

THE CEPA MILITARY
MOBILITY PROJECT:
MOVING MOUNTAINS FOR
EUROPE'S DEFENSE

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GENERAL DYNAMICS

European Land Systems



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MOVING MOUNTAINS FOR EUROPE'S DEFENSE

Report by the CEPA Task Group
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“The first and most important rule to observe ... is to use our entire forces with the utmost energy. The second rule is to concentrate our power as much as possible against that section where the chief blows are to be delivered and to incur disadvantages elsewhere, so that our chances of success may increase at the decisive point. The third rule is never to waste time. Unless important advantages are to be gained from hesitation, it is necessary to set to work at once. By this speed, a hundred enemy measures are nipped in the bud, and public opinion is won most rapidly. Finally, the fourth rule is to follow up our successes with the utmost energy.”

Carl von Clausewitz

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Cover: Members of the Emergencies Ministry of the separatist Donetsk People’s Republic demine the area at the militants’ former positions on the contact line with the Ukrainian armed forces following troop withdrawals near the settlement of Petrivske (Petrovskoye) in Donetsk region, Ukraine November 19, 2019. REUTERS/Alexander Ermochenko.

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About CEPA

The Center for European Analysis (CEPA) is a non-partisan think-tank dedicated to strengthening the transatlantic relationship. Headquartered in Washington, D.C. and led by seasoned transatlanticists and young leaders from both sides of the Atlantic, CEPA brings an innovative approach to the policy arena. Our cutting-edge analysis and timely debates galvanize communities of influence while investing in the next generation of leaders to understand and address present and future challenges to transatlantic values and principles.

List of Acronyms

A2/AD	Anti-access/area denial
AO	Area of Operations
AMCC	Allied Movement Coordination Centre
AOR	Area of Responsibility
CBMP	Cross-Border Movement Permission
CBRN	Chemical, biological, radiological and nuclear
CEF	Connecting Europe Facility
CJTF	Combined Joint Task Forces
CSDP	Common Security and Defense Policy
DG-MOVE	Directorate-General for Mobility and Transport
EDA	European Defense Agency
eFP	Enhanced Forward Presence
FD	Final destination
EUMC	European Union Military Committee
GMPT	General Master Plan on Transport
GRP	Graduated Response Plan
HNS	Host Nation Support
JSEC	Joint Support and Enabling Command
LOGFAS	Logistics Functional Area Services
MFF	Multi-Annual Financial Framework
MLC	Military Load Classification
MNDDP	Multinational Detailed Deployment Plan
MSR	Main supply route
NAC	North Atlantic Council
NMS	NATO Military Strategy
NRF	NATO Response Force
NPOC	National Point of Contact
NSIP	NATO Security Investment Program
NTC	National territorial command
PESCO	Permanent Structured Cooperation
PfP	Partnership for Peace
POD	Port of disembarkation
POE	Port of embarkation
RAM	Rapid Air Movement
RFF	Recovery and Resilience Facility
RSOM	Reception, staging, and onward movement

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SACEUR	Supreme Allied Commander Europe
SJLSG	Standing Joint Logistic Support Group
SOFA	Status of Force Agreement
TA	Technical Arrangement
TEN-T	Trans-European Transport Network
tFP	Tailored Forward Presence
TSI	Technical Specification for Interoperability
VJTF	Very High Readiness Joint Task Force

Executive Summary

The Military Mobility Project

The Military Mobility Project, launched by the Washington-based Center for European Policy Analysis (CEPA), is designed to promote the establishment of the multiplicity of conditions (legal and regulatory standards, infrastructure and military requirements, the management of risks to the security of transiting forces) needed to enable, facilitate, and improve military mobility across Europe. The project focused on five different political-military scenarios each of which was examined by a multinational working group in a series of military mobility workshops that took place between September and October 2020. Their purpose was to generate a number of substantial recommendations that, if implemented, would advance military mobility across Europe.

In an address to the Plenary Military Mobility Workshop in October 2020, Adm. Rob Bauer, the Netherlands' chief of defense, identified the key challenges posed to his country as a transit nation for moving military forces: the need for improved infrastructure; clear and agreed rules and regulations (for dangerous goods, customs, cross-border movement permissions); military mobility relevant command and control (C2); the establishment of a 24/7 network of national points of contact across NATO and the European Union (EU), respectively; the establishment of Territorial Command authorities by transit and host nations to facilitate smooth movements along multimodal movement corridors, properly supported by logistic hubs; and the fostering of digital support and protection. This report seeks to address these and related challenges that military mobility faces in Europe in general.¹

The Project's Primary Message

Europe's security environment changed fundamentally in 2014 as a consequence of Russia's aggression against Ukraine and its illegal annexation of Crimea. Since then, NATO has placed renewed emphasis on deterrence and defense and made a significant effort to strengthen its posture. In view of Russia's now-entrenched policy of constant confrontation, its use of hybrid warfare in both peacetime and during crises, as well as its growing military potential close to NATO's borders, the Alliance must consider the simultaneous and parallel defense of several regions all of which could be at risk in a crisis with Russia. These regions stretch from Northern Norway and the North Atlantic through the Baltic Sea and Black Sea Regions to the Mediterranean. Specifically, NATO must further enhance its responsiveness and agility as well as the readiness of its military forces and be able to deploy them rapidly to provide timely reinforcement of allies in a crisis or a military conflict. Speed is of the essence. NATO also remains committed to responding effectively to crises beyond the Alliance's borders. Given the risk that such crises could escalate rapidly, the ability to respond speedily over distance is also important.

The EU seeks to become a geopolitical actor and advance, in time, toward a so-called European Defense Union. While the EU's focus is on the conduct of effective civil-military crisis management beyond Europe, its ability to act effectively will also require the rapid movement of forces across Europe prior to their deployment to crisis regions adjacent to the bloc's borders and beyond. The security environment is also marked by the return of geopolitical great-power competition. One consequence of China's rapid rise to global power status is the shift taking place in the U.S. strategic center of gravity toward the Indo-Pacific region. The United States' European allies and partners will thus have to spend

significantly more both on deterrence and defense in Europe and effective crisis management in North Africa and the Middle East.

Against this strategic background, both NATO and the EU have a clear common responsibility to establish the conditions needed for the expeditious movement of military forces throughout Europe. The primary strategic purpose of military mobility is to move forces and resources rapidly over distance and by so doing afford the political and military leadership of the Alliance options to enhance deterrence and defense or engage in effective military crisis management beyond NATO's borders. Effective cooperation between the EU and NATO over military mobility would further strengthen transatlantic cohesion by contributing to equitable burden sharing.

Principal Factors

There are three principal factors that should drive all efforts to improve military mobility across and within Europe: high-level engagement, effective military planning, and the adoption of a whole-of-government approach. Engagement is needed at the highest levels of NATO, the EU, and European capitals, and in both the political and military domains, to lay the foundational conditions for military mobility. This is both an urgent military requirement and a political necessity. Effective military planning for the deployment of forces across Europe both in a crisis and war must take better account of national and EU legislation and regulations. There is also a vital need to exercise and test coordination and to deconflict processes prior to any emergency to ensure they function under duress and can thus meet planning timelines. Effective and rapid military mobility also demands a whole-of-government approach in all enabling nations. This would necessarily involve (*inter alia*) ministries of defense, interior, and transportation, as well as those private sector leaders responsible

For Russia, the problem remains that it cannot compete in a direct contest of national power

for air, rail, road, and port facilities. Fostering a whole-of-government military mobility culture through preestablished relationships will be particularly important in transit and host nations.

Main Recommendations

Rules, Regulations, and Procedures

Streamline Cross-Border Movement Permissions:

It is essential that all European nations establish a harmonized cross-border movement approval process for all military movements across Europe and lift existing restrictions in national legislation. NATO has implemented a legal framework through Technical Arrangements (TAs) with both allies and its partners that participate in the Partnership for Peace (PfP) program. The European Defense Agency (EDA) and 25 EU nations are also working on two TAs, one for the surface and the other for the air domain, which are expected to be completed by spring 2021. Norway has joined the program, and it is important that other non-EU European allies join as well or at least establish compatible rules.

- *Standardize regulations for the transport of dangerous goods:* Legal basis for the transport of dangerous goods should be established by the EU member states and their national practices harmonized as soon as possible to promote friction-free movement. The combining of civilian rules with, where necessary, the provisions of the NATO Standardization Agreement, AMovP6, is considered sufficient by the EU. A harmonized legal basis would be particularly important for both transit and host nations. The aim should be an

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Polish soldiers patrol the rail yard at Mockava, Lithuania during Exercise Brilliant Jump 20. Brilliant Jump is a deployment exercise designed to test the readiness of NATO's spearhead unit, the Very High Readiness Joint Task Force. The VJTF deployed to Lithuania by land, air and sea to take part in the Lithuanian national exercise Iron Wolf II. To avoid the spread of COVID-19, the deploying forces avoided civilian populations on their way to Lithuania and practiced social distancing. Credit: NATO.

annual renewal/update of approval for the transport of a range of dangerous goods along defined multimodal movement corridors.

- *Standardize customs procedures:* All European governments should apply simplified and streamlined customs procedures for military transportation throughout Europe in peacetime and in a crisis. NATO allies and their PfP partners use NATO Form 302 for exemption from customs relating to the movement of goods for use by a deploying force. For its part, the EU has developed, in full transparency and dialogue with NATO, EU Form 302 which is to be used alongside NATO Form 302. Together, these forms enable uniform treatment of, and rapid customs declarations for, all cross-border military movements in all EU member states. However, there is concern about duplication of effort and data ownership. Therefore, in order to simplify the customs process for all military movements in Europe, NATO and the EU should make a joint effort to develop identical 302 templates.
- *Accelerate response times for Cross-Border Movement Permissions:* The EU aims to deliver diplomatic, border-crossing, and transit movement clearance in peacetime for military forces within five working days. For NATO, this is too long given how important it is for it to be able to respond rapidly in a crisis. NATO's operational-level planning timeline is three calendar days (72 hours). Therefore, the EU member states should adjust their respective response times to three days. At the very least, the EU should create

a mechanism to allow preapproval for defined rapid reaction force packages within a maximum of three days.

Transportation Infrastructure

- *Undertake a comprehensive infrastructure assessment:* The responsible headquarters/staff of both NATO and the EU should build on a comprehensive infrastructure assessment and maintain shared comprehensive infrastructure databases relevant to their respective military transportation networks. Such an approach will require close and detailed coordination with the nations. For example, host nations should continue the Military Load Classification (MLC) assessment and corresponding marking of relevant bridges.
- *Make full use of the European Commission's Trans-European Transport Network policy:* It is essential that European NATO allies, which are also members of the EU, in coordination with the responsible NATO military headquarters, submit project proposals for priority dual-use (civilian and military) infrastructure projects that could be co-funded by the European Commission through the military mobility envelope of the Connecting Europe Facility (CEF). Such projects will be particularly important along the main supply routes and transportation corridors and covered by the European Commission's Trans-European Transport Network (TEN-T) policy. Such projects will necessarily take time and it is vital EU member states urgently identify projects that could benefit from CEF funding.
- *Build for heavier military equipment:* During the deployment of forces for crisis response operations weight restrictions on roads will tend to favor the use of rail or river/barge routes. This is because the combination of truck, trailer, and heavy tank could in future exceed 120 tons. For rapid

reinforcement of allies located on NATO's periphery, transit and host nations should also better provide for sufficient bridging capability. Projects designed to reinforce bridges should be central to the creation of dual-use civil-military infrastructure throughout the EU.

- *Standardize rail interfaces:* The better use of civilian freight routes for military transportation should be further explored within the framework of the European Commission's work on rail freight corridors. Over the short to medium term, increased investment in so-called transition technologies could be made to facilitate the transfer of shipments from one railway gauge to another to avoid the need to unload and reload rolling stock.

Command, Control, and Coordination

- *Standardize networks of National Points of Contact:* The EU has set up a network of National Points of Contact (NPOCs) for military mobility. They are the entry points for movement requests and in charge of processing them within their nations. NATO has established a network of single NPOCs at the political level to enable the coordinated management of civil emergencies and strengthen the Alliance's resilience. NATO is also setting up a 24/7 movement control network at the operational level between it and national civil and military entities within the Alliance that is vital for force flow management for both exercises and operations. The network of POCs in NATO should be completed as soon as possible with the requisite terms of reference also finalized expeditiously. The EU POCs and those of NATO should also be aligned and harmonized as far as possible.
- *Establish National Territorial Commands:* Where they do not yet exist, national

territorial commands (NTCs) should be established in all transit and host nations and charged with the provision of Host Nation Support (HNS) for transiting or deploying forces. Specifically, the provision of the national military infrastructure necessary for ensuring freedom of maneuver through effective rear area security, military movement control, the rapid and unrestricted crossing of waterways, including sufficient bridging capability, telecom links, and medical support should be provided. The NTCs should also act as enablers for improved links between NATO forces, national forces, and the civilian defense sector, with the NPOCs integral, but distinct elements of the NTCs.

- *Make full use of NATO's Joint Support and Enabling Command:* The Joint Support and Enabling Command (JSEC) has been assigned as Supreme Allied Commander Europe's (SACEUR's) Joint Rear Area Command. It is in charge of battlespace management and force flow management across Europe and responsible for the security of the rear area of SACEUR's Area of Responsibility (AOR). To this end, it should also be vested with coordinating authority for all national territorial commands and act as the network hub for the respective NPOCs for military mobility in the transit nations.

Funding

- *Increase EU funding for military mobility:* The EU member states concerned should make optimal use of the Military Mobility Fund (€1.69 billion in current prices) to co-fund dual-use infrastructure projects. They should also consider additional funding options, for example, by using parts of EU Recovery and Resilience Facility (RFF) funds for such projects. This would send a clear signal that Europe

is serious about significantly enhancing its efforts to do more for its own security, as well as promote better transatlantic burden sharing.

- *Extend NATO common funding:* The Alliance should explore greater use of the NATO Security Investment Program (NSIP) to co-finance infrastructure projects relevant to military mobility that are not eligible for co-funding by the European Commission. NATO should also consider counting allies' investments in such projects that are clearly dedicated to facilitating military mobility of NATO forces as part of a nation's 2% (of GDP) benchmark for defense spending.

Special Capabilities

- *Fully harness capability catalogues:* The allies, together with NATO's European partner nations, should make available and regularly update their respective capability catalogues. Capability catalogues are designed to ensure that nations' data relevant to military mobility is available to NATO to inform operational and movement planning. Critical capabilities such as wet-gap crossing, and counter-mobility equipment must be available in nations' military inventories.
- *Enhance national military transportation capacities:* NATO should assign Capability Targets for the allies to significantly increase their respective military transportation capacity (road, rail, air, sea) and to ensure timely and assured priority access to civilian transportation capacity. EU member states should also contribute to this effort through increased collaboration via enhanced military mobility, which is one of six focus areas for collaborative capability development recommended by the EDA.
- *Establish logistic hubs:* Distances from ports of debarkation in Western Europe



U.S. Marines stand on their Amphibious Assault Vehicles, waiting for the order to head to shore near Klaipeda, Lithuania during Exercise Baltic Operations 18. Credit: NATO.

to potential theaters of operations can be great. Germany and its Permanent Structured Cooperation (PESCO) partners should, therefore, spare no effort to implement the network of logistic hubs (for maintenance, recovery, storage of food, ammunition, and fuel, etc.) across Europe consistent with the planned establishment of multimodal movement corridors. It is essential that the logistic hubs also be fully usable by all allies contributing to NATO operations and exercises.

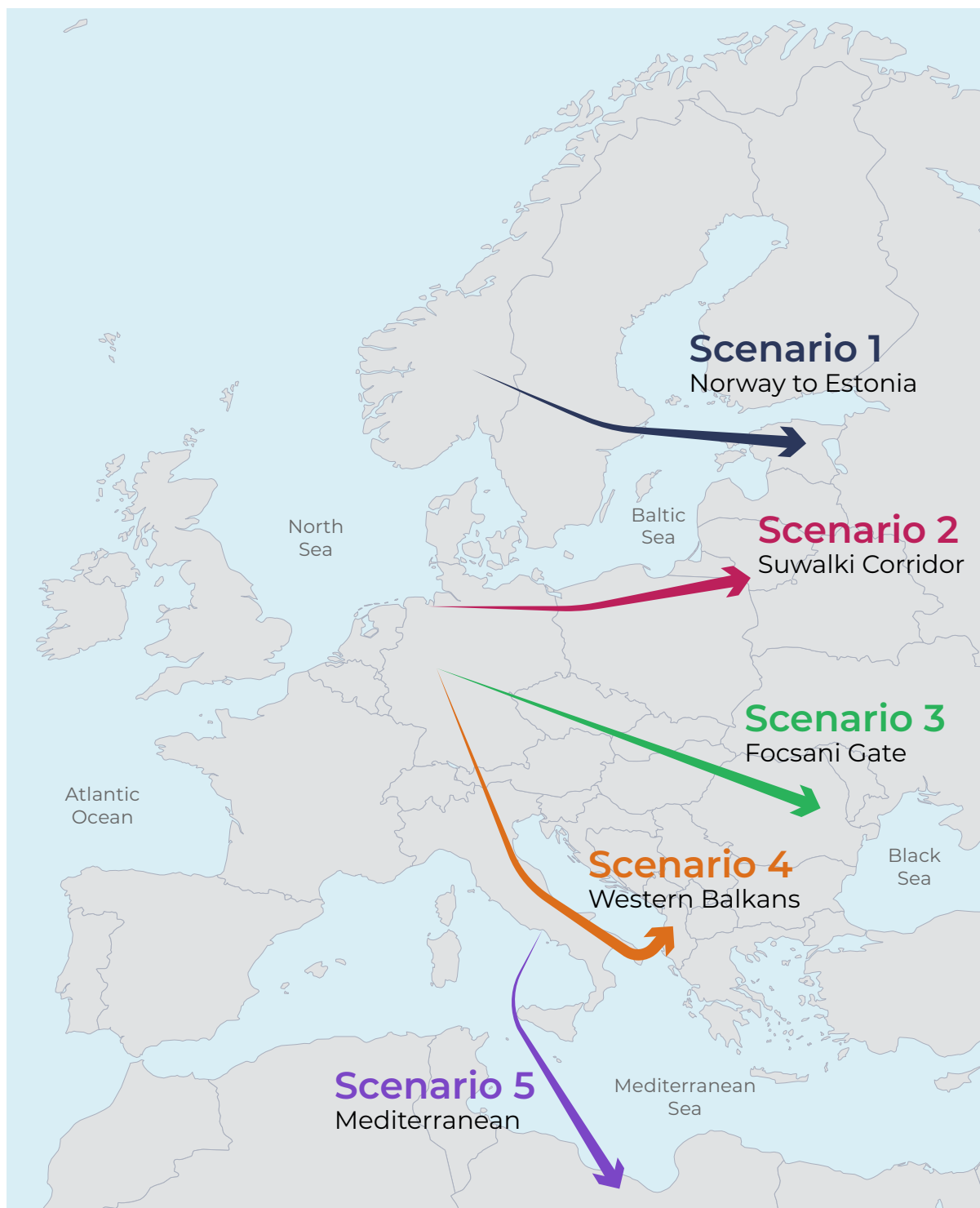
Resilience

- *Foster a culture of cyber resilience:* The deployment of military forces is particularly vulnerable to a potential adversary seeking to delay and destabilize NATO or EU responses to a crisis. Increased awareness of the cyber threat posed to military mobility should be actively promoted

through better communication between NATO, the EU, the member nations, and all civilian and military stakeholders during the planning phase of operations. Far closer civil-military relationships must also be forged to ease incompatibilities between military and civilian equipment that cyberattacks would seek to exploit.

- *Counter information warfare:* Information warfare during a crisis, in combination with cyberattacks and subversive actions, could have significant destabilizing and paralyzing effects on Western societies as well as on allied forces. Therefore, fostering state and societal resilience against all forms of hybrid warfare, including malicious cyber activities and disinformation, is NATO's first line of deterrence and defense and a precondition for the EU's ability to act successfully. Host nations' civil and military authorities, together

Map 1. CEPA Military Mobility Workshop Scenarios



Source: CEPA Military Mobility Workshop 2021.

with commanders of transiting and deployed forces, should closely coordinate to develop a common approach to countering disinformation if they are to respond swiftly and effectively.

Exercises

- *Establish a systematic and comprehensive program of EU-NATO civil-military exercises:* Military mobility in Europe relies on a complex system of national and international civilian and military stakeholders and actors. This system needs to be regularly tested, reviewed, and improved, both in NATO and the EU. Such a goal can only be achieved through a systematic and comprehensive program of rigorous exercising.
- *Use exercises to promote a shared civil-military understanding:* A variety of frequent joint military mobility exercises should be conducted to strengthen both NATO-EU and national civil-military cooperation. Such “events” would also help construct a shared civil-military understanding of the challenges faced by military mobility and ensure staff are properly trained, with processes and procedures tested and adjusted; possible vulnerabilities, frictions, and associated risks identified and addressed; and cohesion built among stakeholders.
- *Test and improve NATO and national planning:* Movement of NATO forces to reinforce national home defense forces of allies located on the Alliance’s periphery requires close and effective coordination between NATO and host

nations to meet the requirements of tactical-level advance planning, in particular with regard to force, space, and time requirements adjusted to regional/local conditions.

Persistent NATO-EU cooperation on military mobility

- *Enhance the Structured Dialogue on Military Mobility:* The Structured Dialogue on Military Mobility between relevant NATO and EU staffs has already effectively contributed to improved information sharing in key areas such as transportation infrastructure, the transport of dangerous goods, customs, and cross-border movement permissions. However, those involved should meet more frequently and focus on identifying those areas and measures that must be tackled urgently in order to make tangible progress. To that end, a virtual joint secretariat could be charged with monitoring progress between the meetings and coordinate technical staff cooperation on particular strands of work between the meetings to ensure issues are followed up.
- *Senior leadership engagement is essential:* Key leaders’ engagement is vital. The NATO secretary general and the presidents of the European Council and the European Commission must be regularly informed about progress achieved and the emerging issues that can only be tackled at their level of responsibility. They should also be encouraged to address issues vital to military mobility in their meetings and provide guidance to their respective civil and/or military staffs.

Foreword

Ben Hodges

Effective deterrence requires demonstrated capability and the will to use that capability. It must be built on a strong foundation of speed: (1) speed of recognition of what a potential adversary is considering, (2) speed of decision-making to begin necessary movements and preparations to prevent or respond to a crisis, and (3) speed of assembly to gather the elements of combat power in place to stop an adversary or, if deterrence fails, to respond fully and forcefully.

Military mobility is essential to effective deterrence. It is about speed and the ability to move our forces as fast or faster than any potential adversary. It gives political leaders options to head off a crisis and the ability to deter — something other than a liberation campaign.

CEPA's Military Mobility Project was a yearlong, comprehensive look at all facets of military mobility, including authorities, capabilities, capacities, transportation infrastructure, cyber protection, air and missile defense, mission command, interoperability, river crossings, weights of vehicles, EU regulations, and NATO decision-making. The project included panels that were conducted virtually over the spring, summer, and fall of 2020 as a consequence of Covid-19 pandemic-related restrictions. Its center of gravity was the Military Mobility Workshop, which was also conducted virtually, in August, September, and October.

The workshop was unique in several ways. It was based upon five different scenarios which touched nearly every corner of Europe within a NATO or EU context. Each

scenario included cross-functional working groups of 15-25 practitioners and experts from a wide range of organizations, agencies, industry, media, and nations. The results were presented during a virtual culminating event in October with the workshop's senior mentors and working group leaders, and alongside presentations by Adm. Rob Bauer, the Netherlands' chief of defense, and Lt. Gen. Scott Kindsvater, deputy chairman of the NATO Military Committee.

This project was also the first to gather a comprehensive list — or “network” — of organizations, agencies, and industries that have a role and stake in improving military mobility. This network will enable and enhance further work in the coming months and years.

This report provides key findings, sharp analysis, and substantive, achievable recommendations to reinforce and build upon existing efforts. Much progress has been made, and relevant headquarters, nations, and responsible NATO, EU, and national leaders now acknowledge the significance of military mobility to our credibility. But we have yet to meet all requirements for effective deterrence. There is insufficient capacity and capability, authorities are still not complete, and determining clear chains of command remains a major problem.

NATO, the EU, and the member nations have a common responsibility to make effective military mobility a reality. We hope that the substantive recommendations offered in this report will be considered and, in time, implemented so that we can move as fast or faster than our potential adversaries.

Strategic Context

Since 2014, the security environment in and around Europe has fundamentally changed. For NATO, new challenges and threats have emerged from two strategic directions. To the east, Russia's aggressive actions against Ukraine and its illegal annexation of Crimea profoundly altered the conditions for maintaining security in Europe. To the south, an "arc of instability" and violence stretching across the Middle East and North Africa (MENA) fueled terrorism and triggered mass migration, both of which affected the stability of Europe. Consequently, NATO must be able to respond to multiple challenges and threats from several regions and directions at short notice. In order to do so, the Alliance must ensure it has the right forces in the right place at the right time. While the two major sets of challenges are different, they are equally important for the security of NATO allies. Therefore, NATO has adopted a multi-faceted approach. First, the Alliance is significantly strengthening its deterrence and defense posture, particularly its ability to rapidly reinforce allies on its periphery, if necessary. Second, the Alliance is projecting stability to its southern neighborhood, primarily by supporting partners therein to develop their own defense capacities, but also by undertaking crisis response operations, if needed. In addition, the Alliance is bolstering its resilience against hybrid threats from state and non-state actors, in particular by strengthening its cyber defense and countering disinformation.

By way of its conclusions on how the EU Global Strategy should be implemented, the European Union (EU), in November 2016, determined the three strategic priorities to be pursued by it in the area of security and defense: responding to external conflicts and crises, building partners' capacities, and protecting the bloc and its citizens. To that end, the EU has adopted a range of measures to "build

a more effective, responsive and joined-up Union, capable of pursuing the EU's shared interests and priorities in promoting peace and guaranteeing the security of its citizens and territory."² In November 2017, the EU agreed to undertake an initiative to improve and enhance military mobility. One of the practical steps proposed was the better exploitation and fostering of civil-military synergies and the greater use of existing policies and instruments to "enable EU Member States to act faster and more effectively in the context of the Common Security and Defense Policy, national and multinational activities."³ Moreover, work is underway on the EU Strategic Compass. Based on a joint threat analysis, this new EU security policy document, which is due in 2022, aims to specify how the priorities set by the EU Global Strategy can be implemented and which capabilities the EU should provide with respect to crisis management, enabling and enhancing partners, and protecting the Union and its citizens.

NATO must be able to respond to multiple challenges and threats from several regions and directions at short notice

There are, of course, wider strategic considerations both in the transatlantic relationship and beyond, most notably the evolution of the global security environment and growing great-power competition. Of specific relevance to this project is the growing worldwide overstretch to which U.S. forces are subject. U.S. armed forces are perhaps as taut as at any time since the Korean War in the early 1950s, or at least the Vietnam War in the late 1960s and early 1970s. Given the nature and scope of the change, the security and defense of Europe will become progressively harder



A US Army Bradley fighting vehicle crosses a Polish floating bridge at Zły Łęg lake during Exercise Allied Spirit. Part of DEFENDER-Europe 20 Plus, Allied Spirit brings together more than 6,000 Polish and US Army troops for combat and mobility drills. Credit: NATO

to maintain credibly unless Europeans, in concert with their North American allies, quickly take practical steps to ensure their ability to act as effective, fast first responders during a crisis. Improved military mobility would represent one strand of effort, albeit a vitally important one, in reinforcing defense and deterrence. Enhanced military mobility would also demonstrate a European determination to ease the burdens and overstretch to which U.S. forces are subject. In the worst case, U.S. forces could face simultaneous engineered crises in the Indo-Pacific, the Middle East, North Africa, and the Euro-Atlantic. Given the changing correlation of forces there could come a point when the United States might be unable to prevail in any of these conflicts unless properly supported and aided by its European allies, particularly in and around the European theater. Therefore, the strategic ambition implicit in the Military Mobility Project is

the possible need for European forces to hold the line in a series of crises precisely so that the United States could use its own forces to best effect.

Europe's Military Mobility Challenge

There is a sobering story about Europe's contemporary military mobility challenge. A U.S. Army force of Bradley armored infantry fighting vehicles was being transported by train across Poland. Each of the Bradleys was equipped with a so-called Commander's Sight device that projected from the top of the hull of each vehicle. The route had been "recced" to ensure the necessary clearances. Every single bridge, tunnel, and overpass had been carefully measured, except one

Drive across Western Europe during the Cold War and one could have seen signs

on thousands of road bridges bearing the image of a tank and a number. The sign signified the weight and gauge any given bridge could bear in the event of a major exercise or an emergency. In what is today's Western Germany, major exercises designed to test military mobility were almost routine with REFORGER I-IV, Lionheart, Able Archer, and Big Lift part of a coterie of exercises the commanders of which all assumed that road, rail, air, sea, and port facilities, much of it controlled by civilian government, would enable their respective forces to move rapidly and relatively securely. Those days are gone. For example, since the end of the Cold War, much of the rail infrastructure across Europe has been privatized, mainly to comply with EU competition and state aid rules. The shift to a corporate culture with its focus on commercial cost and profit has led to entire infrastructures being constructed with no heed for their potential military use in an emergency.

In Central, Eastern, and Southern Europe the situation is even worse as such infrastructure never existed. During the Cold War, the Group of Soviet Forces, Germany (GFSG) might have looked impressive on paper. However, its commanders consistently fretted about the difficulty of secure supply and resupply given the poor condition of much of the infrastructure between Russia's western border and its forward-deployed forces. Indeed, such concerns partly explain the Soviet penchant for the offensive and the doctrine of "proval blitzkriga," which supported it for much of the Cold War. First, the force would need to live off the land of others if it was to maintain both momentum and cohesion. Second, the security of its rear area deteriorated across much of Central Europe as Warsaw Pact nations became increasingly fractious.

The challenge of military mobility is not just one of physical weakness. There are a host of political and legal barriers that prevent the rapid deployment of military

force across national borders in Europe, both during peacetime and the conduct of routine activities and exercises, but also during crises. Consequently, allied forces take far longer to deploy and be retrieved than they should if they are to afford contemporary deterrence and defense, the hard power credibility upon which both depend.

The challenge is being slowly addressed. In March 2018, Federica Mogherini, at the time high representative of the EU for foreign affairs and security policy and vice-president of the European Commission, together with then-European commissioner for transport, Violeta Bulc, presented the "Action Plan on Military Mobility." This action plan outlines concrete steps to better facilitate and expedite the movement and crossing of borders by military personnel, materiel, and equipment both for routine activities in peacetime and during crisis and conflict, both within and beyond the EU. The action plan considers all transport modes and in all strategic directions. Moreover, Bulc stated: "[O]ur objective is to make better use of our transport network, to ensure that military needs are accounted for when planning infrastructure projects. This means a more efficient use of public money and a better-equipped transport network, ensuring quick and seamless mobility across the continent. This is a matter of collective security."⁴

The action plan addresses specific areas germane to this project: transport infrastructure; regulatory and procedural issues, such as transport of dangerous goods, customs and value-added tax, and cross-border movement permissions, including diplomatic clearances; and other cross-cutting topics such as countering hybrid threats. The subsequent military requirements for military mobility within and beyond the EU were developed by the EU Military Staff in close cooperation with the EU member states, as well as the European Commission and the

European Defense Agency (EDA). Critically, the relevant NATO staffs were also engaged and involved. The method of the action plan was to use infrastructure development to create synergies between civilian and military transportation needs. Consequently, a “gap analysis” was undertaken to establish a relationship of need between military infrastructure requirements and civilian requirements addressed by the European Commission’s Trans-European Transport Network (TEN-T) policy. The analysis identified a significant (93%) overlap between the infrastructure identified as relevant for military purposes and the geographic scope of the TEN-T. The overlap also helps define the geographic coverage needed for dual-use (civilian and military) projects that could be eligible for co-funding by the European Commission’s Connecting Europe Facility (CEF) with a view to enhancing both civilian and military mobility.

Work is ongoing to identify suitable dual-use projects with the funding of projects beginning possibly as early as 2021 (in accordance with the October 19, 2020, joint report by the European Commission and the High Representative of the European Union for Foreign Affairs and Security Policy to the European Parliament and the European Council). Therefore, EU member states have been invited to identify and present their priority dual-use infrastructure projects, while the European Commission and the EDA are also examining streamlining and simplifying customs arrangements for military movements, as well as better aligning rules concerning the transportation of dangerous military goods across borders. The EDA has also been charged with supporting the establishment of common rules on cross-border movements of military forces.

While the stated ambition is impressive, political agreement on funding proved more difficult. The European Commission had originally proposed €6.5 billion of

co-funding for dual-use infrastructure projects through the CEF as part of the EU’s Multi-Annual Financial Framework (MFF) for 2021-2027. However, during the long and difficult negotiations on the size and various elements of the new MFF and concomitant contraction of the EU budget by some 16% due to the departure of the United Kingdom as a result of Brexit, the CEF’s military mobility envelope has been reduced significantly to €1.69 billion (in current prices) for 2021-2027.

Military mobility is also among the 47 EU Permanent Structured Cooperation (PESCO) projects, part of the EU’s overall effort to “develop defense capabilities and improving the operational availability of forces.”⁵ The PESCO military mobility project is led by the Netherlands and supported by 24 other EU member states, which are project members. At its core is the concept of a “Military Schengen” — the free movement of military units and assets throughout Europe as a result of the removal of bureaucratic barriers and improvements to the infrastructure needed to move through EU member states, via rail, road, air, or sea. On the one hand, the PESCO military project demonstrates the broad political support that enhancing military mobility enjoys. On the other hand, there is a multiplicity of EU entities and national actors involved which poses significant challenges for cohesion and coordination.

It is critical that the capabilities, infrastructure, and arrangements necessary to support the deployment and sustainment of NATO forces are in place in advance. The vital role of the Alliance is as a force generator, but NATO’s ability to act is only credible if it can act. With the important exception of Rapid Air Mobility, NATO looks to its members and the EU to create the necessary infrastructures and permissions that are vital to enabling such action. To that end, NATO is engaged in similar planning to that of the EU as part of its Enablement

Map 2. Trans-European Transport Network



Source: European Commission Trans-European Transportation Network (TEN-T).

Plan for SACEUR's Area of Responsibility. Timely reinforcement of a threatened ally or allies to strengthen deterrence in a crisis and/or effective defense in a war rather than permanent forward positioning of large forces has been, and remains, the paradigm for adapting NATO's conventional force posture. Hence, enabling military mobility has become a priority area for enhanced NATO-EU cooperation within the framework of the implementation of the 2018 Joint Declaration signed by the presidents of the European Council and the European Commission and the NATO secretary general to promote cooperation in areas that are crucial for the security of both the EU and NATO. The US-led Exercise Defender 20 would have tested many of the Alliance's assumptions about military mobility, but in a sign of the times it was curtailed due to the Covid-19 pandemic.

The Principles of Military Mobility

Two principles remain central to effective and efficient military mobility: speed of assembly and speed of engagement. The master principle of military mobility concerns the ability of combat forces and their weapons to move expeditiously toward their objective, and for combat support and combat service support forces to maintain the fighting efficiency of such a force once engaged. Future war will place a particular premium on the ability of combat forces to move rapidly and securely. Over the past century, the pace and reach of military mobility has gone from the pace and range a regiment or unit could walk to rapid air mobility. With the increasing use of robotics and automation in the battlespace it is likely that future military mobility could take place at hyper speed. Consequently, the speed of command is accelerating as well as the distance from which such a force can be attacked by increasingly "intelligent" systems, which poses a range of challenges

for military mobility because forces will be at their most vulnerable during a war when they move into position.

Military mobility has always been seen as a force and combat multiplier enabling commanders to choose the space in which to fight. From the English longbow men of the 13th to 15th centuries to the Wehrmacht of World War Two the ability of a force to move rapidly has historically enabled a force to defeat a more cumbersome enemy many times its size. With the shift toward future war across air, sea, land, cyber, space, information, and knowledge the very concept and principles of "mobility" are changing. What is to be moved by whom, where, when, and how and against whom and what threat requires a new mindset of mobility. In such an environment the past "luxury" of commanders to amass a force on one site over many days will evaporate as mobility accelerates for both the offense and defense. Moreover, the movement of force and resource is increasingly vulnerable to new forms of coordinated attack from cyber and information "warriors" across a vast field of engagement. Consequently, a deploying force could be attacked anywhere along any route effectively halting military mobility. Therefore, fostering state and societal resilience against all malicious cyber activities and disinformation is key to credible deterrence and thus constitutes NATO's first line of defense. It is also a precondition for the EU's ability to successfully deploy forces for crisis management.

In sum, central to the success of military mobility is the creation of secure military movement corridors through which forces must pass to exploit their mass and to maintain speed of command and action. Carl von Clausewitz saw military mobility as central to sound strategy. For him strategy involved the identification of the decisive space in which to fight an enemy and the preservation of a commander's ability to move forces as he

so wished. Indeed, for Clausewitz strategy involved choosing the space and time in which to fight, while tactics concerned the successful conduct of the fight once engaged. Military mobility was thus central to his principles of warfare.

Political-Military Framework in Europe

Effective military mobility is also central to NATO's mission spectrum, particularly at the high end of conflict. This is because NATO remains solely responsible for collective defense planning and operations as part of which, and as a matter of principle, Article 5 collective defense operations enjoy absolute priority. However, enhanced military mobility also enables allies to maintain their contributions to crisis response operations lower down the conflict spectrum. Effective and credible military mobility is thus also central to meeting the requirements of European security and defense established within the framework of the EU's Common Security and Defense Policy (CSDP), particularly as it concerns the effective and timely deployment and sustainment of civilian and military means for crisis response in regions beyond the EU's borders.

Rapid and effective military mobility thus acts as a deterrence and defense enabler and force multiplier in its own right. For example, improved military mobility would better enable the activation of the relevant NATO Graduated Response Plans (GRPs), specifically the movement of the Very High Readiness Joint Task Force (VJTF, a brigade-sized joint force of some 5,000 troops) and the remainder of the NATO Response Force (NRF) in support of the national home defense forces and forward-deployed NATO forces to designated areas. This is particularly important for the Baltic states and other regions along the northern, eastern, and southeastern borders of the Alliance. It would also enable the more rapid deployment of

reinforcing "follow-on forces," such as additional mechanized forces held at a very high readiness as part of the NATO Readiness Initiative. Improved military mobility would render greater utility of allied forces and thus broaden the range of options for the political leadership to ensure an appropriate, effective, and proportionate response. Consequently, the value of improved military mobility extends far beyond the movement of any force package as it would further assure and ensure allied decision-making in the eyes of allies, partners, and, critically, adversaries. The ability to act is a critical factor in the maintenance of credible deterrence.

Improved military mobility would also give political leaders and military commanders greater flexibility through more phased responsiveness and graduated readiness in crises. For example, moving from air policing to air defense during a crisis requires that NATO air forces can be deployed without delay across Europe. Therefore, the arrangements for NATO's Rapid Air Movement (RAM) across national borders in Europe must be such that border crossings can take place at very short notice. Timely allied air movement is thus a condition for friction-free military mobility that has already been established.

Such movement also reinforces the need to move all allied forces rapidly in the event of a military attack. However, while air movement by its very nature depends on specific infrastructures, the mobility of land forces can only be credible if the infrastructures and systems that enable it are sufficiently robust, the network endowed with sufficient redundancy, and, above all, if the necessary infrastructures and permissions are in place. Legality of movement is thus a critical enabler of defense and deterrence. The legal basis for an Alliance response is under Article 51 of the Charter of the United Nations (U.N. Charter), the right to self-defense. Article 51 permits an immediate response

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A U.S. Coast Guard boat is parked in position to be loaded onto an Air Force C-17 Globemaster, as an Army UH-60 Black Hawk prepares to land during Exercise Patriot Sands, Naval Air Station Cecil Field, Florida, Feb. 22, 2019. Exercise Patriot Sands is a joint-service exercise coordinated by the Air Force Reserve, designed to integrate first responders from federal, state, local agencies and the military by providing quick response training in the event of a regional emergency or natural disaster. Credit: U.S. Air Force photo by Tech. Sgt. Larry E. Reid Jr.

by both national home defense forces and the legitimate alliances of which they form a part. In the event of a surprise attack this would concern all of NATO's various commands and forces in and around the Euro-Atlantic area, including forward-deployed U.S. forces. Indeed, central to the legal ethos of the Alliance is that an attack on one ally is an attack on all. In practice, Article 51 would buy time for a considered decision by the North Atlantic Council (NAC) on the nature, scope, and extent of any attack and thus for the Alliance to respond proportionately, including the possible and eventual invocation of Article 5 of the Washington Treaty. Consequently, improved military mobility, both to theater and within it, would not only make NAC decision-making more credible it would also afford leaders more utility and flexibility in the use of conventional force (which today extends across the

information and digital spectra) prior to any cataclysmic decision to use nuclear weapons.

Furthermore, sound security and defense are increasingly reliant on a shifting balance between people protection, military power projection, and legal authorization. This balance also demands a new "contract" between critical civilian and military actors. As the Covid-19 crisis has shown, the need to move resources quickly and intelligently across the European theater is vital to responsiveness across a broad spectrum of security. However, vital political nuance in a complex crisis can be frustrated if structures and systems on the ground are simply unable to meet the demand of response due to a lack of alignment between the political, the legal, and the physical.

In the event of a planned crisis response operation by NATO beyond its borders the legal basis for action would be constituted by a series of sequential NAC decisions. Critically, for any such crisis response operation member nations would in the end almost certainly also demand a mandate from the U.N. Security Council. In the EU, any decision to act would be taken by the Political and Security Committee (PSC), based on Article 38 of the Treaty of the European Union and under the responsibility of the Council of the EU and the high representative. Additionally, a so-called joint action would also need to be agreed that specifies the mandate and details of such a mission in legal terms, i.e., consistent with the Treaty of the European Union and, of course, the U.N. Charter. Consequently, for both NATO and EU/CSDP crisis response operations most of the nations concerned would insist upon a U.N. mandate.

Given the tensions therein if nations are unwilling to act prior to U.N. authorization responsiveness and mobility could be halted. Given also that adversaries such as China and Russia are becoming increasingly skilled at operating just below the threshold of Article 5, the Alliance must further confront a crisis of legitimate action implicit therein. When would it be legitimate to act in the absence of a U.N. mandate? For example, if the U.N. Security Council was stymied by a Chinese or Russian veto the ability of both NATO and the EU to act would be strengthened immeasurably if both institutions not only had the credible ability to respond to crises in a quick and timely manner, but also applied some “creativity” over the source of legitimacy for any such action.

Ultimately, the case for improved military mobility rests on several dangerous realities given the nature and scope of emerging and disruptive challenges and threats faced by Europeans and their partners: the growing overstretch of U.S. forces and the concomitant shift of the

Rapid and assured military mobility is one of the essential pillars upon which any credible overall strategic framework for security, defense, and deterrence in Europe would need to stand

United States’ strategic center of gravity to the Indo-Pacific region, the relative paucity of deployable European forces, and their limited collective ability to move forces and resources quickly to offset relative weakness. Rapid and assured military mobility is thus one of the essential pillars upon which any credible overall strategic framework for security, defense, and deterrence in Europe would need to stand, the more so given the possible concurrency of crises in a major emergency.

In the event of escalating political and military tensions during which there are a number of indicators that suggest Russia is preparing to launch a large-scale attack, NATO would also need to be prepared to confront aggression in more than one region. Consequently, the Alliance also has to set priorities of scale and the readiness of the forces and resources required, as well as establish timelines for the rapid deployment and buildup of forces in more than one region. It would be assumed that NATO had some time to assess, decide, deploy, and employ forces to reinforce deterrence or conduct collective defense operations. Consequently, the critical need would be for leaders and commanders to know what could be moved where, at what scale and speed, and, critically, how best to move forces and resources appropriately to ensure secure and credible “notice to effect.” It would be difficult but doable. However, if NATO was confronted with a short-notice crisis or attack by Russia, and

a *fait accompli*, possibly in the Baltic region, the challenge for military mobility would be profoundly different and more difficult. NATO's immediate response initially would be to authorize the speedy deployment of sufficient forces to reinforce the Baltic states and Poland to deter Russia from attempting a quick land grab and to deny it the possibility of further incursions. Any such contingency would thus require the planning, generation, and deployment of a sizable and powerful force in far less than thirty days.

During a high-end emergency, for example in the Baltic states, allied forces would need to cross the Suwałki Corridor and move further to the north. NATO would also need to be prepared to move the VJTF and/or even the entire NRF forward as far as Estonia if need be. However, if war were to break out while deploying the force the conditions for the movement of all allied forces would change fundamentally and dramatically. Russia would have activated its burgeoning anti-access/area denial (A2/AD) capability in Kaliningrad and the St. Petersburg area, as well as on the Crimean peninsula, significantly hampering the movement of NATO's forces. Even as they deployed, NATO forces would also be confronted with the full spectrum of Russia's (hybrid) warfare capabilities, including cyberattacks, disinformation, subversive actions, blockages, deep strikes with intermediate-range missiles, etc. Such actions would also massively impact the deployment of NATO's air and maritime forces, the composition and readiness of land forces to be deployed, and how and when they would or could move. In other words, NATO would be forced to adopt maneuver operations in significant scale in depth at an early stage of any major conflict across a space that would extend from the rear area to the forward defense area all of which would be under various forms of an intense Russian attack.

In planning for such worst-case scenarios, a number of questions must be addressed,

such as: What type and quantity of force and materiel would need to be transported to meet the threat? How would control, execution, and monitoring of military and civilian movements be secured?

Who would have the full picture of all multimodal capacities and their availability in such a crisis? Could a robust chain of command be established in the face of deep cyberattacks, engineered social disorder, organized criminal and terrorist attacks, and, of course, direct military attack?

Military Mobility Project — Five Scenarios

It is against the backdrop of a challenging contemporary strategic context that the Military Mobility Project was established. The essential dilemma faced by NATO is this: While the Alliance's 30 member nations provide far more aggregated military power compared to Russia they are disaggregated through geography, command, and structure, as well as varying levels and types of strategic culture. Russia, on the other hand, can choose where, when, and if to apply locally overwhelming force anywhere on the perimeter of both the EU and NATO. Given that potentially critical allied disadvantage, effective and efficient military mobility is a critical element of credible deterrence and defense, as well as regional emergency management, as evinced by the response to the Covid-19 pandemic. While NATO has made significant progress in adapting to a changing strategic environment, and the EU has devoted a significant effort to improving military mobility by means of implementing the Action Plan for Military Mobility, far more needs to be done given the evolving nature of the threat.

The Military Mobility Project was designed to identify key findings and recommendations that would, if implemented, advance the conditions required to enable military mobility across

Europe. The project's core assumption was that effective and efficient military mobility across road, rail, sea, and air would far better support and enable a range of contingencies from a peer competitor crisis in Europe to the consequences of political, economic, and social collapse in the Middle East and North Africa and the threat posed by terrorism.

With this in mind, the project established five scenarios. Three of the scenarios addressed high-end military dilemmas in varying forms in response to a possible threat from Russia, all of which would require the use of significant force, while the other two scenarios considered the use and utility of military force across a much broader spectrum of civil-military interventions. The aim of the scenarios was to test military mobility across differing conditions, environments, and challenges within the overall political and strategic context established herein.

The scenarios shared a range of characteristics and differences. They were all potential flashpoints, had strategic implications for the security and defense of Europe, and demanded a tailored and intelligent application of force and resource over time, space, and mission intensity. They would also likely be subject to complex strategic coercion prior to full-scale military conflict across the hybrid cyberwar spectrum of disinformation, deception, destabilization, disruption, and implied or actual destruction. Equally, they were also sufficiently different and distinct enough to pose a range of institutional, national, and military mobility challenges.

Each scenario was assigned to a working group composed of multinational, cross-functional, civilian, and military integrated teams of some 20 personnel. They all enjoyed representation from the EU, NATO, member nations, industry, media, and academia, and included specific subject matter experts in areas such as cyber, transportation, and logistics. The aim of the working groups was not to "solve" any

political or strategic issues, but to examine what was required to deploy a force using complex multimodal modes of transport (air, sea, road, and rail). The objective was to generate the concrete recommendations for which this report is a vehicle, to use the report thereafter to raise awareness across and amongst a swathe of policymakers of the critical importance of military mobility, and to generate a much-needed sense of urgency.

Scenarios I (the Nordic-Baltic Route), II (the Suwałki Corridor), and III (the Focșani Gate) tested the movement of forces for reinforcement of eastern allies located on NATO's northeastern and southeastern flanks. They were based on the political-military framework set by NATO's political leaders at various summits, such as the 2016 Warsaw Summit where the heads of state and government agreed to establish two forms of multinational forward presence: an *Enhanced Forward Presence* (eFP) and a *Tailored Forward Presence* (tFP). The eFP was established to reinforce the Baltic states and Poland, all of which share common borders with Russia and could be exposed to a potential direct military attack by Russia. The eFP comprises several multinational battlegroups ready to "fight tonight." The tFP in Romania and Bulgaria committed allied forces to reinforce the defense of NATO members not directly exposed to a potential military attack by Russian forces. The tFP saw the creation of a Multinational Divisional HQ (South-East), as well as a Multinational Brigade HQ (South-East), plus roughly two battalions. It also acts as a framework for the regular exercising of multinational allied forces in the region and includes an enhanced NATO air and naval presence in the Black Sea Region. The difference between the two forms of "presence" is essentially one of time. In the event of an attack on NATO's southeast, Russia would either need to launch a large-scale amphibious landing operation from Crimea or first defeat Ukrainian forces before crossing Moldova to invade Romania, all of which

would imply significant preparations, large forces, and significant time. Consequently, NATO would likely have time to prepare its collective defense of the region, albeit subject to the constraints on military mobility environment being sufficiently permissive for NATO to reinforce national defenses in the region that is notorious for poor communications and transportation links. However, while the Alliance force posture in both the eFP and tFP reflects headquarters and forces at different states of readiness, for the sake of methodological rigor each scenario tested assumptions to the credible worst-case for each of them.

Scenarios IV (Western Balkans) and V (Libya) specifically tested the planning assumptions of the EU with regard to a possible crisis response beyond their respective borders. However, while Scenario IV dealt with reinforcing the EUFOR mission in Bosnia and Herzegovina (Operation Althea) to fend off possible Serbian and Russian destabilization activities and restore stability across the Western Balkans, Scenario V envisaged an autonomous EU peacekeeping mission without recourse to NATO assets and capabilities. The assumption therein being that there would be no *Berlin-Plus* missions beyond the existing one in Bosnia-Herzegovina. Consequently, the scenario considered how best to deploy a relatively small force package across a large geographical area using unhardened existing arteries.

Scenario I examined the movement of a defined NATO force package from Norway through Sweden and across the Baltic Sea to the Baltic states and Poland. Its focus was the political, legal, organizational, and infrastructural challenges that would be faced moving a battlegroup from Oslo to Stockholm and on to Estonia. Scenario II examined the movement of military forces from Germany through Poland to the Baltic states. The focus of the scenario was the so-called Suwałki Corridor through which allied forces would need to pass.

Some 40 miles (60 kilometers) wide and stretching along the Lithuanian-Polish border between Belarus and Kaliningrad, the Suwałki Corridor could become a choke point for allied forces and cut across NATO's land supply axis to the Baltic states. Defending the Baltic states and Poland has moved the AOR far to the east of where it was at the end of the Cold War. And yet, only two roads and one railway line through the Suwałki Corridor would enable NATO land forces to reinforce the region across land. Scenario III tested reinforcing NATO's southeastern region, in particular the movement of forces across the Carpathian Mountains and the utility of the River Danube for military transport to the so-called Focșani Gate — a terrain basin that is suitable for maneuver operations and also offers a military force that would be able to penetrate the gate from the east to gain an avenue toward the Western Balkans. The essential challenge was to get allied forces into the region in strength and in time. The infrastructure that would enable such movement is by and large old with some of the POD under Russian influence.

Scenario IV concerned an EU-led operation, supported by NATO assets and capabilities that had to be moved across Europe to the Western Balkans to restore stability and counter Russian influence therein. The focus was on the movement and use of military forces in a complex strategic environment in which hybrid warfare and military competition were destabilizing an already unstable the region. Finally, Scenario V tested the manifold technical, logistical, and military challenges of moving a force across Europe and the Mediterranean Sea into a region beyond Europe's borders which has long since been subject to instability, conflict, and civil war. For the purpose of the scenario, the international community decided on an U.N.-sanctioned ground operation with an EU force at its core charged with keeping armed militias apart.

Military Mobility Project Team

The multinational Project Leadership Team combined experience and knowledge and was structured thus:

Project Co-Leaders: Ben Hodges, *Pershing Chair in Strategic Studies*, Center for European Policy Analysis (United States)

Lauren Speranza, *Director, Transatlantic Defense and Security Program*, Center for European Policy Analysis (United States)

Advisers: Julian Lindley-French (United Kingdom) (lead report author)

Heinrich Brauss (Germany) (lead report author)

Oliver Gnad (scenario design) (Germany)

Miriam Ludwig (scenario design) (Germany)

CEPA: Christina Brown (United States)

Candace Huntington (United States)

Gabrielle Moran (United States)

Carsten Schmiedl (Germany/Canada)

Miruna Sirbu (Romania)

Working Group Leaders: Scenario I: John Agoglia (United States)

Scenario II: Jacek Bartosiak (Poland)

Scenario III: Phillip A. Petersen (United States)

Scenario IV: Greg Melcher (United States)

Scenario V: Hans Damen (Netherlands)

Industry Partners: General Dynamics European Land Systems

Acrow Corporation of America

DB Cargo

Oshkosh Defense

Raytheon Missiles & Defense

Rheinmetall Defence

Participating Organizations:

- Army of the Czech Republic — J4 Logistics
- Atlantic Council
- Bell Textron
- Boeing Defense, Space & Security
- Booz Allen Hamilton
- BRK Systems SRL, Craiova

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- Deutor Cyber Security Solutions GmbH
- Die Rheinpfalz GmbH & Co. KG
- EURACTIV
- European Commission — Directorate-General for Mobility and Transport (DG MOVE)
- European Defense Agency (EDA)
- European External Action Service (EEAS) — European Union Military Staff; Security and Defense Policy Division
- European Parliament — European Parliamentary Research Service; Trans-European Transport Network (TEN-T) and Connecting Europe Facility (CEF)
- Friends of Europe
- George C. Marshall European Center for Security Studies
- German Federal Armed Forces — Mountain Engineer Battalion; Joint Support and Enabling Service Headquarters (JSES)
- Ignitis Group
- International Centre for Defence and Security (ICDS)
- Lithuanian Railways — LG Freight Transport
- Ministry of Defense of Latvia — Crisis Management Department
- Ministry of Defense of the Netherlands — Task Force Logistics
- Movement Coordination Centre Europe (MCCE)
- Multinational Corps Northeast Headquarters (MNC-NE), Joint Engineering (JENG) Division
- National Defense University (NDU)
- NATO Allied Joint Force Command Naples (JFC Naples)
- NATO Defense Planning and Policy Division (DPP)
- NATO Energy Security Center of Excellence (ENSEC COE)
- NATO Force Integration Unit (NFIU) Lithuania
- NATO Force Integration Unit (NFIU) Poland
- NATO International Military Staff, Logistics, Armaments & Resources Division (IMS L&R)
- NATO International Military Staff, Defense Policy and Planning Division, Enablement & Resilience Section (ERS)
- NATO Joint Force Command Brunssum (JFC Brunssum), Movement and Transportation (M&T)
- NATO Joint Support and Enabling Command (JSEC)
- NATO Standing Joint Logistics Support Group (SJLSG)
- NATO Supreme Headquarters Allied Powers Europe (SHAPE) — Strategic Enablement Directorate (STREN), Infrastructure & Engineering (IE); J4 Logistics
- New Strategy Center
- RAND Corporation
- SEKO Logistics
- Süddeutsche Zeitung GmbH
- Swedish Defense Research Agency
- United States Army Europe — 21st Theater Sustainment Command, G4 Mobility Division
- United States European Command — J4 (Logistics)

Project Timetable

The project timetable was severely impacted by the Covid-19 pandemic. It was originally envisaged that the bulk of the work would have taken place at a major Brussels conference in spring 2020. However, the Covid-19 lockdown forced the postponement of the conference. In the end, it was decided to generate the work through several virtual working group sessions which took place between the end of August and October 2020, with a culminating virtual plenary conference on October 20. Over the course of the spring and summer, CEPA hosted a number of virtual panels each month in order to create awareness, build momentum toward the virtual Military Mobility Workshop, and further inform the effort. The following panels were conducted:

- July 7, 2020: “How We Move: Five Scenarios That Test Military Mobility Across Europe,” moderated by retired Lt. Gen. Ben Hodges, Pershing Chair in Strategic Studies, CEPA; speakers: Dr. Jacek Bartosiak, CEO and founder, Strategy&Future; Dr. Oliver Gnad, managing director, Bureau für Zeitgeschehen; Miriam Ludwig, program manager, Bureau für Zeitgeschehen; and Charles “Bill” Robinson, chief of Integrated Learning, Joint Wargaming and Experimentation Division, Joint Staff, J7.
- June 2, 2020: “Cybersecurity and Critical Infrastructure,” moderated by retired Lt. Gen. Ben Hodges, Pershing Chair in Strategic Studies, CEPA; speakers: retired Col. Tom Greenwood, research staff member, Institute for Defense Analyses (IDA); Edvinas Kerza, corporate resilience service director at Ignitis Group, former deputy minister of defense of Lithuania; Col. Jaak Tarien, Estonian Air Force, director of NATO Cooperative Cyber Defense Centre of Excellence; and Sabina Wolf, journalist, Bayerischer Rundfunk, ARD.
- May 5, 2020: “Shifting Towards ‘Crisis Mobility?’ Why Military Mobility Matters During Covid-19,” moderated by retired Lt. Gen. Ben Hodges, Pershing Chair in Strategic Studies, CEPA; speakers: Jacek Bartosiak, CEO and founder, Strategy & Future; Tania Latici, policy analyst, European Parliamentary Research Services; Greg Melcher, chief operations officer, New Generation Warfare Centre; Gp. Capt. Elizabeth Purcell, J4 Strategic Plans, NATO Supreme Headquarters Allied Powers Europe (SHAPE).
- April 2, 2020: “Moving Mountains Amid a Crisis? Increasing Military Mobility Across Europe,” moderated by retired Lt. Gen. Ben Hodges, Pershing Chair in Strategic Studies, CEPA; speakers: retired Lt. Gen. Heinrich Brauss, former assistant secretary general for defense planning and policy at NATO; retired Brig. Gen. Hans Damen, strategic adviser for Insparcom; Tania Latici, policy analyst at the European Parliamentary Research Services; and Professor Dr. Julian Lindley-French, senior fellow at the Institute for Statecraft.

Main Findings and Recommendations

Military mobility has many moving parts: sending nations, transit nations, host nations, NATO, the EU, and potentially other international organizations outside Europe, as well as a host of civilian and military actors within nations. Effective coordination built on a deep understanding of the political, legal, and physical challenges is thus a vital first step to improving mobility. The five scenarios mentioned above highlighted a number of common challenges and requirements, and the working groups identified a series of findings and recommendations without which effective strategic and operational planning will be near impossible. These findings are discussed in Appendices 1 to 5.



An Italian air force member stands-by as a pallet of medical supplies from Milan, Italy is off-loaded in Rome, May, 13, 2020. In response to the ongoing coronavirus disease 2019 outbreak, an 86th Airlift Wing C-130J Super Hercules assisted the Italian government in transporting medical supplies between supply hubs in Milan and Rome, Italy. Credit: U.S. Air Force photo by Senior Airman Kristof J. Rixmann

The working groups' findings and recommendations have been reviewed, consolidated, and are grouped in this section under the key functional areas that have been identified by the EU as central to enabling military mobility in Europe. These functions are also guiding discussions over the Structured Dialogue on Military Mobility between the EU and NATO at staff level: rules and regulations pertaining to the transport of dangerous goods, customs, and cross-border movement permissions, as well as transport infrastructure. A number of important crosscutting issues are also discussed in this section: command, control, and coordination relevant to military mobility, funding, special capabilities, resilience, and exercises. The aforementioned joint report by the European Commission and the high representative has also been analyzed and taken into account, and several senior

experts from NATO and EU staffs have provided additional input on several specific topics central to the mission of the project.

Principal Considerations

There are several principal factors that should drive all efforts to improve the conditions for moving military forces to, across, and within Europe.

Engagement. The security environment is marked by the return of geopolitical great-power competition. As a consequence of China's rapid rise to global power status, the United States is shifting its strategic center of gravity to the Indo-Pacific region. The United States' European allies and partners will thus have to spend significantly more on deterrence and defense in Europe, as well as crisis management in North Africa and the

Middle East. The November 2020 decision by the British government to increase its defense budget by 10% over four years could be a sign of an effort to address the coming challenge. Moreover, between 2016 and 2020 the European allies and Canada increased their accumulated defense expenditures by some \$130 billion. Against such a strategic background, there is a clear common responsibility for both NATO and the EU to enable expeditious military mobility throughout Europe, which is why it has become both a flagship project for NATO-EU cooperation and central to transatlantic burden sharing. In short, establishing the foundational conditions required for military mobility and implementing them is both an urgent military requirement and a political necessity, and requires leadership awareness and engagement at the highest levels in NATO, the EU, and European capitals, at both political and military levels.

Planning. The five multinational civil and military project working groups have already greatly contributed to enhancing and raising awareness in capitals, EU institutions, and across NATO's civilian and military staffs of the critical importance of military mobility for both the Alliance and the Union. Moreover, the discussions therein also addressed a number of issues important for comprehensive and effective military planning for the deployment of forces in a crisis, whether for enhancing deterrence and the collective defense of allies or crisis management beyond Europe. Critically, the responsible military headquarters and staffs of both NATO and the EU have long been engaged in military advance planning, including logistics planning, for deploying forces and sustaining them in theater. Credible deterrence can only be achieved when conditions are set for successful collective defense. Consequently, this report identifies the policies and actions needed to add value to their work. In the event of a crisis that requires the rapid movement

of military forces across Europe, it would also require such forces to cross multiple national borders, pass across the territory of several nations in which different and differing national legislation applies, as well as use the available infrastructures of varying extent and quality. Military planning for the deployment of forces across Europe in peacetime, in a crisis, and war must, therefore, take into account national and EU legislation and regulations. Given the challenges, there is also a vital need to exercise and test coordination and standardization and deconflict processes prior to any emergency to ensure they function under duress and can thus meet planning timelines.

Credible deterrence can only be achieved when conditions are set for successful collective defense

Whole-of-government approach. Even during a major crisis with Russia the relevant peacetime legal regulations would still apply, for which the EU and various levels of national civilian and military authorities and actors are responsible and which differ from country to country. Therefore, for the enabling of rapid and effective military mobility a whole-of-government approach in all enabling nations is required. This would necessarily involve (*inter alia*) ministries of defense, interior, and transport, as well as private sector leaders responsible for air, rail, road, and port facilities. Therefore, the fostering of a whole-of-government military mobility culture through preestablished relationships will be particularly important in transit and host nations. Such a network of effect will demand established and robust relationships between national government and local authorities, those relevant industries

responsible for the management of critical infrastructures, as well as those military commands responsible for coordinating and supporting the deployment of military forces and providing HNS and sustaining forces in theater. Ultimately, the test of effective military mobility will rest upon timely decision-making in an emerging crisis that is at the “speed of relevance” (in the words of former US Secretary of Defense James N. Mattis). While the EU clearly has a major role to play in promoting such political coherence, it is NATO that is and must be the driving force concerning requirements. A whole-of-government approach and effective NATO-EU cooperation on countering hybrid threats will be particularly important to successfully combat disinformation and promote enhanced cyber resilience.

Rules, Regulations, and Procedures

During a crisis, if the Alliance moves to deploy forces to reinforce allies and strengthen deterrence there would be no time for extensive political consultations and preparations of procedures for crossing borders and transiting countries ahead of a planned movement. Therefore, it is of utmost importance that all necessary data, arrangements, and forms are identified in advance, and developed, coordinated, and standardized between the nations, on the one hand, and between the EU and NATO on the other, as well as worked up through frequent exercises and improvements.

Streamline Cross-Border Movement Permissions. Smooth military movement requires harmonized procedures for requesting and issuing border-crossing and transit permission for all modes of transport. NATO has implemented a legal framework through Technical Arrangements (TAs) with both allies and those European partners that participate in the Partnership for Peace (PfP) program. These TAs are geared to NATO’s current advance planning. The EDA has also been working

on two TAs within the framework of its program on “Optimizing Cross-Border Movement Permission Procedures in Europe” for military forces (military personnel, equipment, ammunition, fuel), one for the surface and another for the air domain. Twenty-five EU member states have joined the program, which is reportedly progressing well. The aim is to lift existing restrictions in national legislation. The TAs will thus facilitate the cross-border movement of EU member states’ forces and capabilities for operations, exercises, and daily activities and are expected to be completed and agreed by spring 2021. Therefore, it is essential that all EU member states commit to establishing a harmonized movement approval process within Europe. Norway has joined the program; it is important that other non-EU European allies join up as well or at least establish compatible rules.

Standardize regulations for the transport of dangerous goods. Effective military mobility also requires harmonization of EU member states’ legislative frameworks and diverging national approaches to authorizing the movement of dangerous goods. Several EU bodies (the EDA, the European Commission, and the European External Action Service) have been working, including within the scope of the TAs for the surface and the air domains, to enable harmonization of respective practices across EU member states. The combining of civilian rules with, where necessary, the provisions of the NATO Standardization Agreement, AMovP6, as the reference set of rules for the transport of dangerous goods in the military domain, is considered sufficient by the EU to allow for the speedy international transport of dangerous goods for military purposes (in accordance with the October 2020 joint report by the European Commission and the high representative of the EU). The legal basis for the transport of dangerous goods should, therefore, be determined by the EU member states as soon as possible. A harmonized legal basis is particularly

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THESSALONIKI, Greece - Eight UH-60 Black Hawk helicopters and more than 70 other pieces of equipment from the 10th Combat Aviation Brigade, Ft. Drum, N.Y., arrived at the Port of Thessaloniki Feb. 25. This is the first full aviation Regionally Allocated Force to support Operation Atlantic Resolve and U.S. Army Europe. Credit: Spc. Kelsey Little, U.S. Army Europe

important for both transit nations and host nations. The aim should be to achieve annual renewal/update of approval for the transport of a range of dangerous goods along defined multimodal movement corridors.

Promote standardized customs procedures. All European governments should apply streamlined customs procedures for military transport throughout Europe. Based on the PfP Status of Force Agreement (SOFA), allies and PfP partners use NATO Form 302 for exemption from customs related to the movement of goods for use by a deploying force. For its part, the EU has recently developed, in full transparency and dialogue with NATO, EU Form 302 which is to be used alongside the existing NATO Form 302. Together, these forms enable rapid customs declarations for various military cross-border movements, including within the framework of the

EU CSDP (through EU Form 302). While NATO Form 302 is already digitalized, the EDA is working on a digitalized format of its Form 302, which is supposed to be available in 2024. Although these forms are designed to ensure uniform treatment of all cross-border military movements by customs in all EU member states and non-EU allied countries, there is a concern about duplication of effort and data ownership. Moreover, every custom officer in every European country must be aware of, trained, and thus able to correctly apply the pertinent procedure. Therefore, in order to simplify the customs process for all military movements in Europe, the EU and NATO should make an effort to jointly develop identical 302 templates, while retaining their distinct legal basis.

Accelerate response times for CBMP. The EU has committed itself to ensure the timely delivery of cross-border movement

permissions by its member states, including for requests for entry and movement permission for military forces and equipment for all modes (surface, air, and sea) for routine activities within no more than five working days; and to consider further reducing this period for rapid reaction units/rapid reinforcement. Since a crisis on NATO's periphery in Europe could virtually emerge overnight and, in some circumstances, lead to a decision by NATO to move its high-readiness response forces expeditiously for rapid reinforcement, a five- working-days period would be too long. NATO's operational-level planning timeline is three calendar days (72 hours). The EU should, therefore, adjust the response time to be granted by EU member states to three days, including for movement exercises. At the very least, it should create a mechanism to allow preapproval for defined rapid reaction force packages within no more than three days.

Transport Infrastructure

The transportation infrastructure in Europe is primarily designed for civilian transport. To that end, roads, rail lines, tunnels, bridges, harbors, and airfields in every European NATO country need to comply with established international standards. However, if they are part of NATO's movement corridors and network of main supply routes (MSRs), such infrastructures must also be capable of carrying the weight of heavy armor and large mechanized formations.

Undertake a comprehensive infrastructure assessment. Such an assessment will be critical prior to an emergency to avoid the dangerous slowing of movement of forces as these forces disembark at ports and re-embark on road and rail systems. A comprehensive survey is needed of all possible routes to check the capacity of rail or road networks as well as potential choke points and vulnerabilities in a contested environment and in

anticipation of risks and possible frictions. Route heights and widths, specifically restrictions on the capacity of tunnels, bridges, roadways, harbors, and airstrips, must be known by the responsible military commands in advance for the transport of heavy vehicles. The results of the "gap analysis" for identifying dual-use infrastructure projects should be taken into account. Such an assessment should take place in conjunction with a similarly comprehensive assessment of the capacity of the communications and energy infrastructure. The responsible headquarters/staff of both NATO and the EU should have established and should maintain shared comprehensive infrastructure databases relevant to their respective military transport networks. In this regard, host nations should continue the Military Load Classification (MLC) assessment and corresponding marking of bridges in the mobility corridors in accordance with NATO guidelines (STANAG 2021). In addition to improving existing infrastructure, additional infrastructure requirements to enable heavier military traffic have to be taken into account.

Make best use of the European Commission's Trans-European Transport Network policy. The European Commission has, meanwhile, established procedures to identify dual-use (civilian and military) infrastructure projects as part of its TEN-T network that would be eligible for co-funding. EU member states have also been invited to identify their priority dual-use projects, and the European Commission plans to launch a call for proposals in the first semester of 2021. At the very least, transit and host nations must upgrade their existing rail and road networks to NATO and EU standards. Besides the need to improve existing infrastructure, additional infrastructure requirements to enable heavier military traffic have to be addressed. Therefore, if not already done, it is essential that European NATO allies, which are also members of the EU, in

coordination with the responsible NATO military headquarters submit those priority infrastructure projects located along the MSRs/transport corridors that are also covered by the TEN-T policy. Such projects will necessarily take time, so it is vital that EU member states urgently identify projects that could benefit from TEN-T funding.

Build for heavier military equipment. Given the potential military threat posed by Russia, it was agreed by heads of state and government at NATO's Warsaw Summit in 2016 that allies should provide for "heavier, more high-end forces and capabilities and more forces at higher readiness."⁶ NATO's capability targets for allies have been adjusted accordingly. However, the likely greater weight of new military equipment also needs to be factored into infrastructure assessments. Future equipment could well become heavier with more armor. In Europe, 90% of highways, 75% of national roads, and 40% of bridges are able to carry vehicles with the maximum MLC of 50 for a tracked vehicle. Critically, tracked vehicles can only weigh up to 45.4 tons on bridges, while a maximum weight of 52.6 tons is permitted for wheeled vehicles. During crisis response operations weight restrictions will in some cases tend to favor the use of rail or river/barge routes given that the combination of truck, trailer, and heavy tank could go well beyond 120 tons. On the other hand, for rapid reinforcement of allies located on NATO's periphery, NATO's ability to conduct multiple, simultaneous wide wet-gap crossings would be critical to mission success, especially in the Baltic states and Poland. Allies must, therefore, devote greater attention to providing for sufficient bridging capabilities and filling corresponding gaps. Furthermore, bridge reinforcement, where required, should be central to identifying and co-funding dual-use infrastructure through the EU.

Standardize rail interfaces. In Europe, "rail lift" is likely to be the primary mode of transportation and there is a pressing need to standardize railways and their gauges and weight capacity across Europe. Extensive work is being done by the European Commission on rail freight corridors. These are civilian freight routes that might also be relevant to military mobility. This should be further explored. Moreover, existing standards should be evaluated and the degree of interoperability on European railways assessed — this is currently ensured by so-called Technical Specifications for Interoperability (TSIs). In theory, all EU member states must answer to the TSIs based on requirements set by the EU. However, railway lines in several European countries have different track gauges. This presents a real challenge for the rapid movement of forces on NATO's eastern flank in particular. In the short to medium term, increased investment in so-called transition technologies could be made to facilitate the transfer of shipments from one gauge to another and to rapidly change bogies on railway wagons to avoid the need to unload and reload rolling stock.

Command, Control, and Coordination

Enabling rapid movement of forces requires the clear delineation of roles and responsibilities of national governments and military commands, the EU, and NATO, as well as the effective, seamless coordination and cooperation of all the relevant civilian and military national and international actors. In particular, there is a need for a comprehensive system of movement control from peacetime to crisis.

Standardize networks of National Points of Contact. The EU has set up a network of National Points of Contact (NPOCs) for military mobility. They are the entry points for the submission of a movement request and responsible for processing all

National territorial commands should act as enablers for, and links between, NATO forces, national forces, and the civilian defense sector

incoming transit and host nation requests. They are connected, for that purpose, with all national civil and military stakeholders. NATO has, in turn, established a network of single NPOCs at the political level for the coordinated management of civil emergencies in peacetime or in periods of crisis as part of the Alliance's whole-of-government approach as well as its efforts to strengthen its resilience. NATO is also setting up a 24/7 movement control network at the operational level between the Alliance and national civil and military entities for coordinated movement planning and force flow management for multinational exercises and operations. Moreover, EU and NATO staffs are working together to facilitate future cooperation and synergies between these networks, as well as on developing their respective terms of reference. The work on the networks of NPOCs for military mobility in NATO should be completed as soon as possible with the terms of reference finalized expeditiously. The EU POCs and those of NATO should also be aligned and harmonized as far as possible.

Establish national territorial commands. Transit and host nations should, if not already done, (re)establish national territorial commands or territorial operational centers as soon as possible. Their essential mission should be twofold: to act as central hubs for all matters related to coordination and support of military movement through their respective countries and passing them on seamlessly to the neighboring country. To this effect, the respective NPOCs should be distinct, integral elements of such commands and

establish and maintain a comprehensive operational picture. The national territorial commands should also be responsible for providing HNS for transiting or deploying allied forces, such as providing the national military infrastructure necessary for ensuring freedom of maneuver by means of rear area security; military movement control; ensuring waterway crossings; damage repair; chemical, biological, radiological and nuclear (CBRN) defense; and explosive ordnance disposal. This would, for example, also encompass holding contingency bridging stocks and the provision of capabilities for emergency bridging to improve, repair, or restore essential infrastructure in urban or rural areas and to ready selected national roads for heavy military equipment as well as civilian traffic of all kinds. National territorial commands should also take responsibility for national counter-mobility needed in case of military conflict (supporting establishing the legal framework, conducting national barrier planning in coordination with NATO planning). They should also help ensure telecom links, host nation logistics, medical support, and public relations. Thus, national territorial commands should act as enablers for, and links between, NATO forces, national forces, and the civilian defense sector.

Make full use of NATO's Joint Support and Enabling Command. It is assumed herein that the SACEUR has approved a clear delineation of Areas of Responsibility (AORs) between his subordinate joint commands, in particular the two Joint Force Commands (JFC Brunssum and Naples), the Joint Support and Enabling Command (JSEC), and the Standing Joint Logistic Support Group (SJLSG). Such a delineation of responsibilities and assignment of related areas is an essential prerequisite for ensuring smooth and swift movement of forces through Europe to final destination (FD). JSEC has been assigned as SACEUR's Joint Rear Area Command (i.e., the area where no Joint

Operation Area has been assigned). It is responsible for battlespace management designation of movement corridors and force flow management, as well as for the security of the rear area (e.g., force protection; harbor protection; countering hybrid threats, including cyber defense; traffic management; medical support). As a functional command, the SJLSG is in charge of strategic-level coordination of logistical support for deploying forces across SACEUR's AOR and their logistical sustainment in theater and should also provide a common operational picture to SACEUR. To ensure JSEC is used in full it should also be vested with coordinating authority for all national territorial commands and act as the hub of the network of the (18) transit nations' NPOCs for military mobility.

Funding

For the funding of deployment and employment of forces, as well as sustaining of forces in theater, the principle of “cost lie where they fall” applies to both NATO and the EU. Therefore, those nations that in a crisis or in case of an attack would be reinforced as part of NATO's collective defense should invest in infrastructure that would also benefit NATO as a whole.

Increase EU funds for military mobility. In the course of internal negotiations for the MFF, the funding originally envisioned for the military mobility envelope of the CEF 2021-2027 was reduced from €6.5 billion to €1.69 billion (in current prices). Therefore, allies that are also members of the EU should fully tap the CEF to co-fund infrastructure projects that are critical for military mobility. They should submit suitable proposals as soon as possible and make the best use of committed funding. However, since military mobility is a key component enhancing the contribution of Europeans to both NATO's deterrence and defense posture and the EU's ability to act, the EU member states should look for additional options to fund infrastructure

projects relevant to military mobility. As an example, the EU-agreed Recovery and Resilience Facility (RRF) that amounts to €672.5 billion could in theory be used for transport infrastructure if the EU member states chose to do so. It is, therefore, recommended that they consider spending an appropriate part of the RRF on dual-use transport infrastructure. This would be a clear signal that Europe is serious about significantly enhancing its efforts to do more for its own security, improved NATO cohesion and credibility, and transatlantic burden sharing.

Extend common funding. NATO allies should consider common funding to improve infrastructure and prepositioning of mobility assets along movement corridors/MSRs that are crucial to enabling the rapid movement and sustainment of allied forces to and in theater. The Alliance should also explore using the NATO Security Investment Program (NSIP) to co-finance relevant projects that are not co-funded by the European Commission, in conjunction with the relevant allies, because such infrastructure projects would benefit NATO as a whole. NATO should also consider counting investments made by allies to improve infrastructure that is clearly dedicated to facilitating military mobility of NATO forces as part of a nation's 2% (of GDP) benchmark for defense spending.

Special Capabilities

Fully harness capability catalogues. The allies, together with NATO's European partner nations, should make available and regularly update their respective capability catalogues. Capability catalogues are designed to ensure that nations' data relevant to military mobility is available to NATO to inform operational and movement planning. Catalogues comprise a listing of all relevant facilities that could be made available by a potential host nation in a crisis. These include HNS capabilities, reception facilities, air/naval operating

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Joint river crossing exercise. Credit: U.S. Army Europe.

base facilities, staging and marshalling facilities, as well as support areas, such as supplies, medical, transportation, telecommunications/IT, etc. National cross-functional expertise thus provided to NATO forms the basis of the Alliance's military transport network and enables its further development. The catalogues are particularly important for effective route planning which relies upon the constant fusing of automated updates and real-time information on the status of routes. Capability catalogues should also be used to help fully survey routes and identify potential weaknesses and choke points. This would also help identify alternative movement options, such as commercial solutions, or even the construction of new infrastructure. To that end, the catalogues could be further informed by commercial systems developed by industry partners and information concerning civilian-owned infrastructures and equipment. For example, commercial trucks are equipped

with specialized navigation systems with inbuilt sensors that measure height and weight and automatically guide a vehicle onto routes with the necessary clearances. A similar system could be established that would ease military mobility by recommending alternative routes for the heaviest vehicles. However, the deployment and employment of forces requires more than simply the effective use of emerging technologies. Effective military mobility will also demand additional investment in critical capabilities such as wet-gap crossing and counter-mobility equipment in the military inventories of nations. National territorial military and civil defense actors will also need to be equipped, organized, and funded to ensure the structural enhancement of roads, rail, bridges, as well as the necessary barrier infrastructure required for defense operations. This will take time.

Enhance national military transport capacities. Before Russia's aggression against Ukraine in 2014, and the consequent fundamental change of the security environment, NATO focused on military crisis response beyond its borders. For its part, the EU CSDP deployments also served crisis management, mainly through a range of civilian, civil-military, and by and large small military missions. When deploying their contingents, European nations primarily used contracted commercial transport, while at the same time significantly reducing their military transport capacity. Consequently, military requirements competed with civilian demand, complicating and extending the time needed for planning for and deployment of crisis response operations. Rapid response and nondiscretionary NATO operations critical to allied deterrence and defense require immediate access to sufficient transport capacity. Thus, new emphasis must be put on generating military transport capacity that will be permanently and immediately available. Therefore, as part of its Defense Planning Process, NATO should assign capability targets to the relevant allies devoted to increasing their military transport capacity (road, rail, air, sea) significantly and to ensuring timely and assured priority access to civilian transport capacity. Equally, EU member states should also contribute to this effort through increased collaboration on enhanced military mobility, which is one of the six focus areas for collaborative capability development by the EU member states as recommended by the EDA.

Establish logistic hubs. The distances from ports of debarkation in Western Europe to potential theaters of operations along the northern and eastern periphery can be great. Consequently, logistic hubs should be established along planned multimodal movement corridors for maintenance, recovery, storage of food, ammunition, and fuel, etc. Such a network would ensure supplies are in the right spot at the right time in the right amount. Germany is

leading the PESCO Project Network of Logistic Hubs in Europe, which has 15 participating nations. The project aims to establish a multinational network based on existing national logistic capabilities and infrastructure to better prepare equipment for operations, commonly use depot space for spare parts or ammunition, and harmonize transport and deployment activities. The network is also intended to facilitate rapid response and increase sustainability for military operations. This is vital work and Germany and its PESCO partners should spare no effort to implement the network of logistic hubs across Europe consistent with the planned multimodal movement corridors. It is essential that the logistic hubs also be fully usable by all allies contributing to NATO operations and exercises.

Resilience

Military mobility could be severely affected by the conduct of hybrid warfare by Russia or terrorist groups. The deployment of military forces is particularly vulnerable to a potential adversary seeking to destabilize, weaken, and delay NATO or EU responses to a crisis. Hybrid warfare could also slow down decision-making and undermine allies' cohesion, with sustained cyberattacks on rear choke points possibly paralyzing disembarkation. Disinformation campaigns could be designed to sow doubt about NATO's intentions among citizens in vital host and transit nations, while subversive actions that fall below the threshold of an open military attack could create confusion and fear. In the worst case, hybrid warfare could even prevent allied forces from sustaining lines of communication and projecting military power.

Foster a culture of cyber resilience. Both NATO and the EU have set up ambitious programs to enhance cyber defense and have deepened their cooperation in that area. However, robust cyber resilience is also needed beyond the command chain

given the wide swathe of contacts across society generated by effective military mobility. To that end, cyber awareness, resources (human, technical, and financial), and capabilities (protection, response, recovery) must lead to integrated cyber defense plans, with robust and effective systems of communications established between national military and civilian stakeholders. As cyber protection is often devolved to the civil sector, often the responsibility of railways or airport owners, civilian equipment needs to be tested for cyber resilience in a coordinated and standardized manner by both government and industry. Indeed, even force protection may thus have to come from civilian service providers. Therefore, the use of highly encrypted secure civilian communication systems may better enable such cooperation with the commercial sector and enhance security. Increased awareness of the cyber threat posed to military mobility, as well as the risks associated with the use of non-EU/non-NATO ownership or control of critical communication technologies (e.g., 5G), should also be actively promoted through better communication between stakeholders during the planning phase, as well as far closer civil-military relationships forged to ease incompatibilities between military and civilian equipment that cyberattacks would seek to exploit.

Counter information warfare. Information warfare during any crisis will be extensive. In combination with cyberattacks and subversive actions, information warfare could have significant destabilizing and paralyzing effects on Western societies as well as on allied forces. Therefore, resilience against all kinds of hybrid warfare is NATO's first line of deterrence and defense and a precondition for the EU's ability to act successfully and deploy to crisis regions. Defense against such attacks will require systematic "education" of political and industry leaders, as well

as populations, on the threat posed by Russia or terrorist groups. Such education would necessarily include improved responsiveness, cyber hygiene, and the promotion of a shared culture, including greater media literacy. There is also a need to promote military and industrial standardization and interoperability across both the physical and cyber domains to enhance civilian resilience and improve civil defense. Host nations' civil and military authorities and commanders of transiting and deployed forces should closely coordinate to develop a common approach to countering disinformation to be better able to respond swiftly and effectively in a coordinated manner.

Exercises

Establish a systematic and comprehensive program of EU-NATO civil-military exercises. Military mobility in Europe relies on a complex system of national and international civilian and military stakeholders and actors. This system needs to be regularly tested, reviewed, and improved, both in NATO and the EU. NATO-EU coordination and cooperation can only be properly established by such a regimen. For example, it is well-established that in peacetime given advance planning allied forces can be moved to Bremerhaven, a port city on Germany's North Sea coast, and projected into Poland without undue delay. It is a tried and tested system. However, in an emergency such a "space" would become contested, possibly critically so.

Use exercises to promote a shared civil-military understanding. A variety of frequent joint military mobility exercises should be conducted to strengthen both NATO-EU and national civil-military cooperation. Such "events" would also help construct a shared civil-military understanding of the challenges faced by military mobility, and ensure staff are properly trained, with processes and procedures tested and adjusted; possible vulnerabilities,

frictions, and associated risks identified and addressed; and cohesion built among stakeholders. Particular attention should be paid to exercising hybrid scenarios and their impact on military mobility. The exercising of cyber vulnerabilities and multimodal transport and infrastructure interfaces would be critical to assess where “weak” connections could impede operations and should be central to a testing regime. Industry should be included in such exercises from the outset as part of a development program to enhance military mobility systems and structures across the relevant AOR. Moreover, previous military mobility exercises could be revisited to identify lessons that have not as yet been incorporated into action plans to better inform exercise campaign design.

Test and improve NATO and national planning. The movement of NATO forces to reinforce national home defense forces of allies located on the Alliance’s periphery requires close and effective coordination between NATO and host nations to meet the requirements of tactical-level advance planning, in particular with regard to force, space, and time requirements adjusted to regional/local conditions. The deployment of forces for reinforcement and their integration into national defense forces at the tactical level within a very short period of time and potentially under enemy fire is a demanding military operation. Therefore, the integration of moving forces into local defense structures must be systematically exercised to stress test capabilities, structures, and plans down to the tactical level.

Persistent NATO-EU Cooperation on Military Mobility

Enhance the Structured Dialogue. The Structured Dialogue on Military Mobility between relevant NATO and EU staffs

has so far effectively contributed to information sharing in key areas such as transport infrastructure, transport of dangerous goods, customs, and cross-border movement permissions. It is also designed to facilitate coherence and mutual reinforcement of efforts to improve military mobility and achieve synergies wherever possible, while avoiding unnecessary duplication. Due to the Covid-19 crisis, the Structured Dialogue was suspended for several months and only resumed in October 2020. Its work should be expanded and enhanced.

Enhance frequency of staff meetings. The relevant staffs should meet at least monthly and focus on identifying those areas and measures that must be tackled urgently in order to make tangible progress. Technical staff contacts should be pursued on particular strands of work between the meetings of the Structured Dialogue to ensure issues are followed up. A virtual joint secretariat should also be established charged with monitoring progress between the meetings and identifying actions to be taken, potential delays or blockages to be addressed, and key leaders to be engaged as appropriate in the search for military mobility solutions. NATO and the EU need a common operating picture at the senior level.

Senior leadership engagement and buy-in is essential. NATO’s secretary general and the presidents of the European Council and the European Commission must be regularly informed about progress achieved or emerging issues that need to be tackled at their level. They should also be encouraged to address military mobility in their meetings with a view to giving guidance to their respective civil and/or military staffs on how to advance cooperation and expedite the implementation of military mobility.



HNMLS De Witt and HNMLS Rotterdam conduct amphibious exercise in Cassis. LCVP in assault. DYMR20. October 5th, 2020. Credit: Mediacentrum Defensie (MCD) - Maartje Roos

Conclusion

The future defense of Europe will not simply depend on a sufficiency of relevant force, but the ability of such a force to move far more rapidly than today across Europe and around Europe's extended borders. Both the force and its supporting resources will need to be sufficiently maneuverable to meet all challenges, and of sufficient mass to meet several contingencies at once. The critical enablers will be mission relevant military mobility and the political and legal permissions, as well as a sufficiently large and robust network of road, air, rail, sea, and river transportation systems and infrastructures.

The ultimate strategic challenge will be to develop European strategic mobility capabilities that are able to "reach in strength" to the very eastern frontiers of both the Alliance and the Union. Therefore, it is particularly important

that Europeans now collectively consider the military mobility challenge if Europe is to properly harness the resources and capabilities that will be needed in the post-Covid-19 economic environment to credibly and speedily project military power to its own eastern borders, with or without the United States.

The November 2020 report of the NATO Reflection Group, "NATO 2030: Unified for a New Era," states: "The key to NATO's political and strategic credibility is that it keep pace with a dramatically and fundamentally changing strategic environment. This is all the more important in the context of a paradigm shift in how Allies think about their security. Doing so will require Allies to continue to adopt a genuinely strategic mind-set that goes beyond risk- and crisis-management. NATO must preserve a geopolitical perspective and shared vision for NATO's strategy at the same time that

it upgrades its ability to understand and manage the transboundary threats that will shape its environment over the long term. Only with this clarifying strategic framework will NATO be able to make full use of the resources at its disposal for shaping its external environment.”⁷

Since the end of the Cold War much of the road, rail, air, sea, and port infrastructure that enabled NATO forces to move rapidly across Western Europe has diminished, together with the facilities that also enabled the safe transit and secure reception of U.S. and Canadian forces. Therefore, effective deterrence and defense will not only require, but increasingly depend upon, hardened and expanded “inter-modal” military-friendly infrastructures, especially so given the size of the Area of Operations (AO) to be defended by the Alliance is far bigger than it was during the Cold War. The Covid-19 pandemic has also revealed the importance of the timely movement of resources across Europe during such an emergency and must be seen as a core component of improved people protection across the conflict spectrum.

In spite of recent progress, a true constancy of purpose is needed to enhance military mobility. Deeds, not words, will be the currency with which all such efforts will be judged. For the EU, in particular, contributing to better European defense capacity that is fully compatible with and complementary to NATO will require enhanced national military capabilities and effective implementation of substantive initiatives such as military mobility. That goal is still a long way away.

Put simply, Europe is by no means close to meeting the military mobility challenge this report addresses despite there being an implicit acknowledgment that rapid and assured military mobility (together with Europe’s ability to act as an effective first responder) is central to credible defense and deterrence. Indeed, military mobility is an essential pillar on which any credible

overall strategic framework for security, deterrence, and defense in Europe must necessarily stand.

The critical need is to counter Russia’s readiness advantage. That is why the 2019 NATO Military Strategy (NMS) calls for effective and credible deterrence and defense across the totality of the Alliance’s AO. For SACEUR, such credibility demands geographic interdependence is strategically and properly aligned with domain (land, air, maritime, cyberspace, space) interdependence. The ability to move forces and resources rapidly would not only demonstrate a full-spectrum mix of activities vital to the Alliance’s permanent postures and temporary deployments, it must also be central to NATO’s training, exercise, and education programs that drive adaptation.

Military mobility also highlights the many vulnerabilities that exist to all-important logistics. While these are known weaknesses, the priority for most allies at present is addressing sustainability shortfalls in overall force preparedness. Military mobility is too often an afterthought. This is partly because of the nature of logistics. While military mobility is a common endeavor, logistics remain a national responsibility. Such tensions hinder not only any agreement on priorities, but also collective action in spite of there being broad agreement on the principles of military mobility.

It is for these reasons that this report is not about where or when to move forces and resources, but rather the establishment of what might be termed the procedural wherewithal that needs to be agreed and put in place in order to allow them to do so. That is why the main focus of the report is on practical considerations, including what worked well in the past and why the method is to identify approaches that do not require significant investment in order to gain early momentum, just collective will. The vision implicit in this project is of

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a Europe in which forces and resources can be moved around in an expeditious and affordable manner to deter, defend, and assist, and in which infrastructures, laws, and politics combine to afford Europeans enduring security and stability. This is because the ultimate reason for enhanced military mobility is not to fight a war, but to prevent or stop one. In other words, NATO, the EU, and their respective members and partners must demonstrate an ability to move as fast, or faster, than any potential adversary if crises are to be managed effectively, deterrence is to remain credible, and defense maintained. The possible alternative? The conduct of liberation campaigns on Europe's soil ... again!

Time is pressing. An already complex and difficult security environment is going to very likely deteriorate further, possibly rapidly so. Progress will not be easy, it never is. Military mobility, by its very nature, is the essence of progress. It is time to act. It is time to move.

**The Military Mobility Project,
CEPA,
March 2021**

Endnotes

- 1 For the purpose of clarity and readability, the team decided that as a matter of policy footnotes would only be used where direct quotations are employed supported by the bibliography at the end of the report.
- 2 “Joint Communication to the European Parliament and the Council on the Action Plan on Military Mobility,” *European Commission*, March 28, 2018, <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=JOIN:2018:0005:FIN>.
- 3 *Ibid.*
- 4 See: “Action Plan on military mobility: EU takes steps towards a Defence Union,” March 28, 2018, *European Commission Mobility and Transport*, https://ec.europa.eu/transport/themes/infrastructure/news/2018-03-28-action-plan-military-mobility_en.
- 5 See: “Draft Council conclusions on progress in implementing the EU Global Strategy in the area of Security and Defence,” *Council of the European Union*, March 6, 2017, <https://data.consilium.europa.eu/doc/document/ST-6715-2017-INIT/en/pdf>.
- 6 See: “Warsaw Summit Communiqué,” *North Atlantic Treaty Organization*, July 9, 2016, https://www.nato.int/cps/en/natohq/official_texts_133169.htm.
- 7 “NATO 2030: Unified for a New Era: Analysis and Recommendations of the Reflection Group Appointed by the NATO Secretary General,” *North Atlantic Treaty Organization*, November 25, 2020, https://www.nato.int/nato_static_fl2014/assets/pdf/2020/12/pdf/201201-Reflection-Group-Final-Report-Uni.pdf.

Appendices: Working Group's Findings

Appendix 1

Working Group Nordic-Baltic Route: Anticipating a Changing Geostrategic Environment (Scenario I)

This scenario highlighted the time that will be needed for extensive political consultations and preparations of the legal process for crossing the Norwegian-Swedish border ahead of any planned military movement. This is because there are multiple levels of authority that need to grant approval for any such movement.

Dealing with Legal/Diplomatic Standards

Importance of civil society: The scenario highlighted the importance to military mobility in the Nordic-Baltic region of civil society and its many organizations in both Norway and Sweden. Appropriate relationships with these institutions will thus need to be built as they are often best equipped to enable such movements and best placed to offer insights to movement planners on route networks and the capacities of necessary staging areas. Particular focus will be needed on the expeditious completion of Sweden's Host Nation Support (HNS) request process for the use of civilian infrastructure by military equipment. Thankfully, many of the necessary legal and political requirements needed to move military equipment across the region are already in place through bilateral and HNS agreements in Sweden and Norway.

Managing Infrastructure Requirements and Standards

Road and rail lacunae: Road and rail transport will pose greater challenges than shipping in this scenario as Oslo is able to receive forces, although the Port of Stockholm is unlikely to be available thus requiring the use of ports to the north and

Scenario 1: Norway to Estonia



south of the city. Critically, road, rail, and shipping capabilities for any movement in strength will need to be assessed early, with particular concern for EU regulations for the transport of dangerous goods. Both road and rail capacity is limited in Sweden, which could cause a three-to-four-week delay in the transport of heavy equipment, not least because of the relatively small number of railway flat cars of the appropriate size. Consideration should thus be given to the use of wheeled rather than tracked armored vehicles as this would also make alternative and multiple routes available. Storage options in Sweden are also limited.

Continuous inventory: The scenario also highlighted the need for a rolling inventory to establish the state and scope of the relevant equipment expedited military mobility would need. Much of the equipment will be civilian. It will need to be tested for cyber resilience in a coordinated manner by both government and industry. Part of that testing regime will require exercising cyber vulnerabilities and multimodal transport and infrastructure interfaces to assess where weak connections could impede operations. Any such effort will,

of course, cost money and it is important that appropriate funding is identified and coordinated between NATO, the European Union (EU), and the host nations with incentives to industry and the host nation to commit to the capital funding outlays needed to improve infrastructure vital to improved military mobility. A critical step will be to strengthen the resilience of civil infrastructure through improved civil-military communication, which will also need to be built into the planning process.

Determining Chains of Command and Communication

A common operational picture: For an effective chain of command and control to be established, the scenario underlined the need for a common operational picture that will be established and maintained by Norway and Sweden. Successful civil-military cooperation will, in turn, only be established if roles, responsibilities, and command and control structures are designed from the outset to bridge the civil-military spectrum and the structures and institutions therein. The scenario's findings placed particular importance on the need to facilitate early use of host nation infrastructure through increased cooperation between industry, civilian authorities, and host nation militaries.

Information warfare: Three necessary courses of action were identified to address the information risks to the security of military mobility in the scenario. First, the use of information warfare (*infowar*) during any emergency will require the need to educate political and industry leaders, as well as populations, on the threat posed by state actors, although the working group did not specify who would be responsible for such a program. Second, the need to promote military and industrial standardization and interoperability across both the physical and cyber domains to promote enhanced civilian resilience and improved civil defense. And third, to promote increased awareness of the cyber threat posed to military mobility through

better communications between critical mobility stakeholders during the planning phase, as well as far closer civil-military relationships to ease incompatibilities between military and civilian equipment. Particular attention must be paid to the impact of 5G technologies and their use which could allow adversaries to attack at great speed but remain undetected.

Appendix 2

Working Group Suwałki Corridor: NATO's Achilles' Heel (Scenario II)

Security of mobility was a central theme in this high-end scenario on NATO's eastern flank. Procedures for the military's use of infrastructure have not been updated since the Cold War. Such modernization will be critical during an emergency to avoid the dangerous slowing of military mobility as it transitions from disembarkation at port to multimode transport systems. This scenario highlighted the vital need to test coordination and deconfliction of processes under duress and beyond the usual planning timelines. For example, it is well-established that in peacetime, allied forces can be moved into Bremerhaven and projected into Poland. But what about during an emergency?

Dealing with Legal/Diplomatic Standards

Rapid responsiveness: Key mobility stakeholders, who are vital to military mobility in a high-end emergency such as played out by this scenario, will need to be identified early in the planning process. Close working relationships will be particularly important in transit nations between national and local governments, relevant industries, those responsible for the management of critical infrastructure and organizations, and between sending and transit nations through the reconciliation of border-crossing procedures by both the European Union (EU) and NATO. Authorization procedures must also be resilient to the sudden changes any emergency tends to generate. For example, the importance to

Scenario 2: Suwalki Corridor



rapid mobility of robust administrative systems cannot be overstated. Potential errors in cargo lists and the order of arrival of shipping could lead to significant delays. The importance of effective and robust regulatory regimes will also be vital. In peacetime, industry and civilian activities and regulations that compete with military requirements can cause friction. As soon as a crisis is formally declared as such friction should be brought to an end by the necessary political and statutory instruments. The critical need will be to declare a crisis early which, in turn, will require the indicators and decision-making capacity for such a judgment to be made. Thereafter, national coordination centers would promote the seamless mobility of forces and resources. There is already a process to formally recognize a crisis — the NATO crisis response system. As soon as the Supreme Allied Commander Europe (SACEUR) has been authorized by the North Atlantic Council (NAC), Supreme Headquarters Allied Powers Europe (SHAPE) issues an activation order to all participating nations and commands, initiating the deployment of NATO forces.

Determining Chains of Command and Communication

Mobility coordination triad: The actual process of military mobility rests on a triad of “legs” or phases that provide the framework for future coordinating architectures. The national leg concerns the home base and port of embarkation (POE), and requires national-level coordination. The strategic leg takes place between the POE and the port (or point) of disembarkation (POD) and requires effective transnational coordination. The operational leg takes place between the POD and the final destination (FD). During the strategic leg, SACEUR, through the Standing Joint Logistics Support Group (SJLSG) and the Allied Movement Coordination Centre (AMCC), plans, prioritizes, coordinates, and deconflicts. During the operational leg, the Joint Force Command (JFC) plans and executes reception, staging, and onward movement (RSOM) in coordination with the host nation and nations responsible for national planning and provision of transportation and movement.

Streamlined border crossings: It would be useful to create a streamlined process to better facilitate cross-border movement and eliminate parallel procedures. There are existing memoranda of understanding (MOUs) and transit agreements in place to help improve cross-border missions, but more needs to be done. Authority for crossing borders should be standardized so that forces can move without having to overcome several and repeated legal and regulatory obstacles. Military mobility would also be greatly helped if the areas of responsibility of both NATO and the EU with regard to military mobility procedures were harmonized, such as establishing equal response time for permissions to move. For example, the EU is trying to agree those military movements that could be eligible for annual approval, i.e., military movements that do not affect civilian activities and do not require repeated approval. This

initiative could establish the basis for a harmonized approach. Another could include easing the discrepancies that exist between the time it takes to obtain cross-border movement permission for military forces (military personnel, materiel, and assets) through the EU (up to five working days) and NATO (up to three working days). At the very least, the EU and NATO should seek to harmonize their respective data and provide annual, overarching approvals wherever possible.

Form 302: Another measure that might be considered is the adoption of a common regulatory process by both NATO and the EU. For example, the EU is developing Form 302 which is also NATO-compatible. Form 302 implies the end goal of a uniform approach by the two institutions for the transit of the same military items. The EU version is designed to accelerate cross-border movement via a movement identification number (MIN), which identifies the country of origin, the destination, whether the shipment includes EU or non-EU goods, and whether it is a NATO or EU activity or other. To facilitate harmonization further it would also be useful to establish a direct link between NATO's Joint Support and Enabling Command (JSEC) and the European Defense Agency (EDA).

Managing Infrastructure Requirements and Standards

The Suwałki bottleneck: The scenario considered the infrastructure requirements needed to move forces through the Suwałki Corridor through which there are only two roads with limited tonnage capacity and one railway line. The corridor is a main EU thoroughfare for civilian traffic but lacks staging areas to house a significant force package without interference with civilian traffic. It is also too narrow for the deployment of long military convoys. To prevent a dangerous bottleneck the specific forces and materiel needed by each force unit (e.g., heavy brigade/wheeled brigade, etc.) would need to be determined well

in advance and then assigned to the most suitable method and route for onward transportation. In such circumstances, it is probably more important to identify such requirements prior to any movement than suggest improvements to the infrastructure itself, although that is also needed. There is a critical need for more detailed standing defense plans, which have atrophied markedly since the end of the Cold War.

Defender 20: Although Exercise Defender 20 was in part cancelled due to Covid-19, it does provide sufficient data to form the basis for a renewed effort to quantify what is needed for military mobility in such a high-end scenario in areas such as the required quantity and capability of railway wagons and trucks (both heavy and light) so that critical gaps can be identified. Critical infrastructure, such as airports, rail facilities, ports, fuel storage areas, as well as hubs for theater logistic bases, are regularly surveyed to assess whether they meet NATO requirements in close coordination with respective host nations. This data can already be accessed through several allied capability documents. However, the situation could be improved if NATO's Logistics Functional Area Services (LOGFAS) was able to be continually updated with real-time data, including highlighting temporary restrictions.

Alternative routes and dual use: Consideration must also be given to alternative routes to the Suwałki Corridor to avoid the main arteries, which are obvious targets, and increase dispersal. This could include disembarkation at Poland's Szczecin/Świnoujście sea/river ports or through the use of the Kędzierzyn-Koźle connectivity hub, which used to be the second-largest in Europe. Specific military mobility gaps could also be assessed by comparing military requirements with the capabilities identified in the European Commission-led work on the Trans-European Transport Network (TEN-T) as not all possible routes have been fully assessed. Such an approach would promote more extensive dual civil-

military use, which will be vital to future military mobility. By identifying dual-use infrastructure within the framework of TEN-T a case could be made for improved funding from the EU. Hitherto, the EU has only funded dual-use commercial infrastructure. Interestingly, the EU has reportedly identified the existence of a 93% overlap of the geographic scope of commercial and military transport infrastructure requirements.

Renovating Soviet infrastructure: An examination should also be undertaken to see if it would be possible to revitalize some Soviet-era transportation and storage infrastructure in Poland. Some of it has not been in use for more than 30 years. However, if renovated, such capabilities could be used to facilitate future deployments. Railway junctions, seaports, and river ports between Greater Poland and Silesia could also be used as rear areas in the Szczecin and Kędzierzyn-Koźle area.

Supply chain and flexible logistic nodes: A critical assessment is also needed along the entirety of the supply chain both for needed capabilities and the manifold vulnerabilities from which they suffer, particularly when forces rely upon civilian fuel supplies. Fuel storage capacity, as well as the capabilities needed to move fuel, are limited. One approach might be to create flexible infrastructure with storage based on need with locations rendered flexible thus enabling far easier movement. During the Cold War, when all essential supplies were mobile, divisions were expected to be able to fight for seven days before resupply. What is really needed is the development of flexible logistical nodes for maintenance, recovery, storage, food, etc. This would ensure supplies are in the right spot at the right time and in the right amount. The current centralized approach to storage makes supply and resupply highly vulnerable. In the absence of bespoke flexible solutions, the use of hybrid civil-military solutions could also offer some way forward. However, they would need

to be worked up through exercises such as Trident Juncture.

“Civilian” battle space management policy: The supply chain challenge highlights the growing importance of civilian assets in almost all aspects of military mobility. Indeed, without recourse to such assets it is increasingly hard to speak of a battle space management policy as such. Civilian traffic has a particularly important role in bringing forces to any given area. Experience of past conflicts demonstrates that in any crisis area civilian traffic management will also be crucial.

Civil preparedness: Effective military mobility will also rely on improved civil preparedness and resilience. While there has been some progress in the cybersecurity domain with EU regulations identifying critical sectors and infrastructure that need hardening, as well as new “incident response regulations,” far more needs to be done. In line with the other four scenarios, the need to minimize bureaucracy and movement across areas of authority was highlighted, including the use of an electronic Form 302 form when entering EU territory as such a form would enable just one complete load and unload.

MNDPP: It is vital that all states contributing to the Multinational Detailed Deployment Plan (MNDDP) fulfil their National Deployment Plans, coordinate and de-conflict the process led by the SJLSG, execute expeditiously the strategic RSOM and make effective use of LOGFAS, with the necessary support of trained personnel, reinforced by appropriate access for key mobility stakeholders assured by robust connectivity.

Determining Chains of Command, Control, and Communication

Robust C3: Consideration of the robust command, control, and communication needs of military mobility was central to the scenario. To improve all three elements one finding was the need for a central

hardened location. Particular emphasis was placed on maintaining and enhancing interoperability. The importance of the Very High Readiness Joint Task Force (VJTF) was paramount during the pre-crisis, crisis, and sustainment phases of an operation and for establishing effective communications and an information exchange with civilian authorities to support any deployment from port to the final destination.

Test C3: Chains of command, control, and communication must be tested with the aim of synchronized planning for all the mobility elements and phases based on a realistic analysis of the challenge. Critical information gaps must be addressed in the common operating/movement picture with a high-level plan generated that includes and incorporates the relevant capacities and movement windows. This high-level plan would need to be supported by a low-level detailed plan that enjoys a live feed from convoy movements and tracks critical cargoes and which links into civil and commercial movement information systems. For example, there is at present no operating picture for a brigade moving to reinforce. It would thus make sense to acquire the appropriate civilian system and work it up prior to a crisis rather than develop and run a parallel and bespoke military system.

LOGFAS and a joint mobility command: Connectivity to NATO's LOGFAS would enable permanently updated data to populate a common operating picture if nations "fed" the LOGFAS system with the latest data. The more sensors there are, the more "visibility" there will be for commanders of all aspects of military mobility. Critically, a new joint JSEC-led mobility command could better manage the battle space if it had an overall view of movement. If supplemented by a standing joint logistic support group, such a command structure would ensure enhanced coherence between joint fighting commands. Such a command

structure could be reinforced further by local information from the host nation, industry, and specialist providers, which have been integrated into a NATO or EU knowledge net.

Anticipating Risks to Security

Trust and confidence building: In keeping with many of the recommendations herein trust and confidence across the stakeholders can only be built through regular meetings, exercises, and experience of how to overcome potential choke points when planning for exercises and operations through a shared culture. In anticipating risks to security, the scenario considered a wide range of potential choke points when moving forces. These included threats to multimodal transport exchanges (e.g., from port to railway) where communication nets change, as well as choke points early in a movement that are often more difficult to predict. Some force components also move at different speeds, or simply do not work together, creating opportunities for an adversary to impose cyber or kinetic disruptions, often without attribution. Non-physical choke points must also be considered, such as the mindset of the deployed force if it begins to fear such disruptions, be they geographic or administrative, and even if these are simply figments of a stressed imagination.

The worst case: This scenario stood apart from the others because of the threat of an Article 5 contingency which demanded a firm grip of a host of worst-case consequences. Consideration was thus given to the dispersal of forces during movement closer to the Baltic states given the threat posed by a potential flanking attack from either Kaliningrad or Belarus by powerful Russian forces. The primary lesson was that any credible concept of secure military mobility in such circumstances should plan and prepare to be deprived of critical resources, face a series of coercively applied choke points, and resist concerted attempts to undermine NATO cohesion.

Force protection: Effective force protection for forces on the move will demand training and exercising in how to effectively implement both active and passive measures. An essential challenge will be the need for sending nations to entrust the provision of security to national authorities, particularly concerning the use of national infrastructure. For example, force protection cannot be guaranteed when moving into Lithuania, particularly during a gray zone crisis or in the face of a surprise attack, as units are no longer permitted under law to protect themselves with live munitions. Peacetime protection is also now led by interior ministry forces and national and local police and they will need to be up to the task and resilient to infiltration and disruption. Cyber protection is also often devolved to the civilian sector, in many cases the responsibility of railway, road, port, or airport owners. Some of these owners or shareholders are Russian. Enhanced force protection may thus have to be generated by government contractors or transport police.

Materiel protection: Protecting the force while moving does not simply concern personnel. Materiel also needs to be protected. Munitions and containers of other essential, often dangerous, materiel may also move separately from the force and much of its protection will also be the responsibility of a host of nonmilitary authorities. Again, only the proper training and exercising of all mobility stakeholder personnel would help ensure structures can withstand the test of a crisis. Command jurisdiction will also need to be clearly established.

Rear area protection: Critically, it will be vital to establish early a clear definition of the “rear area” when moving from, say, Germany to Poland, with those charged with its security trained for the task. This is because the “rear area” is not generally a commander’s Area of Responsibility (AOR). A clear division of responsibilities must thus be established, particularly if

continuity from deterrence to defense to deployment is to be realized within seven days under NATO planning. Defining the “rear area” early will better enable clear contingency and operational planning built on equally clear lines of responsibility within clearly defined boundaries. The status of the rear area should also be capable of being graduated upward, particularly as U.S. forces move forward.

Redundancy and flexibility: Any force movement in such a scenario would benefit from an appropriate level of redundancy and flexibility built into the planning. Moving a force with only limited assets and capabilities along clearly identified and effectively fixed axes leaves forces extremely vulnerable to disruption and possible destruction. Redundancy built into mobility through the use of several means and modes of transport would thus markedly improve resilience. Such an approach would be similar to the British-led Operation Transportation prior to D-Day which successfully masked the landing operations. This basic rule of secure military mobility also applies to command-and-control structures, which if more distributed are more resilient, thus facilitating a greater capacity to adapt and recover. The emergence of a host of unmanned aerial vehicles (UAVs) and long-range reconnaissance drones has accelerated and increased the need for such in-built redundancy into planning, systems, and mobility itself.

Countering hybrid warfare: The scenario also revealed the importance of countering the effects of hybrid warfare all and any of which could slow decision-making and undermine cohesion even without a kinetic exchange of fire. For example, sustained cyberattacks on rear choke points could paralyze disembarkation, while disinformation campaigns could create doubt about NATO’s intentions among citizens and critical mobility stakeholders in vital host and transit nations. Subversive actions that fall below the threshold of

Article 5 could also create confusion and thus prevent U.S. and other allied forces from sustaining strategic lines of communication and projecting defensive power.

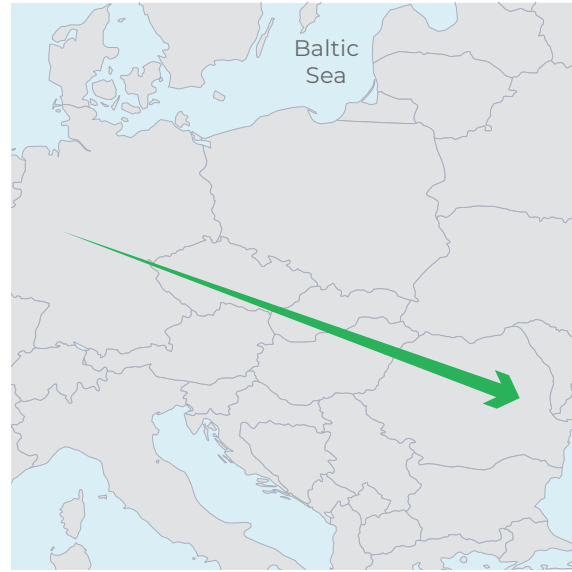
Cyber resilience: Improved cyber resilience, which reaches far beyond the military command chain given the wide swathe of contacts across civil society on which effective military mobility would rely, is needed. To that end, cyber awareness, resources (human, tech, and financial), capabilities (protection, response, recovery) must promote the far deeper integration of cyber defense plans into national crisis management, with robust and effective systems of communication established between national and civilian mobility stakeholders.

Appendix 3

Working Group Focșani Gate: Key Terrain in NATO's Southeastern Region (Scenario III)

Certainty of mobility is the twin of speedy mobility. These twin certainties were tested to the limit in this scenario focused on southeastern Europe and the Black Sea Region. To enhance the cross-border transit of military forces, NATO needs to intensify its efforts to standardize rules/requirements among members and non-member EU nations. A harmonizing body needs to be established to gather data for coherent information sharing with NATO, EU, the private sector, and all stakeholders in effective military mobility, particularly in regions where access is severely constrained due to outdated road and rail networks. In this scenario, an estimated 20 brigades would be required to defeat a Russian attack and would require 20 million liters of diesel fuel and more than 12,000 tons of ammunition to be moved to fight the initial battle. Critically, this scenario highlighted the need for extensive combat support service (CSS) enablers, such as transport maintenance and bridging equipment. The overall assessment was that any movement in strength would take a very long time and because of that any and all military mobility should be carefully planned in advance.

Scenario 3: Focsani Gate



Dealing with Legal/Diplomatic Standards

Civil emergency planning: In keeping with all the scenarios, the need for standardized border regulations and customs forms was highlighted together with a common European system of civil emergency planning. The European Defense Agency (EDA) is currently working to harmonize these procedures and it would be useful to build on the EU Action Plan on military mobility by establishing a Europe-wide legal framework for border crossing that extends to troop, equipment, ammunition, and fuel movements into Romania in particular.

EU capabilities: Greater leverage needs to be made of EU capabilities, and improved harmonization is needed between them. EU member states are currently running eight relatively low-level programs designed to optimize cross-border movement procedures. These issues need to be gripped at a more strategic and political level, leading to both friction and gaps. For example, there are two sets of Technical Arrangements (TAs) for surface and air domains, but the maritime domain is missing. The EDA is also trying to reduce the “move time” from seven to five working days for task forces at high

readiness with logistic planning established in advance, in conjunction with efforts to resolve in advance any customs obstacles faced during the pre-crisis phase for the prepositioning of ammunition and other logistic assets. The EDA has also established a program to revise European customs law to create a legal basis for the harmonization of regulations across all 27 EU member states.

Managing Infrastructure Requirements and Standards

Supply and resupply: Ammunition stocks and petroleum, oil, and lubricants (POL) would need to be moved to where they are needed, which could prove difficult given the poor and outdated transport networks across the region. There are also insufficient pre-positioned stocks while the stocks that would be needed could not be pre-positioned in all the required locations. Ammunition and POL could be moved by sea but getting from port to the battlefield by road and rail still requires moving hazardous materials through population centers via inadequate and insecure road and rail corridors.

Land movements: The scenario paid particular attention to the problems associated with the movement of forces over land into the AOR. Particular attention was paid to the need to find rail corridors capable of transporting heavy equipment and the need to plan for alternative routes if bridges were targeted, even if this meant forces disembarking in Greece diverting via Poland. The example was highlighted of an Italian division using the Greek ports and rail system to transit through Bulgaria and into Romania. The deployment of Italian forces to Kosovo provided some useful lessons about the likely problems. For example, a force moving by rail via Skopje would need to detrain early because of gauge restrictions with tunnels and bridge clearances. There were also considerable concerns about the Ruse Bridge over the Danube River. If it is destroyed, it would act as a single catastrophic point of failure

which could bring any force movement to a halt. A new railway crossing should thus be constructed. In any case, the need for rail ferries on the lower Danube should be a mandatory part of any strategic defense planning in Romania, not just as a national requirement, but also an Alliance requirement. An infrastructure fund should be developed to build barges capable of creating pontoon bridges across the Danube and transporting rail vehicles when bridges have been destroyed.

Choke points and vulnerabilities: A proper assessment of critical intermodal choke points and vulnerabilities is needed. Such an effort would require a detailed, in-depth series of onsite measurements and route analysis to assess the reliability of rail, particularly in Bulgaria, not least because of problems associated with electricity supply and the type of voltage used by Bulgarian rail. Sea lift would be facilitated by the 11 ships dedicated to the movement of NATO forces, assuming they were available. The Port of Thessaloniki would be the most capable port of entry due to its berthing capacity. However, Russian influence over the ownership of the port suggests that NATO should also look use Alexandroupolis Port in Thrace, although the United States has already taken steps to mitigate the threat posed by Russian influence over critical infrastructure in the region.

Innovative transportation solutions: Given the many constraints, innovative transportation solutions should be considered. For example, it might be possible to use large trucks to move heavy equipment and bulk supplies (such as fuel) to bridges and tunnels where weight and gauge restrictions apply. Thereafter, use smaller trucks to move loads onward. The use of multiple trucks fitted with cranes could also help ease challenges posed by bridge weight limits and would require minimal personnel. Most likely, an emergency in the region would require a mix of air, land, and sea lift solutions, subject to the political approval to cross borders being granted early in the pre-crisis phase.

Secure routing into theater: Consideration was also given to finding the most secure routes. For example, the Poland-Ukraine (Lviv)-Romania route would probably be the most secure prior to any fighting in Romania, while the Greece-Bulgaria-Romania route would probably be the only land route available once a conflict has broken out. Contracting out to the civilian haulage sector could ensure and assure strategic lift across the 1,200 or so miles from Poland to the Focșani Gate prior to a conflict, although there would be significant associated costs such as hire and insurance. Moving by rail across such a large distance is unlikely to be possible, unless such movements are made well in advance of an emergency.

Romania's infrastructure: The scenario also highlighted the paucity and poor quality of much of the infrastructure in the region. Romania is in need of major improvements to its air, road, river, and rail infrastructure. Its road infrastructure is unsuitable at present for large deployments of forces due to narrow roads, weak bridges that would be unable to support large and heavy vehicles, and narrow tunnels. There are also several river crossings in Romania where bridges cannot support armor (the Focșani and Galați bridges being the exception). Romania does have airfields which could be used by large aircraft to transport a spearhead force, such as the Very High Readiness Joint Task Force (VJTF). The Danube is a major thoroughfare, but needs more ports of entry to be constructed and infrastructure improved along the length of the river from Germany to the Black Sea. If the Danube is to be exploited as a corridor for mobility, ferries on the river could provide a logistical reserve capability and should be developed by both Romania and Bulgaria. The Romanian rail system would be unable to transport a huge tonnage of equipment via rail, but could transport some military equipment at a relatively high speed.

Work with national planning: Any deployment and mobility plans to the Focșani Gate must also account for Romania's existing strategic plans, including the National Defense Strategy (RoNDS) for 2020-2024, Romania's Defense Strategic Assessment (RoDSA) for 2020-2040, and the revised final version of the General Master Plan on Transport (GMPT). The GMPT was revised in December 2020 by an interinstitutional working group that included civilian and military stakeholders and took into consideration EDA and NATO military mobility requirements.

Sources of infrastructure investment: The updated GMPT also assumes access to the now very limited EU military mobility budget, as well as the Three Seas Initiative (3SI) transport priority project and the Three Seas Initiative (3SI) Investment Fund. As such, the GMPT might prove a useful test case for best practice military mobility planning in the region and might have lessons that could be applied elsewhere in Europe.

Serbia, the Danube, and "smart TEN-T": Romania could provide a critical pathway for developing cooperation between the European Union (EU) and Serbia with the aim of boosting the importance of the Danube for commercial activity and, as a consequence, fostering improved military mobility. The region would also benefit if the Trans-European Transport Network (TEN-T) and other corridors were adapted for enabling the transport of oversized military assets. At the EU level, there is only knowledge of such requirements (which are not met across all EU member states in spite of existing legislation). Therefore, an audit should be undertaken of all infrastructure to test for accommodation of oversized military assets. In some circumstances, it might still be possible to move such assets using mitigation measures. The EU is also promoting the streamlining of procedures for building infrastructure across the Union. Transport and military communities in the region should seek

to exploit these efforts by both sharing knowledge and expertise and promoting a joint approach to developing the case for funding.

Rail interfaces: There is a need to standardize railways and their gauges and weight capacity across the region. To that end, a working group should be established within the framework of enhancing military mobility to evaluate existing railway standards and reassess the degree of interoperability on European railways currently based on so-called Technical Specifications for Interoperability (TSIs). In theory, all EU member states must answer to the TSIs based on the EDA and the European Commission's Directorate-General for Mobility and Transport (DG MOVE) requirements. However, railway lines in several EU countries have different gauge widths, while the gauge in Ukraine and Moldova is 1,520 mm and thus conforms to Russian standards. This presents a real challenge for military mobility on NATO's eastern flank. In the short to medium term, increased investment in so-called transition technologies could also be made to facilitate the transfer of shipments from one gauge to another. Both the Russians and the Swiss have developed the technology to rapidly change bogies on railway wagons to avoid the need to unload and reload rolling stock. The Swiss have a bespoke system to facilitate changing the bogies on flat-bed wagons from standard to narrow gauge.

Determining Chains of Command, Control, and Communication

Promote decision-making: Promoting political decision-making at the "speed of crisis relevance" to initiate and enable military mobility was highlighted. And, while the EU clearly has major role to play in promoting more political coherence, NATO must be the driving force concerning requirements.

Exercising and training: The need for more shared operational military training and exercises to safeguard command and control was also identified, with calls for a systematic program of EU-NATO civil-military exercises that would help construct a shared civil-military understanding of the challenges faced by military mobility, ensure staff are better trained, and build cohesion among stakeholders.

Equipment movement: There is also a need to better coordinate the numerous mobility stakeholders involved in equipment and ammunition movement. To that end NATO and the EU should jointly bring together regional transport authorities. Increased coordination among NATO, the EU, and the member states is thus vital. It must be further reinforced by a whole-of-government approach to mobility. Critically, there is no single coordinating authority, although NATO is moving to enable whole-of-government efforts across Europe and has a rolling database to assist in the process. However, as it is developed it should also be shared with the EU and partner governments, not just allies.

Anticipating Risks to Security

Big-picture approach: To ease threats to the security of transiting forces a holistic "big-picture" approach is needed to scenario planning that incorporates critical infrastructure preparedness, offensive cyber operations, effects on local populations, disruptions to lines of communication, and other actions which could create confusion and impact the speed of movement and act as a barrier to rapid political decision-making.

Civil unrest: Preparedness for civil unrest should also be an integral part of the planning remit, together with possible large-scale population movements, all of which would further limit the already limited road and rail capacity in the region. While alternative civilian logistic capacity is attractive as a solution, it

could also be vulnerable to Russian New Generation Warfare. For example, Russia has successfully penetrated the political systems of Hungary and Serbia and trains carrying troops and equipment across those states could be interfered with. Forces disembarking in Greece could also have difficulty transiting through Bulgaria.

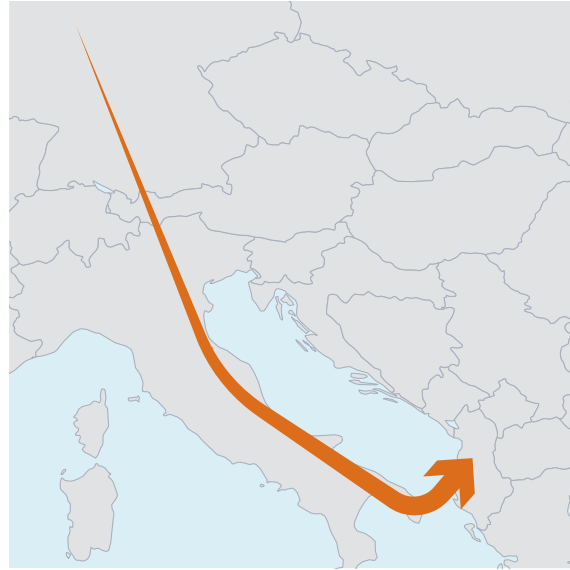
Lack of airborne fire support: Secure military mobility in the region needs the support of airborne fire support platforms such as attack helicopters and U.S. Army aviation, which are critical combat multipliers. An aviation brigade is capable of self-deploying for at least 48-72 hours, supporting elements and movement coming out of Germany and Poland, forward deploying and providing mobility and strike capability. Its Longbow radar can detect enemy at ranges of 16 kilometers and distribute this targeting data to any Link 16-capable fire system.

Appendix 4

Working Group Balkans — Europe's Soft Underbelly (Scenario IV)

Legality and legitimacy of movement in a pre-crisis situation is as important and complex as speed of movement and the ability to move. In the specific circumstances of this scenario, a number of allies could well insist on a new legal mandate, most likely a U.N. Security Council mandate. However, NATO is unlikely to secure such a mandate because of the veto power wielded by Russia and China. This scenario highlighted the complexity of military mobility in those parts of Europe where nations are not members of either the EU or NATO and where there is strong Russian influence. The importance of making trade-offs between weight of force and mobility during the phases of movement again became apparent. The sheer complexity of military mobility in such regions was also highlighted with many moving parts; sending nations, transiting nations, host nations, NATO, EU, and other international organizations, as well as a host of civilian and military actors within nations. Effective deployed coordination is thus vital, not

Scenario 4: Western Balkans



least because a firm knowledge of infrastructure along lines of ingress and egress is a key driver of strategic and operational planning. Responsibility for movement during the phases of deployment into and across the region would need to be better defined.

Dealing with Legal/Diplomatic Standards

Legal and legitimate mobility: The Western Balkans raises a host of issues concerning the legality and legitimacy of movement. Take Kosovo as an example. It is not in NATO, so Article 5 collective defense does not apply. NATO reinforcement could still take place as a non-Article 5 Crisis Response Operation and for Bosnia-Herzegovina (BiH) through reinforcement of the existing EUFOR operation. However, in a pre-crisis situation NATO would also need to demonstrate that any reinforcement of its forces in the region would be covered by the United Nation's mandate authorizing KFOR (UNSCR 1244) and the operational plan (OPLAN) would need to reflect that. In the specific circumstances of this scenario a number of allies could well insist on a new legal mandate, most likely a U.N. Security Council mandate. However, NATO is

unlikely to secure such a mandate because of the veto power wielded by Russia and China.

Form 302: In keeping with several of the other scenarios, the need for a standardized Form 302 to be used by both the European Union (EU) and NATO was also proposed as essential for the seamless transit of equipment and materiel across borders in the region, even if a state is not a member of either institution. In such cases, arrangements would need to be negotiated prior to any such contingency. A critical need identified by the working group was to promote awareness of such instruments amongst customs officers at borders across the region.

The need for bespoke diplomacy: Ideally, at the national level a whole-of-government approach should be fostered built on shared best practice between EU member states and NATO allies, with a specific point of contact identified for each nation or region tasked with coordinating all relevant civilian and military operators and actors. However, in this scenario, several critical partner states were members of neither the EU nor NATO. Moreover, it was envisaged that some nations would not have a seat at every, nor indeed any, table (Bosnia-Herzegovina/Serbia/Kosovo). Given the tensions in the region, a bespoke and continuous diplomatic effort would be needed. This would not be dissimilar to that required to maintain access for NATO forces and resources in Afghanistan through Pakistan.

Standardized doctrine: All EU and NATO standards relevant to command and control, mobility, and transportation should be reviewed and harmonized. Such an effort should be based on “NATO Standard Allied Joint Publication (AJP) — 4.4 Allied Joint Movement and Transportation Doctrine” on command and control, roles, and responsibilities, and “NATO Standard AJP-3 Allied Joint Doctrine for the Conduct of Operations.” Any review should also include parallel

documents from the EU, which are not publicly available.

Speed of reinforcement: The roles played by NATO’s Joint Support and Enabling Command (JSEC) and the Standing Logistics Joint Support Group (SJLSG) to maximize the speed of reinforcement will be critical. JSEC provides a network for all involved nations to use during a crisis but needs clearance from Albania and Kosovo before it can act. NATO’s SJLSG provides contingency planning for the NATO Response Force (NRF), including the Allied Movement Coordination Centre, and acts to deconflict and coordinate actions based on a commander’s required date for a multinational joint plan. To ensure deconflicted strategic movement, SJLSG could identify available infrastructure through the existing capability catalogue. SJLSG also coordinates strategic movement (multinational deployment plan) and advisers for strategic support and movement.

JSEC, SJLSG, and host nations: Responsibility between JSEC, SJLSG, and national movement plans could be further aligned by using the model provided by Supreme Headquarters Allied Powers Europe (SHAPE) tabletop exercises (TTX) to ease pressure on host nations. JSEC is in close contact with host nations and prepares the battlefield, as well as provides force protection and damage control for the rear area. It is also responsible for all areas that are militarily necessary to support the joint operational area or the “rear area” in the Western Balkans. The SJLSG is considered responsible from the “rear area” to the objective (Kosovo in the case of this scenario), while the host nation is responsible for delineating responsibility between SJLSG and national movement. Detailed responsibilities were better defined at SHAPE at a TTX in November 2020 at which the involved commanders were present.

Three phases of deployment: Responsibility for movement during the three phases

of deployment into and across the region should be better defined. From home to the ports of embarkation it, including border-crossing procedures, is the responsibility of the sending nation. In the strategic phase of deployment (port of embarkation, POE, to port of disembarkation, POD) the nations play a significant coordinating role, but the strategic military commander and the Allied Movement Co-ordination Center (AMCC) or equivalent EU movement coordination center (the European Commission's Directorate-General for Mobility and Transport, DG MOVE) has the responsibility to coordinate, deconflict, and prioritize the movement of forces. In the operational phase of deployment in theater (from POD to the final destination (FD), the Joint Force Commands (JFC) for NATO and the force exporters for the EU are responsible for deployment. Nations are responsible for executing the plans afforded them by the operational-level headquarters, must provide transportation, and conduct execution of movement of forces in accordance with the plan.

Managing Infrastructure Requirements and Standards

Use of the Danube: This scenario also explored the potential of the Danube River as a corridor for military mobility, but went more deeply into associated risks. For example, the required draft for a barge carrying M1A2 Abrams tanks or Stryker armored vehicles is 2.5 meters, which is deeper than much of the river itself. This constraint could be addressed by limiting the loads where draft is lower or ensuring the entire Danube is dredged to 2.5 meters. Other constraints include different and differing regulations in NATO and EU countries, and between Schengen and non-Schengen countries on the river, limited port capacity for the accommodation of ro-ro (tank-carrying roll-on, roll-off) ships, relatively poor connections to road and rail infrastructure from river ports, and the sheer distance from the Danube to Kosovo, especially if Serbia is not supportive of an operation. In the case of the latter,

movements would need to take place either from a Bulgarian port through North Macedonia, or from Hungary to Kosovo. If Serbia cooperated, offloading could take place in Belgrade and then proceed via rail and road to Kosovo. The use of the Danube as an alternative approach would only work via the Port of Pančevo near Belgrade.

The EU plan for the Western Balkans: The EU Economic and Investment Plan for the Western Balkans does to an extent address rail, road, river, and IT improvements across the region. And, while it does not mention military mobility, it could be adapted to support dual-use projects of which there are several. These include “Flagship Programs” which address, *inter alia*, road, rail, and river improvements, improved connections to the coastal regions (including a rail link to the Port of Durrës, the one currently used and most likely to be used in any such scenario), as well as improvements to digital infrastructure. If funded, such programs would need careful review, assessment, and ultimately appraisal by the EU Military Committee (EUMC) to meet military mobility requirements, or at least include an assessment of the key trade-offs that would need to be made. The SHAPE capability catalogue team, in conjunction with both JSEC and SJLSG, could also help address these issues.

Assess rail capacity: A comprehensive assessment needs to be undertaken of the capacity of the Western Balkan rail network as an enabler of military mobility. Bridges, tunnels, and other infrastructure are old across the Balkan rail network, much of it built by the Austro-Hungarian Empire, and as such suffer from significant limitations, most notably height-weight capacity of tunnels and road overpasses, which would impact the expeditious movement of military forces in a contingency operation. There is a particular problem when transporting armored vehicles via rail or road in the mountains. A comprehensive assessment

of the capacity of the communications, energy, and transportation infrastructure in the Western Balkans for mobility is also needed.

An EU-NATO host nation database: The host nation is the key player in the region. NATO has established a common EU-NATO Host Nation Support (HNS) database to reinforce NATO's HNS information for the planning of deployments (SHAPE J4 has a dedicated cell for this). The EU does not have access to such a capability. Given that the EU's goal is to maintain the network with the support of nations across the region, access to a database of regional infrastructure information would be vital for the planning process.

Improve route planning: Improved route planning could be achieved by employing capability catalogues with automated updates and status reports. Such capability catalogues are also intended to act as geolocation repositories, which are critical to effective route planning and require the fusing of automated updates and real-time information on route status. Commercial technology could assist this process. For example, commercial trucks are equipped with specialized navigation systems with inbuilt sensors that measure height and weight and automatically guide the vehicle onto routes with the necessary clearances. A similar system could be established to ease military mobility when the load class of the heaviest vehicle dictates the route. To that end, NATO and the EU should assess the possibility of synthesizing the many disparate military and commercial tools available so that consistent and secure route planning via rail/road/river is made possible. SHAPE's capability catalogue could then be further expanded to include telecom/IT, energy, and health information and fused with commercial systems developed by industry partners and information about civilian-owned infrastructure.

TEN-T and military mobility: The European Commission's Trans-European Transport Network (TEN-T) corridor system should

be examined to test its suitability as an enabler of strategic mobility into the Western Balkans region. The most relevant corridor for this scenario is the Eastern Mediterranean corridor, which extends north from Thessaloniki into Central Europe. The EU has already agreed on its strategy for the Western Balkans and the six initiatives designed to upgrade infrastructure therein. Consequently, there is some €1 billion set aside for connectivity projects and technical assistance across Europe for which states in the Western Balkans can compete.

Port options: The scenario also considered the viability of port options for enhanced mobility. The Port of Bar in Montenegro has significant limitations to unload and stage large equipment. Therefore, industry highly favors use of the Port of Durrës. Substantial military experience has also been gained over the past 20 years in the use of the land route from Durrës to Kosovo (although that particular road has quite a few bridges and tunnels limiting military movement which should be studied further). The Port of Durrës also enjoys much larger berthing capacity than the Port of Bar for the unloading of multiple vessels simultaneously and is also more modern. While the Port of Thessaloniki has excellent capacity with good links to road and rail options, its ownership is vulnerable to Russian influence. This could be an issue depending on the nature of any given crisis response operation. An alternative could be the Port of Alexandroupolis.

Plan for a heavier future: Military mobility demands a constant trade-off to be made between the weight of a force and mobility. Mobility challenges would be eased if the weight of future main battle tanks (MBTs) and armored vehicles could be reduced, although the nature of the threat suggests the opposite is likely to occur with more armor required given the experience of counterinsurgency operations over the last three decades. Any such trade-offs

may require more thinking about pre-positioning equipment at certain hub locations in Eastern Europe, or even for European forces. The likely greater weight of new military equipment should thus be factored into infrastructure assessments. In Europe, 90% of highways, 75% of national roads, and 40% of bridges are able to carry vehicles with the maximum military load classification (MLC) 50 for a tracked vehicle, but such vehicles can only weigh up to 45.4 tons on bridges while a maximum weight of 52.6 tons is permitted for wheeled vehicles.

Bridging catalogue: Past experience should be tested against current planning as infrastructure deteriorates. What was possible in the past may not be so in the future. A capability catalogue should thus be created of all industry-standard bridging equipment. This catalogue should also be designed to assess the current status of bridges in each host nation, critically the route from Durrës to three destinations in Kosovo. Routes and their deficiencies would need to be fully surveyed so that commercial solutions, military options, or even the construction of new bridges might be explored.

Existing projects should also be reviewed: For example, a careful military review of the U.S. International Development Finance Corporation's Export/Import Bank joint project with Serbia should be undertaken to identify lessons. The main aim is the construction of a "peace highway" between Niš and Pristina via Merdare. From a military mobility perspective this route could provide a much more direct link from Belgrade via the E75 and an improved E80. Bridges and tunnels on that route should also be reviewed to test their current limitations for military equipment and the resulting requirements fed into the plan.

Build on the KFOR experience: KFOR is a long-standing NATO deployment. Indeed, the Alliance has operated in the region for over 20 years and there is likely to be little that NATO, the EU, or US European Command

(EUCOM) does not know about this region and its infrastructure (if, of course, coordination and information sharing is permitted). However, infrastructure wears out and what may have been possible 20 years ago may not be possible now if maintenance or improvements have not been carried out.

Determining Chains of Command and Communication

Better coordination of command and control: Continued and deepened coordination and collaboration between EU and NATO command and control structures is vital. Use of the same or similar procedures and structures would help maintain a clear but linked delineation of responsibilities in the region. The NATO STANAG AJP-6 on Allied Joint Doctrine for Communications and Information System (CIS) (2017) could be a useful starting point for the practical and pragmatic strengthening of a strategic partnership. While EU command and control (C2) concepts are classified, there are no major differences between the C2 structures or standards across either the Alliance or the Union.

Anticipating Risks to Security

Counter Chinese influence: Potential risks resulting from increased Chinese influence and investment in infrastructure and IT in the region need to be mitigated. For example, Chinese companies are actively influencing Serbian TV networks, creating security risks, and undermining civil liberties by using debt to leverage state behavior. Russian activity in Serbia is also increasing and has a long history. While NATO and EU influence may be perceived to be in decline, as recently as 2016 there were 125 military-military interactions between NATO and Serbia versus only four with Russia. Efforts by the United States in September 2020 to increase its investment in the Western Balkans (specifically targeting Serbia and Kosovo) should be built on.

Assess all communications networks in region:

There is a critical need to assess all aspects of in-region communications. Any such assessment must include available bandwidth for command and control of transiting forces, sustainment, and communications infrastructure security. An established policy would require managing spectrum allocation. NATO could manage such a spectrum through the appropriate STANAGs, but the local capabilities in the region are not part of NATO and rely on different standards and systems.

Vulnerable cable infrastructure: Most telecom cable infrastructure into and in-theater date back to the 1990s and is outdated. This includes the primary cable that runs from Greece to Albania and Croatia. The degree of protection given to these networks is unknown and will require further investigation given their vulnerability to sabotage in light of the critical services they continue to provide. There are also overland fiber optic cables which are being laid along major road and rail rights of way that could also be vulnerable. Emerging and Disruptive Technologies (E&DT) will enable the targeting of hitherto hard-to-reach infrastructure, such as undersea cables. The region is particularly vulnerable to such attacks as cables under the Adriatic are old and terrestrial cables are of poor quality and degrade the communications network. The consequences could be profound for military mobility in the region, even if the goal is simply to slow movement and sow chaos.

Unexploded ordnance: The implications of unexploded ordnance for mobility must also be considered. There are mines and other devices across the Western Balkans left over from the conflicts of the 1990s. This could make it particularly dangerous for convoys transiting off-road or stopping and camping. KFOR and EUFOR will again have the best knowledge of this issue, but it is unlikely they are aware of all locations germane to this scenario. There are also mines in the Sava River which could present complications.

Appendix 5

Working Group Libya — A Potential EU Peacekeeping Mission (Scenario V)

Robust military mobility is the sine qua non of peacekeeping during complex contingencies in countries such as Libya. A potential EU peacekeeping mission to Libya and its associated military mobility planning should be approached as though they are a just-short-of-war scenario. Any such operation that is first and foremost an EU-led operation will demand tight political, diplomatic, military, and civilian coordination between European states and the EU with NATO acting as the worst-case backstop. Recourse to U.S. assets would also be needed in an emergency. A clear distinction also needs to be established between national responsibilities and those of the EU and NATO. For such a scenario, where possible, design equipment to meet civilian infrastructure standards. Establish the means of transportation based on the quantity of materiel needed to meet the likely threat. Rail lift would likely be the primary mode of transportation in Europe. However, sea lift from a port in Northern Europe, including on the Baltic Sea and directly to Libya, might prove faster than either rail (loading and transit) and/or trans-loading to ships in Italy for onward dispatch to Libya.

Dealing with Legal/Diplomatic Standards

The plan must fit the challenge: Any deployment plan for a major EU peacekeeping mission in such a scenario as Libya must be worked up based on the size of the EU Battlegroup (EUBG) to be deployed, the civilian resource base that will be needed to support it, and the possible threats it might encounter. Planning must also take account of the time needed to generate both force and resource with a clear distinction established between national responsibilities and those of the European Union (EU) and NATO. Contracts with commercial entities either assigned by troop contributing nations (TCNs) to the battlegroup, or engaged directly by the European External Action Service (EEAS) to undertake strategic lift, will need an activation/notice period of at least 30 days

Scenario 5: Mediterranean



(sometimes 45 days). The same activation period will probably also be required for the military assets of many contributing nations.

Harmonize legal and diplomatic standards: Differing country-specific legal and diplomatic standards may affect movement to Libya. Libya is not a benign environment so measures have to be taken to guarantee an unhindered reception, staging, and onward movement (RSOM) of troops, inside or outside Libya. Switzerland's neutrality does not seem to pose problems for the movement of troops, although there are limitations on the use of tunnels for military equipment and ammunition. Austria's neutral stance may pose problems for the movement of troops, but only in the case of a NATO Article 5 contingency.

Managing Infrastructure Requirements and Standards

Infrastructure and planning: Critically, the EU does not have an inventory of the infrastructure that exists in member states. However, it does have a firm grasp of infrastructure standards because of the European Commission's Directorate-General for Mobility and Transport's (DG MOVE's) gap analysis of civilian

movements and military requirements. Where infrastructure is not up to standard, alternative routes will need to be explored. There are plans for major improvements to European infrastructure over the next 7-10 years, which would also benefit from input from military planning authorities. A detailed infrastructure picture would also be central to building options into the deployment plan. Infrastructure is designed and funded to meet civil demands in Europe and for a deployment to Libya is probably adequate. Such flexibility is particularly important for embarkation and disembarkation because the choice of port will make a difference to the speed of deployment. Given its new high-speed rail link, Genoa may be faster, although Naples could be more robust and secure. Marseille, Izmir, and Catania should also be studied.

When ports are identified investment should be made to upgrade their respective reception and berthing capabilities. This approach would promote an overall profile of movement model from garrison to port to final destination over time and thus help identify which investments would net the highest returns.

Renew CJTF arrangements: The Combined Joint Task Forces (CJTF) concept should be renewed and used with the particular goal of enabling an EU Battlegroup (EUBG) to use strategic lift assets from NATO/EU members to rapidly deploy to Libya. The EU should consider creating a system similar to the U.S. Civil Reserve Air Fleet (CRAF) or the U.K.'s Ships Taken Up from Trade (STUFT) to requisition the appropriate assets to address the shortage of air and sea movement assets. Aggregating the available large, medium, and smaller amphibious landing assets could enable a peacetime deployment if commercial or large amphibious ships are not available. If the deployment is a NATO-supported Berlin-Plus operation, the United States might also be in a position to provide amphibious support, although Europeans should plan on the assumption that is not the case.

Force generation and rail mobility: If rail is the preferred mode of transit, any EUBG would need to be generated in Central Europe and then cross through Switzerland. This is because no European country has significant rail capacity, with the possible exception of the Netherlands. Such a lacuna cannot be fixed by early planning. Libya has nearly no railways, making that option irrelevant for the movement of heavy equipment. Road travel in northern Libya is also extremely difficult due to the high level of threat, and any deployment will need to be heavily protected. Planners will also need to assess the limited capacity, length, and security of telecom cable infrastructure both into Libya (there are just two undersea telecom cables into Libya) and in country. Over time Telecom Italia should be encouraged to invest in a new undersea cable.

Design military equipment to meet civilian standards: The developing high-speed rail network across Europe is of sufficient strength and gauge to carry most military equipment. Where possible, such equipment should be designed to meet such civilian weight and gauging standards. This would also include the purchase by the state, and subsequent leasing out to commercial entities, of dual-use rail platforms such as flat cars.

Develop comparative simulation technology: Comparative simulations, if not already accomplished by operational planners, would prove worthwhile, especially if rolling stock is in short supply or other factors delay rail coordination. The option of primarily deploying by sea would tend to reduce the exposure to sabotage, cyber, and information disruption once port operations are secured. Such simulations would also help to address inadequate tunnel sizes and capacities en route to the port of embarkation (POE).

Stocks and storage in transit: Battlegroup members are individually responsible for arranging storage with host nations. However, there would be value in

coordinating the national movement of stocks within a battlegroup, especially for those nations contributing relatively small force elements. For example, one of the 2020 EUBGs, which was led by Germany, was some 2,500 strong and comprised of forces from eight nations, from Sweden in the north to Austria in the south. NATO has stocks in Poland to enable rapid response, but other states are not as well prepared for such a response (i.e., building such stocks). There is also a particular problem if the movement is planned from the north to the south of Europe. Southern European countries, and/or partner countries in Africa, should be encouraged and supported to build up stocks and the appropriate storage facilities. A mechanism also needs to be stood up by the EU Military Staff to better enable all EU member states to contribute resources for operations on behalf of the EU, even if they are not sending troops. Other states can provide equivalent field office (EFO) or combat health support (CHS) in support of troop-contributing states.

Essential regional partnerships: Partnerships in region will be vital for such a deployment. Tunisia could act as an intermediary to help the deployment of an EUBG. The Tunisian government has been a supportive and willing partner for both the EU and NATO. Tunisia is a longtime (since 1994) NATO partner and since 2015 has regularly exercised and trained with NATO maritime forces. The use of intermediate staging bases (ISB) would allow the battlegroup commanders to shorten lines of communication and supply. Moreover, Tunis has deepwater ports and warehousing that could also be used to sustain the battlegroup. Tunisian Armed Forces could also be invited to help safeguard the port and onward transit to Libya, and could assist with reception, staging, and onward movement (RSOM), probably with the assistance of U.S. European Command (EUCOM) with pre-preparation, particularly getting into theater and offloading in a secure environment.

Determining Chains of Command, Control, and Communication

Maintaining the common operational picture: It is vital that responsibility for maintaining the common operational picture is established early. This is because any operational picture has two vital roles to perform. First, to establish a higher-level plan that enables a comprehensive understanding of capacities, time requirements, and movement windows. Second, to establish a lower-level detailed plan that acts as a live feed from convoy movements and tracks critical cargoes. Any such “picture” must be linked with civil and commercial movement databases, particularly for rail. The Joint Support and Enabling Command (JSEC) could fulfil such a role if the operations are EU-led.

Promote broad command and control interoperability: Military air, rail, road, and sea infrastructure must be integrated into civil systems and given the appropriate authorities to enable the prioritization of military requirement over civil and commercial movements. The need to promote effective interoperability with the commercial sector is vital but traditional military command and control structures may not provide an optimum locus. This is because unless enforced by law the commercial sector might not be able or willing to respond to such a hierarchical system. Such interoperability might be strengthened by developing further the concept of mission networks as outlined in NATO STANAG AJP-6 on CIS Doctrine (2017). The use of highly encrypted secure civilian communications systems may also enable deeper cooperation with the commercial sector.

EU Military Planning and Conduct Capability: Planning is already in place to enable the effective deployment of EUBGs. The Military Planning and Conduct Capability (MPCC) is designed to lead planning, primarily focused on supervising and deconflicting the overall deployment effort. Logistics are the responsibility of

the contributing member states. The MPCC also enables well-structured requests to be forwarded promptly by the member states deploying permanent assets to any operation in Libya. The possibility of the preplanned involvement of the Movement Coordination Centre Europe (MCCE) and its partners could also help grant early access to naval and air transport missions or identify spare capacity to share, reinforce, and ease military mobility. The responsibility for moving troops is with the contributing states, but the coordinating role of the JSEC should be further explored and developed for use by EU-led operations.

EU-NATO multimodal database: NATO enjoys a full picture of multimodal database capacities, and the EU should be prepared, where possible, to conduct military and civil-military operations from Supreme Headquarters Allied Powers Europe (SHAPE) based on a shared database. At the SHAPE level, there are ongoing discussions about the role of the JSEC in relation to the Standing Joint Logistics Support Group (SJLSG). The SJLSG should also be moved to Ulm now and its work fully integrated with that of the JSEC.

JSEC and Defender 21: Tabletop exercises (TTXs) should be used to develop the role of the JSEC with the aim of revitalizing and reinforcing the CJTF protocols. JSEC could, for example, operate in concert with industry to better enable and coordinate any services and capabilities they might provide. Such a model could be exercised at Defender 21. The seven-day “notice to move” should be made more realistic. It mandates that units are ready to deploy in their peacetime location within a week. This is not being met by most of NATO’s High Readiness Forces and whether the EUBG can achieve this is debatable.

Create a commander’s infrastructure dossier: In advance of a crisis response operation all relevant information on infrastructure should be placed in an electronic commander’s planning document. For the

EU, this should be the responsibility of the appointed force commander, but an impartial arbiter should also pressure test whether the overall deployment plan is sufficiently flexible and well-established. Most EU member states already have experience of the Cold War culture of contingency planning which should be restored. This is relevant in the NATO context, too, as the JSEC could be given responsibility for such a dossier that would also better afford planners with multiple options in the event a transiting nation refuses to support the action.

MCCE and third nations: The MCCE should facilitate communication with third nations and act as bridge for communications between the EU and NATO and industry leaders embedded in the region. Host nation single points of contact and the MCCE should become far more aligned. MCCE could also play an important role in better involving the commercial sector as early as possible in exercises, planning, and to better understand military requirements.

Anticipating Risks to Security

Establish political resiliency: Adversaries will seek to undermine political resolve by portraying the EU as militarily impotent. Any such deployment could well be the first time that an EUBG is deployed into a major contested environment. The political pressure on the EU to demonstrate resolve, and its ability to maintain it, during a swift and professional deployment would be a major concern and possibly a critical vulnerability.

Mitigate deploying cyber threats: The most likely form of hybrid attack would come in the form of a cyber offensive designed to disrupt a deployment. Anticipating how cyber operations could be used against the deploying and deployed forces will be crucial, particularly attacks on personnel, armored vehicles, and containers, as well as

loading software, ship's manifests, shipping networks, and even ships themselves. A recent U.S. exercise in Charleston, South Carolina, and Savannah, Georgia, revealed the chaos that could be created by a capable digital red force. Mission critical digital devices should be stowed during the transport stage of any deployment in Faraday cages and social media monitored in advance of an operation to gauge how much information is being leaked. Exercise cyber hygiene and protections regularly, such as during Defender 20.

Leverage advanced national capabilities: The U.K. and Dutch National Cyber Security Centers are advanced cyber defense capabilities, and in the U.K.'s case an offensive capability. Such centers can actively support both commercial and military entities during times of crisis. It is vitally important that networked systems are equipped with the latest defense technologies and operated by trained users. To foster more secure transfer operations at ports of embarkation (POEs) and ports of disembarkation (PODs), including ship networks and port operations networks, and establish and maintain crucial links with stakeholders such as local municipal networks (water, energy, traffic control, and emergency systems), it would be useful to include private sector actors in unclassified and reclassified cyber exercises.

Establish Federated Mission Networks: The NATO concept of Federated Mission Networks could be used to reduce the vulnerability of communicating within a complex multinational movement. Under this concept, the lead nation establishes a common network for all mission members to join via interface protocols. It is only for the mission and is to be disbanded when the mission is complete. Such an approach could also help establish close communication on the ground with the United Nations and its relevant agencies.

Bibliography of Relevant Publications

EU

Council of the European Union. 2018. "COUNCIL DECISION establishing the list of projects to be developed under PESCO." March 1. <https://data.consilium.europa.eu/doc/document/ST-6393-2018-INIT/en/pdf>.

eu2020.de. 2020. "Strategic Compass: Developing strategic principles." August 25. <https://www.eu2020.de/eu2020-en/news/article/eu-defense-strategic-compass-foreign-policy/2377030>.

European Commission. 2017. "President Jean-Claude Juncker's State of the Union Address 2017, Brussels." September 13. https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_17_3165.

European Commission/High Representative of the Union for Foreign Affairs and Security Policy. 2017. "Joint Communication to the European Parliament and the Council – Improving Military Mobility in the European Union." November 10. <https://ec.europa.eu/transport/sites/transport/files/join20170041-improving-military-mobility.pdf>.

European Commission/High Representative of the Union for Foreign Affairs and Security Policy. 2018. "Joint Communication to the European Parliament and the Council on the Action Plan on Military Mobility." March 28. https://ec.europa.eu/transport/sites/transport/files/2018-military_mobility_action_plan.pdf.

European Commission. 2018a. "Action Plan on Military Mobility: EU takes steps towards a Defense Union." March 28. https://ec.europa.eu/transport/themes/infrastructure/news/2018-03-28-action-plan-military-mobility_en.

European Commission. 2018b. "Defending Europe – Improving Military Mobility in the European Union." Factsheet. https://ec.europa.eu/transport/sites/transport/files/2018-military_mobility_factsheet.pdf.

European Commission/High Representative of the Union for Foreign Affairs and Security Policy. 2019. "Joint Report to the European Parliament and the Council on Implementation of the Action Plan on Military Mobility." June 3.

<https://ec.europa.eu/transport/sites/transport/files/legislation/join20190011.pdf>.

European Commission/High Representative of the Union for Foreign Affairs and Security Policy. 2020. "Joint Report to the European Parliament and the Council on implementation of the Action Plan on Military Mobility from June 2019 to September 2020." October 19. <https://ec.europa.eu/transport/sites/transport/files/legislation/join20200016.pdf>.

European Commission. 2020a. "Mobility and Transport – Trans-European Transport Network (TEN-T)." https://ec.europa.eu/transport/themes/infrastructure/ten-t_en.

European Commission. 2020b. "Mobility and Transport – Connecting Europe Facility." https://ec.europa.eu/transport/themes/infrastructure/cef_en.

European Defense Agency. 2019. "Military Mobility." Factsheet. https://www.eda.europa.eu/docs/default-source/eda-factsheets/2019-05-14-factsheet_military-mobility10afb13fa4d264cfa776ff000087ef0f.

European Union External Action Service (EEAS). 2020. "Towards a Strategic Compass." November. https://eeas.europa.eu/sites/eeas/files/towards_a_strategic_compass_20_november.pdf.

European Parliamentary Research Service. 2020. "Military mobility: Infrastructure for the defence of Europe." Briefing to the European Parliament. [https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/646188/EPRS_BRI\(2020\)646188_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/646188/EPRS_BRI(2020)646188_EN.pdf)

Finabel (European Army Interoperability Centre). 2018. "On the Way Towards A True Military Mobility." Food for thought paper. <http://finabel.org/wp-content/uploads/2018/12/Military-Schengen-Towards-a-true-Military-Mobility-1.pdf>.

PESCO Secretariat. 2018a. "PESCO Projects – Military Mobility (MM)." <https://pesco.europa.eu/project/military-mobility/>.

PESCO Secretariat. 2018b. "PESCO Projects – Network of Logistic Hubs in Europe and Support to Operations (NetLogHubs)." <https://pesco.europa.eu/project/network-of-logistic-hubs-in-europe-and-support-to-operations/>.

NATO

NATO, “Wales Summit Declaration,” press release 2014 (120), September 5, 2014 [updated August 30, 2018], https://www.nato.int/cps/en/natohq/official_texts_112964.htm.

NATO, “Warsaw Summit Communiqué,” press release 2016 (100), July 9, 2016 [updated March 29, 2017], https://www.nato.int/cps/en/natohq/official_texts_133169.htm.

NATO, “Brussels Summit Declaration,” press release 2018 (074), July 11, 2018 [updated August 30, 2018], https://www.nato.int/cps/en/natohq/official_texts_156624.htm.

NATO, “London Declaration,” press release 2019 (115), December 4, 2019, https://www.nato.int/cps/en/natohq/official_texts_171584.htm.

NATO, “NATO 2030: Unified for a New Era: Analysis and Recommendations of the Reflection Group Appointed by the NATO Secretary General,” November 25, 2020, https://www.nato.int/nato_static_fl2014/assets/pdf/2020/12/pdf/201201-Reflection-Group-Final-Report-Uni.pdf.

NATO-EU

NATO, “Joint Declaration on EU-NATO Cooperation by the President of the European Council, the President of the European Commission, and the Secretary General of the North Atlantic Treaty Organization,” press release 2018 (095), July 10, 2018, https://www.nato.int/cps/en/natohq/official_texts_156626.htm.

U.S. Mission to the North Atlantic Treaty Organization, “Joint Declaration by the President of the European Council, the President of the European Commission, and the Secretary General of the North Atlantic Treaty Organization,” July 8, 2016, <https://nato.usmission.gov/joint-declaration-nato-european-council-european-commission/>.

Reports and Papers

Drenth, Margriet, Kimberley Kruijver, and Dick Zandee. 2019. *Military Mobility and the EU-NATO Conundrum*. July. The Hague: Clingendael, https://www.clingendael.org/sites/default/files/2019-07/Military_Mobility_and_the_EU_NATO_Conundrum.pdf.

GLOBSEC. 2017. *One Alliance: The Future Tasks of the Adapted Alliance*. July 25. <https://www.globsec.org/initiatives/globsec-nato-adaptation-initiative-2/>.

Hodges, Ben, Tony Lawrence, and Ray Wojcik. 2020. *Until Something Moves: Reinforcing the Baltic Region in Crisis and War*. March 31. Tallinn: International Centre for Defense and Security. <https://icds.ee/en/until-something-moves-reinforcing-the-baltic-region-in-crisis-and-war/>.

LTG (Ret.) Ben Hodges, “Let’s Get Moving,” *Europe’s Edge* (blog) Center for European Policy Analysis, April 7, 2020, <https://cepa.org/lets-get-moving/>.

Marta Kepe, “Preparing for the Summit: Why Military Mobility Should be Top of the Agenda,” *TheRANDBlog* (blog), RAND Corporation, February 26, 2018, <https://www.rand.org/blog/2018/02/preparing-for-the-nato-summit-why-military-mobility.html>.

Mehta, Aaron. 2018. “NATO not moving fast enough on military mobility.” *Defense News*, November 1, 2018. <https://www.defensenews.com/global/europe/2018/11/01/nato-general-europe-not-moving-fast-enough-on-military-mobility/>.

Scaparotti, General Curtis M., and Ambassador Colleen B. Bell. 2020. *Moving Out: A Comprehensive Assessment of European Military Mobility*. April. Washington: Atlantic Council. https://www.atlanticcouncil.org/wp-content/uploads/2020/04/Moving-Out_Military-Mobility-Web.pdf.

Szopa, Maciej. 2020. “Military Mobility - A Key in Defending the NATO Eastern Flank.” *Defence24.com*, March 31, 2020. <https://www.defence24.com/military-mobility-a-key-in-defending-the-nato-eastern-flank>.



Romanian Army trucks tow artillery across the Danube River during Exercise Saber Guardian 2019. Credit: NATO



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