundeswehr had 204 armoured, mechanised, air manoeuvre and self-propelled artillery battalions, roughly matching the equivalent totals in the combined land forces of France, Italy and the United Kingdom at the time. By 2015, this number had shrunk to 30 for the Bundeswehr, and in 2023 it stands at 31 (see Figure 6). Consequently the German army, which is now re-establishing territorial and collective defence as its dominant and structurally defining mission set, is a much smaller force. The present-day army has been held at much lower readiness than that which saw the end of the Cold War, when the Bundeswehr was arguably at or near its peak in terms of capabilities. Over the past 25 years, Germany has spent much less on its defence than the years prior. Perhaps the only continuity since that earlier era has been the ambition to work in multinational settings even if the meaning and expectations associated with multinationality and interoperability requirements – Germany proclaims itself as framework nation acting as a hub into which smaller partners can plug – have changed significantly.

3.1 Cuts: Doing More with Less

Current concern over Germany’s level of contribution to the deterrence and defence of NATO, especially in the land domain and on NATO’s eastern flank, are not rooted in Cold War nostalgia. Rather, it is Germany’s partners, various observers, and a number of German military and non-military leaders who assess that Germany could afford to contribute much more and that this gap is large enough to compromise European security. At the 2022 Bundeswehr conference, German Chancellor Olaf Scholz declared that territorial and collective defence were the core mission of the Bundeswehr and that ‘every other task has to be subordinated to this mission’. His government also formulated an ambition to become ‘a cornerstone’ for conventional defence in Europe and to develop the Bundeswehr into one of the most effective armies on the continent.

Like many other European nations, the decline in German military capability was not an accident or the inevitable outcome of structural factors. It was the consequence of political choices animated by the assessment that Germany was surrounded by friends and partners, that any major military confrontation was unlikely, and in the event would be preceded by clear and ample warning time of at least a decade. Money was considered better spent on other priorities including social programmes. Contributions to military crisis-management operations were also challenging politically because they demanded a form of power...
projection that made German society uncomfortable. Militarily, they required neither mass or readiness, nor the ability to engage in high-intensity combined-arms combat. Most deployments had long lead times, dozens of rotations and where enemies were involved, they were usually technologically inferior, even if otherwise resourceful and often still lethal on a lesser scale. Although Russia’s annexation of Crimea in 2014 triggered a shift in thinking in some parts of the German defence community, it did not lead to a new strategic policy for the armed forces. It did not trigger funding for rebuilding the German armed forces in general, nor even for any individual services.

As the Chief of the German Army Lieutenant General Alfons Mais declared in an interview published in November 2022:

in 2010/2011 we gave up the capability for territorial and collective defence in a deliberate process. At the time it was a secondary mission, because Afghanistan was much more important. We should check every single decision taken at the time, to see whether we have to reverse it.45

Some of this reversal, at the conceptual level, began in 2017 and 2018. The 2018 Bundeswehr Concept (Konzeption der Bundeswehr) emphasised that the German armed forces would only be able to deal with the varied and rapidly changing security environment if they were fully equipped, trained and manned. In 2017, General (Retd) Erhard Bühler, the then director general for planning in the defence ministry, was quoted publicly as having identified ‘substantial need for adjustment for the Bundeswehr in all possible temporal and functional facets’.46 At the time, Germany committed to provide three fully digitised army combat divisions to NATO’s defence planning process, with a total of eight to ten brigades by 2032. Important milestones at the time were to provide a fully equipped and combat-ready brigade in 2023 and a division by 2027.

These decisions marked the beginning of the return of state-level adversaries and their capabilities as drivers for Bundeswehr capability development. It also highlighted a recognition that this would now require large formations for high intensity combat instead of modular contributions to crisis-management operations.

Germany’s main fault over the past 15 years has not been a failure to translate broad strategic ambition to military prerequisites in terms of capability profiles. Rather, the failure has been the inability to generate the support necessary to unlock resources to fund the implementation of these military capabilities. Moreover, there has been insufficient political acceptance of what is actually needed to enact these ambitions. As a result, the gap between what is required and what is available has widened across all major indicators: military readiness, personnel, procurement and defence spending.

3.2 Status 2023: Having Less But Trying To Do More

Only a few weeks into his new position as Minister of Defence, in February 2023, Boris Pistorius offered a sober but hardly surprising assessment: ‘we do not have armed forces that are combat ready – combat ready in the sense of being able to confront an offensive, brutal war of aggression’.47 The writing had been on the wall since the 2017–18 plans were first formulated. In 2021, the German army command published a document that clarified where the army would need to go to fulfil its mission. Tellingly, the document assessed the land forces as ready in only one of 13 critical categories vis-à-vis opponents, namely in mission command. The remaining 12 showed different degrees of shortcomings.48 The available budget did not support an agenda requiring large-scale equipment recapitalisation, digitisation, an increase in firepower including munitions, regeneration of logistics and other support functions that had atrophied, or the plugging of capability gaps that previous funding cuts had created. To many inside and outside the Bundeswehr, 2022 looked like a lost year. While the debt-financed off-budget special fund (Sondervermögen) to modernize the Bundeswehr was agreed with broad political support, forward momentum was not really generated until then defence minister Christine Lambrecht resigned and was replaced by Pistorius in January 2023.

In the meantime, Germany had taken the lead for NATO’s Very High Readiness Joint Task Force (VJTF) land component in 2019. Worryingly, despite a lead time of some two years, the army had to pull together personnel and equipment from across the service to
be able to provide a combat brigade and deploy it to Norway for exercises. Within the army, the euphemism of ‘equipment tourism’ became known to describe the unedifying process of borrowing material from other units and thus finding creative workarounds for shortfalls, often with negative effects on those units asked to give up the equipment. In 2023, Germany again took the lead for the VJTF land component and to avoid repetition of the 2019 experience, has aimed to fix the underlying issues in time and prioritise having the brigade ready and equipped. While improvements have been made, and the need to pilfer equipment and personnel from other units has been much reduced, problems nonetheless persist. In October 2021, Mais declared that ‘we have fallen behind our own ambitions’. Effectively, the first milestone in the new plans has not been fully achieved.

Persistent issues like this undermine Germany’s ambition to be a serial integrator of the capabilities of smaller European nations, including under NATO’s framework nations concept. The German interpretation of the framework nation concept is focused on generating large formations for use in NATO (and possibly the EU). Smaller nations are dependent on the larger nation, in this case Germany, to provide the enablers for this purpose, including – but not limited to – command and control and high degrees of interoperability. Unfortunately, however, this is precisely one of the areas where Germany’s progress has been slow, for example with software-defined radios and tactical data networks. Indeed, the lack of digitisation in the German army has required partner nations to downgrade their own capabilities in order to achieve interoperability.

Germany is one of a few European countries with the ambition to operate its land forces above brigade and at division level. However, reforms agreed in 2011 under the so-called Heer 2011 plan – infused by the idea of efficiency savings, just-in-time logistics, and crisis management contributions – led to cuts to most combat support and combat service support troops at division level because support of large formations was not a priority. General (Retd) Jörg Vollmer (then commander of the NATO Allied Joint Force Command Brunssum and a former chief of the German Army) thus argued that the 1st Armoured Division at pre-2011 levels, including all necessary combat support and combat service support elements at brigade and division level, was a model to emulate for future divisions.

Despite these challenges, Germany has a range of actual and potential partners to work with in the land domain. To the east and northeast, Poland and Lithuania come first to mind. Poland’s borders with Germany, Russia’s Kaliningrad exclave and Belarus make it a key actor in the defence of northeast Europe. The Polish Armed Forces has also outlined ambitious plans to grow its military capabilities. Germany further makes a major contribution to NATO’s Multinational Corps Northeast in Poland. Germany has also made a major commitment, at brigade level, to increase its forces assigned to Lithuania. Geography makes both armies essential strategic partners for Germany.

France and the Netherlands share a strong tradition of bilateral military cooperation with Germany that could take a more operational turn. Cooperation with France is institutionalised in the Franco-German brigade and German participation in the Eurocorps Headquarters. France has also demonstrated the ability to act as a lead nation for the most demanding of peace support and stabilisation operations outside Europe. Although marred by political and industrial challenges, the collaborative development of a main battle tank (MBT) replacement under the Main Ground Combat System (MGCS) programme is an opportunity for partnership. Regarding the Netherlands, Germany is the framework nation of the German-Netherlands Corps Headquarters in Munster. The Dutch armoured and airmobile brigades are assigned to German divisions, including a German-led tank battalion that incorporated a Dutch tank company. Now with virtually the entire field army of the Netherlands affiliated with the German army, this strategic partnership is likely to be of enduring value to both armies (and to both armed forces more widely).

The British Army retains a stockpile, forward base, and training area at Sennelager in Germany. These are used for final preparation of units deploying to Estonia. It has formed a combined engineer battalion with the Bundeswehr that operates the M3 amphibious bridging and ferry system. Of all European nations, the UK deployed the most reinforcing troops to Eastern Europe and Scandinavia in 2022.
Additionally, its purchase of Boxer armoured personnel carriers (APCs) and updating of Challenger 2 MBTs creates new opportunities for partnership.

One point of attraction for some partners is that Germany hosts some first-class land training facilities and ranges within Germany, including for combat training in an urban environment. Germany’s defence-industrial base furthermore produces capable equipment that is very relevant for high-intensity armoured warfare – such as Leopard 2, PzH 2000 and Boxer – all products that have had notable export successes, including to important partner nations.

### 3.3 Plans: Rebuilding Combat Readiness

Germany’s original aim was to have one mechanised brigade ready for 2023, one mechanised division with two national brigades for 2027, and three divisions with division and corps-level support functions by the end of 2031. The lack of investment in previous years has made this a very ambitious goal to pursue, and consequently, the army has struggled to halt further loss of capability, much less grow new ones in significant ways. Command and control (C2), digitisation and fires were particular weaknesses. As one army author argued in 2022, ‘at the moment, we observe a degression of capabilities across all projects’. Nevertheless, in light of Russia’s war of aggression and NATO’s ensuing decision at the Madrid Summit, some elements of the German Army’s goals have now been brought forward and Germany was the first nation to publicly declare the outlines of its New Force Model (NFM) contribution. Germany now intends to provide a division with two brigades from 2025 onwards to the NFM, growing to three brigades in 2027. A second mechanised division is also now meant to be available earlier than 2031 (although still beyond 2027). With the timelines becoming only more demanding, putting any increase in German defence spending to good use will be of paramount importance. Mais was quoted in the media, partly based on leaked documents, as suggesting that the division would not be fully ready and that as of late 2022 there was not a single German brigade that could deploy on a sustained combat mission without lead times longer than the current NATO readiness requirements would demand. While the army’s general share of the Sondervermögen does not look too impressive, more than half of the funding that is earmarked for digitisation will flow into army projects. This should be an important boost for tackling the C2 challenges mentioned above, assuming that the pace with which the additional funds are turned into contracts picks up significantly from 2023 onwards.

An important element of Germany’s plans is the introduction of the medium forces category (Mittlere Kräfte). They are meant to combine mobility, with wheeled rather than tracked infantry fighting vehicles (IFVs), self-propelled (SP) artillery, and engineering vehicles, and firepower to quickly reinforce lighter forces and prevail in combat until heavier forces are available. Forces in this category should also facilitate manoeuvre warfare once deployed. The creation of this new force category has led to a first wave of army restructuring after April 2023, so that units reflect this conceptual separation into light, medium and heavy forces, and thus the demands of the NFM. Mais expects that as a result of the current plans, the army’s combat elements of the army will need to shrink in order to generate additional combat support and combat service support elements, including at division level. It is highly likely that the German Army command is aware – given its involvement in Multinational Corps Northeast (MNC-NE), German-Netherlands Corps, and Eurocorps – of the overall lack of NATO corps-level combat support. One opportunity for Germany, once NATO’s regional plans have settled and turned into drivers of readiness and command and control priorities, would be to focus on generating corps-level combat support capabilities. This would, however, likely require a focus on one priority corps, in line with expectations and plans of NATO and the Supreme Allied Commander Europe (SACEUR).

While the German Army’s future plans require a fair amount of procurement, not least to implement and equip the new medium-force category units, they do not require a major deviation from the equipment plans defined since 2017. Some exceptions might be counter-UAV capabilities and very-short range and short-range air-defence assets as well as loitering munitions. From this perspective, the ongoing restructuring is primarily an effort to use the available resources, including personnel, more effectively in light of the new requirements and force goals.
Russia’s full-scale attack on Ukraine in February 2022 has put the need for robust, deployable and sustainable European land forces, able to conduct high-intensity combat as part of multi-domain forces, firmly back on NATO’s agenda. This is particularly true for frontline states in the east and north, but also applies to the three major European NATO powers: France, Germany and the United Kingdom. While the exact nature of Russia’s military threat to allied territory is difficult to predict, it is prudent to assume a formidable Russian capability, given its advanced military systems, its considerable force size, its ability to mobilise Russian troops relative to NATO states, and its first mover advantage given the geography in, for instance, the Baltic region. Moreover, at the moment there seems little prospect of change in Russia’s political orientation, Moscow’s view of its own security requirements, and the trajectory of its policies towards its neighbours. At the same time, given the challenges for Russia’s recapitalisation in the midst of a war, and the significant level of attrition experienced by its land forces, NATO allies might have a five-to-ten year window to build up forces and address their main shortfalls. Importantly, a forward-defence posture must be primarily based on deterrence by denial (as opposed to punishment), necessitating the capability to frustrate any Russian advance through sustainable, forward-deployed land forces which can be augmented by rapidly deployable follow-on forces.

However, have European land forces really followed-up on the promise to heed the ‘wake-up call’ this time? The overall assessment of this paper is that of a mixed picture. The European land forces under consideration have recognised weaknesses in their respective forces, which exist in all of them to varying degrees, including operational overstretch, lack of stocks and resupply limitations, limited unit and formation level collective training, low personnel numbers, ageing equipment, unsuitable equipment, maintenance problems, and tight budgets. Many of these combine to produce lower levels of combat readiness than NATO defence plans and the New Force Model (NFM) will demand. Since 2014, the urgent requirement to address readiness levels has been acknowledged, both in terms of troops but also of military equipment. This recognition has led to debates on how to activate and/or build-up reserve components, and also supporting infrastructure such as training areas and storage bases. Combat attrition in Ukraine has sharpened focus on reserve forces, including the challenge of regenerating combat mass. It has also highlighted dependencies across society and the national defence-industrial base with regard to the generation of effective military capability, making it more important that these sectors are factored into exercises. Moreover, they acknowledge wider issues that influence readiness such as the need to ramp-up defence industrial production. Finally, they have formulated ambitions to address those under the general objective to implement NATO’s NFM.

Yet, looking at practical measures, we conclude that change has been rather modest thus far. The most significant improvement to addressing readiness deficits and strengthening capability have been investments in procurement across all countries. While many procurement plans pre-date 2022, such as armoured recapitalisation, plans to improve heavy manoeuvre capabilities have accelerated. This is most notably seen in Poland’s armour modernisation, but it is also apparent elsewhere. The flow to Ukraine of Soviet-era armour by states in Europe’s east has accelerated the modernisation of their armour capabilities; but elsewhere there is also a renewed focus on modernising main battle tanks (MBTs) and tracked infantry fighting vehicles (IFVs), including in some West European states that transferred modern armour to Ukraine. Some of the notional structural changes that have been posited for future US Army heavy divisions indicate the level of capability that the world’s most capable military power could require for its heavy manoeuvre forces (see Figure 8). At the same time, medium-weight formations are being developed in a number of states, with the possibility that his could

Conclusion: Sustaining the Momentum?
lead to improved operational and strategic mobility through the growing numbers of wheeled protected platforms including IFVs, Armoured Personnel Carriers (APCs) and artillery.

Current and planned investments in rocket artillery, and future plans for longer-range surface-to-surface strike weapons, should deliver systems capable of engaging targets in the rear, including assembly areas, enemy logistics and headquarters nodes. These investments could help deliver capabilities useful also for deterrence by denial. However, this will also require better training with, and integration of, intelligence and command and control capabilities (C2). At the same time, a number of states have already taken investment decisions regarding ground-based air defence (GBAD), principally at the medium- and lower-tier, to protect a range of potential targets, from civilian and industrial sites to headquarters, logistics hubs and assembly areas, as well as mobile forces. Moving forward, allies will need to consider interoperability and integration requirements for GBAD and deepen exercise cooperation; these are useful for all, but perhaps most for small states that are procuring systems in limited numbers. Expenditure rates in Ukraine also highlight the requirement for GBAD munitions stockpiles and for production and expansion capacity in national defence industry.

That said, questions remain over the implementation of these defence initiatives and their synchronisation with NATO’s evolving regional plans. At the political-strategic level, uncertainty persists over the extent to which the support expressed for the NFM will be reflected in practical terms, such as alignment of national plans and land capability developments with NATO planning, particularly those at the regional command.
level, for example MNC-NE. In part, this highlights different national strategic priorities, notwithstanding a general commitment to NATO’s requirement to be able to effectively deter and defend against Russia. For instance, development plans for the land forces of NATO’s European members might be driven by differing national assessments of the magnitude of the threat that Russia’s armed forces will realistically be able to pose over the medium- to long-term and, consequently, what this implies for their own capability requirements. Frontline states will likely base their planning on worst-case assessments, but European allies further away may feel differently and, as a result, may see investments in in capable land forces as less urgent. A crucial question, therefore, is whether European governments and land forces will maintain their current focus, particularly should the intensity of the war in Ukraine abate or carry on with no end in sight.

NATO members should make these contributions to the NFM clear, and declare their land contributions before, at or after the Vilnius Summit in July. Doing this – and publicly tying governments to their commitments – would help to facilitate better planning, enhance deterrence vis-à-vis Russia and strengthen allied cohesion. A sourcing conference prior to the Summit in June may provide greater clarity. In the case of the UK, the Ministry of Defence’s new Defence Command Paper, due to be published before the Summit, presents an opportunity to be more explicit than the 2021 version about the British land force’s commitments to NATO. At or after the Summit, nations could also opt to make a two-phase offer given current limitations; that is, commit some forces now, but also indicate further assignments that will be made when new and improved formations or equipment reach operational capability.

NATO might also need to consider different command and control arrangements for its land component in the ´new North’, to address questions over higher-level command and control posed by Finland’s membership (and the likelihood of Sweden’s accession). Currently, NATO Joint Force Command in Norfolk, Virginia, is the operational command responsible for operations in the High North. Yet, given the considerable distance between an enlarged Scandinavian area of operations and the United States, there could be a case for establishing a new joint regional headquarters in Norway, Sweden or Finland, and associated land component headquarters.

European land forces acknowledge that enhancing interoperability is essential for force generation at the scale envisaged by the NFM. This is where the size of Europe’s land forces becomes an issue. At present, barring a select few allies, land force sizes are not increasing significantly in relative terms. Recruitment and retention will remain challenging for most armies without either significantly improved ‘offers’ to personnel, or innovations in force design or equipment capability, or perhaps even the (re)introduction of conscription. Moreover, growing personnel even in relatively modest numbers will have a significant impact on defence budgets and will, without sustained budget increases or the use of other funding measures, such as off-budget funds, likely reduce the ability to invest in other critical areas. The requirements of the NFM’s Tier One of over 100,000 troops in under ten days make it very unlikely that even nations with large land forces would be able to meet the task on their own. This means there will need to be a sharper focus on formations that are multinational by design. However, multinationality brings its own difficulties. It is an open secret that many nations have a higher confidence in some multinational partners than others. Some might, reasonably, assume that at present the more dangerous the operation, more multinationality could add risk. That is also because of different national caveats and rules of engagement. Moving forward, NATO allies will have to find an answer to this challenge.
Additionally, as European land forces seek to improve readiness levels quickly, NATO allies would do well to consider a reappraisal of evaluation standards. Questions to address include whether current national and NATO evaluation standards are realistic and optimised to produce uniform combat capability across the Alliance, and whether readiness benchmarks need to be refined. If so, what changes should be prioritised? This includes not only combat-readiness evaluations for personnel, but also standards for equipment storage.

They must also engage in more frequent training at all levels. This includes large-scale exercises focused on high-intensity multi-domain warfare. These should be live exercises as well as synthetic drills, but they will need to include training at the divisional level and above, including also civil and military logistics at-scale. At the same time, personnel need to be re-familiarised with operations in and with high-level formations. NATO must signal this capability to Russia on a frequent basis in relative peacetime to enhance the chances of a deterrent effect. This may include more public discussion of the triggers for national deployment in advance of any crisis, to deliver effective capability in theatre, and in sufficient volume, so as to be optimally useful for the concept of deterrence by denial.

It is also not clear if European land forces will get the balance right between a focus on replenishing heavy armour and combat formations on the one hand, and combat support (CS) and combat service support (CSS) on the other. The Ukraine war has reconfirmed the old adage that ‘infantry wins battles, logistics wins wars’. At present, CSS remains a national responsibility and none of the NATO corps HQs have any organic combat support. European land forces must address the question whether CS and CSS should be assigned to the NATO corps-level. If they prefer to keep those functions as a national responsibility, they must address the fact that under current circumstances they would struggle to rapidly deploy and sustain land forces forward by air, land and sea. For example, would the German Army be able to quickly reinforce its future brigade in Lithuania? It appears that only the British, French and US land forces have exercised such reinforcements thus far, exposing significant challenges in the process, and even in these cases, while there may have been reinforcement exercises, it is less clear whether these countries have so far practiced reinforcement up to the level of a full brigade-sized component. In addition, the eFP battle groups are effectively fixed in place. However, war is not static and if European armies wanted to deploy a land force of any size elsewhere in Europe it would require a second logistic supply line. It is not clear that many European powers currently have or plan to develop sufficient logistics forces to sustain two lines of communications.

Furthermore, while European land forces have put forward ambitious modernisation plans, the extent to which sufficient money will be allocated to facilitate implementation remains to be seen. For instance, in 2022, the defence budgets of the European countries in question together averaged 1.75% of GDP, according to the IISS Military Balance+ database. Even as most European governments have resolved to ramp up defence spending in the wake of Russia’s invasion of Ukraine, their land forces have often not received the lion’s share of new investments. This includes the German army, which received less than the air force and the navy in the planned spending for major equipment and enablers from the €100bn special fund. The same is also true for the British Army, which, according to the 2022-32 Defence Equipment Plan (DEP), is scheduled to receive less money over the next 10-year reporting period than that of the previous DEP, decreasing from GBP41.3bn over 10 years to GBP 40.6bn. Even with increased funding, land forces will face difficult financial trade-offs between more personnel, weapons systems, stockpiles, logistics and digitisation. This tension is currently exacerbated by the large volume of ammunition, spare parts, weapons and vehicles provided to the Ukrainian armed forces.

European land forces have, again, acknowledged the need to respond to Russia’s threat. The pressure to do so appears even higher than immediately after 2014, but while some positive steps have been taken, it remains to be seen whether the momentum can be sustained. German leadership in driving European land-warfare capability development to meet NFM objectives will be key in this regard.
Notes


7 Ibid.


11 While recognising that European countries are also likely to employ land forces for missions other than major combat operations in the future, including peacekeeping and peace-enforcement, the focus of this paper is on their ability to implement the NATO NFM in response to an external attack on allied territory, specifically any act of aggression by Russian Federation forces.

12 We note that in the event of a conflict in Northern Europe in particular, the US Marine Corps would also be involved, for instance, through its long-standing cooperation with Norway, including Marine Corps Prepositioning Program-Norway. That said, the focus of this paper is on the contributions of US Army Europe and Africa.


20 See IISS assessments of emerging military lessons of the first year of the war in Ukraine: https://www.iiss.org/online-analysis/military-balance/2023/02/


45 Interview with Rolf Clement and Michael Horst (2022), ‘Die Menschen im Heer sind das Wichtigste, was wir haben’ [The people in the army are the most important resource we have], Europäische Sicherheit und Technik, 1 November 2022, https://esut.de/2022/11/fachbeitraege/37511/die-menschen-im-heer-sind-das-wichtigste-was-wir-haben/.

46 As quoted in Johannes Leitlhauser and Marco Seliger, ‘Bis Zu den Sternen’ [To the stars], Frankfurter Allgemeine Zeitung, 19 April 2017.

47 As quoted in Peter Carstens (2023), ‘Wünschen ist leichter als Kaufen’ [Wishing is easier than buying], Frankfurter Allgemeine Zeitung, 3 March 2023.


Interview with Rolf Clement and Michael Horst (2022): ‘Die Menschen im Heer sind das Wichtigste, was wir haben’ [The people in the army are the most important thing we have], 1 November 2022, Europäische Sicherheit und Technik, https://esut.de/2022/11/fachbeitraege/37511/die-menschen-im-heer-sind-das-wichtigste-was-wir-haben/.


VI Ibid. p. 10


VIII Artillery includes mortars, howitzers and other guns, and rocket artillery.

IX IISS analysis of sales of F-35s suggest that by 2030 European air forces should have an inventory of about 500 aircraft.

X The British Army has about 200 Challenger 2 tanks. These are supported by:

- 56 Terrier armoured engineer tractors
- 33 Trojan armoured breaching vehicles
- 32 Titan armoured bridge layers


XIII The British Army uses the term regiment to designate battalion-sized units of armour, artillery, engineer aviation and transport capabilities. This paragraph uses current British Army terminology.


XV Combat support capabilities include artillery, engineer, air defence, and intelligence, surveillance and reconnaissance capabilities.

