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War in Europe: preliminary lessons

edited by Thierry Tardy

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Nota Bene

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List of abbreviations

AUKUS	Australia, United Kingdom, United States
DCB	Defence Capacity Building
eFP	enhanced Forward Presence
EPF	European Peace Facility
EU	European Union
FRG	Federal Republic of Germany
FSB	Federal Security Service
GDP	Gross Domestic Product
IAEA	International Atomic Energy Agency
IRS	Intelligence, Reconnaissance, Surveillance
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MENA	Middle East and North Africa
MPCC	Military Planning and Conduct Capability
NATO	North Atlantic Treaty Organization
NCO	Non-Commissioned Officer
NDC	NATO Defense College
NDDP	NATO Defense Planning Process
NPT	Non-Proliferation Treaty
PESCO	Permanent Structured Cooperation
PGM	Precision Guided Munitions
S&P	Standard & Poor's
SEAD	Suppression of Enemy Air Defense
(new) START	Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms
THAAD	Terminal High Altitude Area Defense
tPF	tailored Forward Presence
UK	United Kingdom

UN	United Nations
USSR	Union of Soviet Socialist Republics
VDV	Vozdushno Desantnye Voyska
VJTF	Very High Readiness Joint Task Force

Introduction

Thierry Tardy

The 24th of February, 2022, will remain a watershed date in European history; that day, the Russian regime led by President Vladimir Putin launched a military invasion of Ukraine, marking the return of war in Europe for the first time in decades.

Much of what has transpired since the war's onset has come as a surprise, whether in its political and strategic dimensions or in operational and tactical terms. The war was not an impossibility prior to 24 February, but it was certainly viewed in the West as improbable from the perspective of a rational cost-benefit analysis. This is especially so when one considers Putin's attempt to swallow the entirety of Ukrainian territory. The means with which Russia attempted its conquest also raise a number of questions as to its armed forces' level of preparedness, organisation, and operational ability. Today, it is clear that Russia's military capacity was overestimated while Ukraine's capacity to resist was underestimated. We have witnessed Russian forces encountering difficulties in achieving their military objectives and a Ukrainian nation-state – including its armed forces and its society – determined to deny Russia any gains. Politically, the Russian regime misread the very nature of the Ukrainian nation, which proved strong and unanimous in its rejection of the Russian endeavour – even in the country's supposedly Russian-leaning East (with the exception of part of the Donbas).

For its part, the Atlantic Alliance has displayed a political unity that was admittedly lacking in recent years prior. The United States has demonstrated unequivocal commitment to the defence of Europe, while European Allies have shown both political resolve and a will to take defence spending seriously. Very little dissent or freeriding has occurred in the West. Solidarity with Ukraine has been optimal, both politically and through the delivery of weapons.

Still, Allied support is constrained by the imperative of non-belligerence. NATO Allies have made it clear upfront that they have no desire to directly confront Russia, hence the rejection of a no-fly-zone or any other move carrying the risk of inadvertent escalation. That said, NATO has deployed part of its NATO Response Force and activated its defence plans. Allies have strengthened their presence in each of the enhanced Forward Presence

(eFP) four existing battlegroups, and committed to the deployment of four additional battlegroups in Romania, Slovakia, Hungary and Bulgaria. 40,000 troops are officially deployed under direct NATO command on the Eastern flank as of the beginning of April, together with ships and air assets. Most importantly, the US has staged a comeback in Europe, with an overall deployment of 100,000 troops, among which approximately 20,000 have deployed since the beginning of 2022.

The European Union (EU) too has acted swiftly, most notably through the imposition of sanctions on Russia in lockstep with US and UK sanctions. The EU has also flexed its muscle through the newly created European Peace Facility (EPF), which has delivered three instalments of EUR 500 million to finance the delivery of weapons to Ukraine. At the time of writing, EU states had not taken the decision to extend sanctions to oil and gas imports from Russia, unlike the US and the UK. If such a decision is taken, this would lead to a major energy crisis – and therefore economic crisis – in the whole of Europe.

The war, then, raises a series of questions about the current and future European security order. First, will Western unity endure over time? What are the risks that the US or some European states will defect once the initial shock of the invasion has faded, once sanctions begin harming European economies, once the possibility of a re-engagement with Russia is floated, or once the Indo-Pacific inevitably regains US attention? Second, how will the war impact European security institutions – most notably NATO and the EU – and to what extent will the current situation positively shape the partnership between the two? Third, how resilient will Europe be in the face of a possible energy crisis provoked by the cessation of oil and gas deliveries from Russia? Fourth, from a military perspective, what lessons can be drawn from the first months of the Russian offensive regarding both Russia's capacity (or incapacity) as a first-tier military power and in the changing (or unchanging) character of modern war? Finally, what initial lessons should we draw regarding nuclear deterrence and the Atlantic Alliance's ability to dissuade harmful Russian nuclear-related actions?

This collective *Research Paper*, authored by NDC Researchers and the NDC Commandant, explores these questions directly, identifying some preliminary lessons from the war. In the first chapter, Lt. Gen. Olivier Rittimann looks at the war's potential impact on the distribution of tasks between NATO and the EU. The second chapter, written by Thierry Tardy, examines NATO's response to Russia's aggression and outlines implications for both the EU and for NATO's forthcoming Strategic Concept. The third chapter, co-authored by Andrea Gilli and Pierre de Dreuz, analyses Russia's military performance on the Ukrainian battlefield and draws early conclusions about Russian military power. Fourth, Marc Ozawa explores the war's impact on European energy security and Europe's dependence on Russian oil and gas. Finally, Cynthia Salloum assesses how the crisis questions the very

concept of deterrence and Allies' ability to deter the Putin regime.

This *Research Paper* is published alongside a series of related events and publications (notably in the *Policy Brief* series) that the NATO Defense College Research Division has organized in relation to the ongoing revision of the Alliance's Strategic Concept. To that end, it arrives in tandem with an adjacent NDC study on the strategic shifts impacting NATO's core tasks and in anticipation of a multi-authored analysis (to be released in September 2022) of the forthcoming Madrid Strategic Concept.

A revisited European security order ^{*}

Olivier Rittimann

The all-out war unleashed by Russia on neighbouring Ukraine on 24 February 2022 is a clear demonstration of how real a threat Russia poses for the security of the Euro-Atlantic area. President Putin's threat of nuclear retaliation¹ to any outside interference has laid to rest any lingering doubts regarding Russia's status as a malign actor seeking to undermine the established world order and international peace. However, neither NATO nor the European Union is in a position to take direct action in defence of Ukraine, as both organizations are keen to avoid direct confrontation with Russia. The only options open to them are therefore economic sanctions, international isolation, and support of Ukraine. Although direct military action against Russian forces is out of the question, the war in Ukraine is already impacting NATO, by boosting its sense of purpose, and Europe's strategic reflection process, which it has seemingly spurred on beyond all expectations.

NATO's cohesion and sense of purpose

While Russia's invasion of Georgia in 2008² was already a clear indicator that the Kremlin was determined to thwart any further NATO expansion, most Allies, focused on operations in Afghanistan, chose to turn a blind eye to Russia's aggression, blaming it on Georgian provocation. Their awakening was therefore all the more brutal in 2014, when Russia annexed Crimea and offered support to separatists in the Donbas region. Despite Russia's

^{*} This text was translated into English by Rodolphe Develle. The French version was published in *Le Rubicon* (31 March 2022), with the title "L'impact de la guerre en Ukraine sur l'OTAN et l'Union européenne".

¹ P. Lewis, "How likely is the use of nuclear weapons by Russia?", Chatham House, 1 March 2022.

² M. Birken, "La guerre Géorgie-Russie en dit long sur le conflit en Ukraine", *HuffPost*, 22 February 2022.

clear hegemonic resurgence in its former Soviet sphere of influence,³ not all Allies shared the same perception of the threat, arguing that Russia would never attack Alliance territory.

Russia's invasion of Ukraine and the subsequent war still raging in the country have been an eye-opener even for the most ardent sceptics. While Alliance territory is indeed not under attack, the methods and assets used by Russia's armed forces can only alarm its nearest neighbours, such as Poland or the Baltic states, and all Allies in general. The nuclear threats brandished by Putin, albeit unsubtle, have at least served to reaffirm the Alliance's nuclear nature and the validity of its Article 5 on collective defence. Russia's behaviour has also vindicated actions taken since 2014,⁴ such as air policing missions and the deployment of battlegroups in the Baltic states and Poland,⁵ and even led to additional measures, such as the deployment of four battlegroups in Romania, Slovakia, Hungary and Bulgaria. Alliance cohesion has therefore been considerably strengthened, and the delineation of the threat is now beyond any doubt. Even the most frugal countries in terms of defence spending are engaging in a massive catch-up exercise, as illustrated by Germany's decision to commit an extra EUR 100 billion to its own defence modernization.⁶ In some partner countries such as Sweden and Finland, the debate on the prospect of joining NATO has been revived,⁷ because the guarantees offered by membership are more attractive now that Russia has chosen to gain control over its "near abroad".

With its political-military decision-making mechanisms, permanent military headquarters, defence plans, and ability to rely on the presence of US troops as guarantors of the transatlantic link, NATO has proven to be the only credible organization when it comes to defending Europe. NATO is where measures to strengthen indicators and warning, deploy additional forces and activate defence plans are being implemented, as the EU does not have the necessary military mechanisms. Significantly, even a country as attached to EU strategic autonomy as France is doing its part to confront this crisis within the NATO framework, since it is responsible for manning the Very High Readiness Joint Task Force (VJTF) of the NATO Response Force and is deploying a battalion in Romania as well as several aircraft in Poland.⁸

3 R. Hatto, "L'OTAN et la crise ukrainienne", SciencePo – Centre de recherches internationales, 19 November 2014.

4 Wales Summit Declaration issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Wales, September 2014.

5 Warsaw Summit Communiqué issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Warsaw, 8-9 July 2016.

6 "Guerre en Ukraine – 'Revirement complet' de l'Allemagne, qui augmente massivement son budget militaire", *Courrier International*, 27 February 2022.

7 A. Jacob, "L'invasion de l'Ukraine incite la Finlande et la Suède à se rapprocher de l'Otan", *Les Echos*, 11 March 2022.

8 Ministère des Armées, "Renforcement de la posture défensive et dissuasive de l'OTAN sur le flanc est de l'Europe", Paris, 16 March 2022.

Beyond this positive assessment though, NATO should take care of the image projected to its partners. While Allies are satisfied that the Organization is fulfilling its role, some partners may come to doubt the usefulness of maintaining relations with NATO. The core tasks of the Alliance are not only collective defence but also crisis management and cooperative security. In particular, cooperative security is aimed at helping partners stabilize their area of responsibility by advising them on how to reform their defence apparatus and capabilities. Yet the end of NATO's mission in Afghanistan offers a poor example of this at best, and could even be regarded as a failure, as despite twenty years of Defence Capacity Building (DCB), it took only a few days for the Afghan National Army to collapse. Countries in the South may also wonder about the value of NATO's DCB, in particular if it is not supported by long-term assistance, as discussed below.

With respect to crisis management, for reasons linked to escalation control and the nature of the aggressor, NATO's role in the management of the crisis currently unfolding on its doorstep is inherently limited. Some partners may therefore wonder whether NATO can uphold its Open Door Policy, or even whether it still has what it takes to be a major player in Europe's security architecture. Looking at Ukraine, they could note that NATO has been unable to stand up to Russia and rescue a democracy – despite its public statements on shared values – and privileged partner for many years, for fear of a nuclear escalation. They could conclude that moving closer to NATO may in fact jeopardize their future and that it would be preferable to swear allegiance to Russia instead. As the conflict currently stands, it is impossible to say whether this assessment will prevail, but it is important to recognize that the aim of Russia's actions is also to make an example of Ukraine so as to prevent any further “defections”.

A wake-up call for European defence

The EU's economic weight has bolstered NATO's collective defence messaging and has helped put together a coordinated response in the form of sanctions, which NATO is not equipped to offer. In return, NATO is preparing to defend its territory, in line with the institutional cooperation between the two organizations. Work is focused on issues such as military mobility, cyberdefence and resilience, which are addressed as part of their joint measures for cooperation. The war in Ukraine has given this cooperation an unprecedented boost, and the united front shown by EU member states on sanctions provides reassurance that the EU is now fully aware of the danger it faces and of the need to assert itself as a world power.

For generations, the EU had shown little concern for military issues. Geopolitics was not part of the EU's vocabulary. Rather, the EU saw itself as a chiefly economic union whose success would turn it into a shining star which other regional groupings would wish to emulate. The return of great power competition, the rise of China and Russia's adventurism have all led the EU to understand that in order to remain in existence, it needs to be powerful and able to defend its interests. What followed was a bold decision to supply lethal weapons to Ukraine,⁹ breaking a longstanding taboo. Beyond bilateral deliveries of weapons, this is an initiative coordinated by the EU.¹⁰ The idea is that individual countries digging into their own inventories to deliver those weapons will be compensated through the European Peace Facility,¹¹ which has a ceiling set at EUR 5 billion for the period 2021-2027. As the list of countries wishing to supply Ukraine with weapons keeps on growing in spite of Russia's protestations, it can be said that Putin has actually awoken Europe's defence spirit.

Furthermore, while the EU may not be in a position to intervene in Ukraine, it has been engaged in an area of great significance to European stability, i.e. the Western Balkans, through its Operation Althea in Bosnia and Herzegovina. After purring along quietly for years, this operation has now gained renewed relevance with Russia threatening to destabilize the Balkans as a side show to its war in Ukraine. Recent reinforcements¹² in Bosnia show that the EU is aware of those risks and is fulfilling the mission it took over from NATO in 2004.

Looking at the broader picture, the EU is of course not equipped to provide a military response to a major crisis in Europe,¹³ as the tools¹⁴ at its disposal remain limited: two hitherto unused battalions on standby, an embryonic Military Planning and Conduct Capability (MPCC), a small Military Staff uncomfortably straddling the gap between the political and tactical levels, and external missions restricted to training initiatives in Africa, as well as a handful of maritime operations in addition to Althea. Against the backdrop of the ongoing war in Ukraine, this setup seems rather inadequate and much will need to be done in order to turn it into a credible instrument. The recently released Strategic Compass aims at doing this. Yet, considering the importance given to NATO in most European countries' strategic calculus, the EU is still a long way from eclipsing the Alliance with its

9 C. Perruche and D. L. McClain, "Guerre en Ukraine: quelles armes ont été livrées à Kiev, et par quel pays?", *Les Echos*, 11 March 2022.

10 European Council, "Timeline – EU response to Russia's invasion of Ukraine", April 2022.

11 European Council, "European peace facility", March 2022.

12 "Borrell: la mission de l'EUFOR en Bosnie est désormais 'plus importante que jamais'", *Infobae*, 16 March 2022.

13 G. Weber, "10 points sur la défense européenne en 2022", *Le Grand Continent*, 3 February 2022.

14 European Union External Action Service, "A stronger EU on security and defence", 19 November 2018.

own capability, which would probably not be desirable anyway if the intent is maintaining a strong transatlantic link.

The relevance of European strategic autonomy

The transatlantic link remains fragile. The lack of US leadership, and the downright hostility shown by the Trump presidency towards Allies, revived the debate over the issue of European strategic autonomy. Likewise, the Biden administration's reassurances on restoring the transatlantic link were undermined by the uncoordinated evacuation from Kabul¹⁵ in August 2021 as well as by the AUKUS deal on the Australian submarine contract¹⁶ in September 2021. The war in Ukraine has now put an end to the crisis of confidence between Europeans and Americans, as it is clear that the US has stepped up to the mark and is indispensable for the defence of Europe.

Nevertheless, thinking about European strategic autonomy remains necessary, as US contributions could diminish going forward, should the US become more involved in Asia. Of course, strategic autonomy reaches beyond defence, encompassing areas as diverse as assured access to raw materials, end-to-end control of strategic production processes, network protection, energy supply, and the ability to influence markets and trade, to name but a few. But the whole idea can only work if there is a credible and effective defence component capable of protecting interests when threatened, and of intervening to prevent or stabilize a crisis. Therefore, while the need for strategic autonomy is incontrovertible, it cannot be disassociated from its defence component.

The ultimate goal of strategic autonomy is to end this dependency, but the war in Ukraine has shown that that goal is still a long way off: Europe is unable to defend itself without US support and will be for many years yet. However, European nations should continue their defence effort in order to lighten the load for the US, for example by acquiring capabilities and assets to counter an initial incursion, thereby giving the US more time to deploy reinforcements. Again, the war in Ukraine calls for a sizeable increase in European defence budgets, which most European countries seem now willing to contemplate. Involving Europe in turbulent areas in its periphery would allow the US to focus more effectively on the core effort and would enhance the credibility of European countries.

15 S. Erlanger, "Afghan fiasco raises hard questions", *The New York Times*, 23 August 2021.

16 V. Niquet and M. Peron-Doise, "AUKUS and submarines: the fallout for France", *The Diplomat*, 18 September 2021.

A potential scope for action

While the war in Ukraine will probably serve to redirect NATO's attention on its primary mission, i.e. collective defence, its other two tasks (crisis management and cooperative security) will likely remain in the new Strategic Concept. It is therefore necessary to determine how European autonomy could be put into practice and what tasks could be carried out by the EU in order to relieve NATO. For example, it should be recognized that only NATO will be able, for the foreseeable future, to ensure defence at the higher end of the spectrum, i.e. to defend Europe against a conventional, nuclear or hybrid threat. Conversely, the EU should be accepted as the preferred option for crisis management operations, from training and advice missions, through post-conflict stabilization, maritime security and local military capacity building, up to a high-intensity operation.

The EU's field of action could be the Southern flank and particularly Africa, as an area of instability marked by lack of governance, poverty and corruption resulting in terrorism and crime, as well as mass emigration, especially to Europe. As such, these issues are not of relevance to the US, and NATO is probably not the appropriate forum for responding to them, as a strictly military solution will not be enough. The issues need to be tackled in depth with economic and social initiatives – as envisaged in the EU's Global Gateway project¹⁷ – to ensure that these countries are stabilized and that their populations are sustainably anchored there.

This is an arduous task, as both Europeans and Africans need to be convinced of its merits, and Chinese competition, which is particularly active on the continent, must be kept in check. Africa is a huge potential market with a population set to grow exponentially. In order to remain relevant on the world stage, Europe cannot afford to leave this market to China, and the EU must compete with the "New Silk Roads"¹⁸ by offering Africans an alternative to the Chinese debt trap. Coordinated and proactive EU involvement in Africa would also serve to counter Russian efforts to spread disinformation aimed at discrediting the West¹⁹ and to establish mercenary groups²⁰ whose goal is to prey on resources by

17 European Commission, Global Gateway, https://ec.europa.eu/info/strategy/priorities-2019-2024/stronger-europe-world/global-gateway_en

18 W. Garcin-Berson, "Les nouvelles routes de la soie, le projet au service de l'hégémonie chinoise", *Le Figaro*, 26 March 2019.

19 Africa Center for Strategic Studies, "Russian disinformation campaigns target Africa: an interview with Dr. Shelby Grossman", 18 February 2020, <https://africacenter.org/spotlight/russian-disinformation-campaigns-target-africa-interview-shelby-grossman/>

20 UN Geneva, "RCA: le groupe russe Wagner harcèle et intimide les civils, dénoncent des experts de l'ONU", 27 October 2021.

helping keep corrupt regimes in power.

Africa harbours vast reserves of strategic raw materials,²¹ such as hydrocarbons, rare earths, various minerals, and uranium, in addition to its agricultural potential. As Europe wakes up to the fact that 48 percent of its oil and 43 percent of its gas come from Russia,²² it must find other sources if it is to free itself from the constraints of this dependency. The sanctions front is strong for now, but if the crisis drags on, there is no guarantee that European governments will remain as firm in the face of pressure from consumers, and this may be part of Putin's calculation. With its own sources of nuclear power, France is probably the least dependent on Russian energy. But the situation is very different for other European countries, who are even considering reopening coal mines, thus flying in the face of the energy transition despite this issue being high on the European agenda. Building the necessary infrastructure to receive Liquefied Petroleum Gas (LPG) from the US will take time and create another form of dependency. It therefore makes sense that the EU should look to Africa to establish or strengthen trade relations that will ensure it can diversify its suppliers.

To that end, it is necessary to inject massive assistance rapidly in support of fragile states, and above all to develop local capacity for political, economic and societal governance. This means engaging in actual "nation-building", but with a unity of command and action that only the European Union is in a position to provide. Only once such a package is put together can military efforts be helpful. They could be limited to training activities, as with the EU Training Missions, or they could take the form of a larger-scale operation under EU planning and command. This would demonstrate the added value of the MPCC: by engaging on the southern flank and leaving the defence of Europe to NATO, it would once and for all lay to rest the claim of duplication between the two organizations.

Defining both potential tasks and potential theatres of engagement in this way would clearly demonstrate to all Europeans that there are missions or places where the US has no interest in getting involved, but which are of utmost interest to Europe. The challenge here will be to convince Central and Eastern European countries, which are so close to the Russian threat. But the EU must not let situations deteriorate simply because it lacks assets of its own. It should be able to assess a situation independently of the US, set a common political objective in order to address the crisis, and ultimately decide whether or not to intervene, safe in the knowledge that it has the means to do so. A decision not to intervene should no longer be made because of a lack of resources; it should be a truly deliberate choice.

21 I. Ramdoo, "L'Afrique des ressources naturelles", *Commentaire*, IISD, November 2019.

22 R. Imbach, "Quel est le niveau de dépendance des pays européens au gaz et au pétrole russe?", *Le Monde*, 11 March 2022.

Division of labour

The war in Ukraine fully justifies NATO's existence and is a demonstration that NATO is indispensable. As the only permanent forum where Americans and Europeans meet on a daily basis, the North Atlantic Alliance remains the guarantor of European security against a Russian threat. NATO can rely on well-tested mechanisms and procedures, permanent multinational headquarters, defence plans and standing missions, as well as on the presence of US commanders and troops at all levels, securely embodying the transatlantic link.

European countries alone are not yet in a position to take over from the US but could play a greater role within NATO, as may be inferred from their military spending increases and their latest announcements. In this respect, Russia's invasion of Ukraine has been a wake-up call for the EU, which has come to terms with geopolitical reality.

With NATO fully absorbed by the Russian threat, it could agree on a division of labour with the European Union, giving the latter free rein on the southern flank. Such an approach would allow both organizations to specialize in their preferred field of expertise – namely, higher-end collective defence for NATO and out-of-area crisis management combined with development for the EU.

Ukraine, NATO, and the Madrid Strategic Concept^{*}

Thierry Tardy

The 24th of February 2022, will stand as a key date in European history; that day, the Russian regime launched a military invasion of Ukraine, thus marking the return of war in Europe more than two decades after the end of the Balkan conflicts. The invasion has shaken the European security landscape to a degree not seen since the end of the Cold War. For NATO Allies, the war underscores the plausibility of a direct military confrontation with Russia. It thus places in question the Alliance's own policies, including its ability to deter and its readiness to defend against Russian aggression. These questions carry short-term and long-term implications for Allies, all at a moment when the US increasingly focuses its attention on the Indo-Pacific while Europeans look for ways to better ensure their own defence. This chapter examines some preliminary lessons that NATO, its Allies, and partners can draw from the war in Ukraine while the Alliance drafts its new Strategic Concept and must, once again, demonstrate its ability to adapt to a new environment.

War plausible

The first lesson from the war in Ukraine is that direct military confrontation between the Alliance and Russia is no longer highly unlikely; such an outcome has moved distinctly up the ladder of plausibility. At least two scenarios of military confrontation are possible. One involves an unintended spill-over of the Ukraine conflict onto NATO soil. Such hypothetical cases of “inadvertent escalation”¹ include: a violation of NATO airspace

^{*} The author is grateful to Lucrezia Scaglioli and Pierre de Dreuzy for their research assistance.

¹ See F.E. Morgan *et al.*, *Dangerous thresholds: managing escalation in the 21st century*, RAND Corporation, Santa Monica, CA, 2008, <https://www.rand.org/pubs/monographs/MG614.html>; and B.R. Posen, “Inadvertent nuclear war? Escalation and NATO's Northern flank”, *International Security*, Vol.7, No.2, 1982.

by Russian jets and a subsequent military response by the West; confrontation between Western and Russian forces over the delivery of weapons to (or the training of) Ukrainian forces; cross-border incidents related to the flow of Ukrainian refugees entering NATO countries; or even Western reactions to Russia's potential use of chemical weapons.² While Allies insist that they are not at war with anyone and are not co-belligerents to the war in Ukraine, this stance can be inadvertently modified through Allied actions or simply misperceived by Russian decision-makers.

The second scenario involves a deliberate Russian attack against a NATO Ally. This could occur if Russia believes it can seize parts of a NATO state's territory – and this could be just a small part, an island for example – without facing an Allied response or at a cost Moscow considers acceptable. In this scenario, Russian gains would not be strictly territorial, but rather intended to undermine (*inter alia* by sowing division) or even to destroy the Alliance (by betting on its passivity or its undecisive response). The narrative often heard in the Baltic States and Poland argues that Putin's regime will only be deterred from such a course of action if it meets resistance.³ Prior to 24 February, a rational cost-benefit analysis from the Russian perspective hinted towards restraint: Russian hybrid warfare tactics were recorded, yet kinetic operations against NATO member states were largely considered improbable. These arguments remain valid when evaluating the potential costs of a kinetic attack against a NATO Ally. Yet the rationality of Russia's leadership in the context of the war in Ukraine is now questionable, making it more difficult to exclude a deliberate attack elsewhere. Put differently, yesterday's argument about Russia's rationality, wherein "Russian leaders would not act in a way that is obviously against their interests", is more difficult to make today.

NATO united, as an exclusive alliance

The second lesson of the war in Ukraine relates to the unity of the Allies. Prior to the war in Ukraine, Alliance cohesion was largely debated due to diverging threat perceptions amongst individual Allies and ensuing disagreements regarding NATO policy priorities. Debates over the extent to which European states should shoulder the defence burden

² See U. Kühn, "The pathways of inadvertent escalation: is a NATO-Russia war (now) possible?", *Bulletin of the Atomic Scientists*, 24 February 2022, <https://thebulletin.org/2022/02/the-pathways-of-inadvertent-escalation-is-a-nato-russia-war-now-possible/>

³ See "On NATO's vulnerable eastern edge, Baltic nations face high stakes in Ukraine crisis", *The Washington Post*, 20 March 2022.

with the US (and possibly develop a truly European capacity) also negatively impacted Alliance politics. Lastly, under the previous US administration, many raised doubts that the US would fulfil its commitment to the Alliance's Article 5 clause of collective defence.

In this context, the North Atlantic Council convened twice at the level of Heads of State and Government and twice at the ministerial level in the month following the start of the war, each time to "condemn in the strongest possible terms Russia's full-scale invasion of Ukraine" and reassert their iron-clad "commitment to Article 5 of the Washington Treaty" as well as their unity to "protect and defend all Allies".⁴ Beyond official statements, Allies not only demonstrated (quasi)⁵ unity in their solidarity toward Ukraine and condemnation of Russia, but also in their willingness to uphold their defense guarantees towards one another in case the Alliance itself were attacked. They held consultations under Article 4 of the Washington Treaty,⁶ activated NATO's defence plans, and decided on the deployment of various assets on NATO's Eastern flank, including national assets and elements of the NATO Response Force. Allies have strengthened each of the four enhanced Forward Presence (eFP) battlegroups stationed in the Baltic States and Poland and resolved to deploy four additional battlegroups in Romania, Slovakia, Hungary and Bulgaria. As of the end of March, 40,000 troops together with ships and air assets were officially deployed under direct NATO command on the Eastern flank.⁷ Most importantly, the US has staged a return to Europe militarily, with approximately 20,000 troops deployed since the beginning of 2022, bringing the overall deployment of US soldiers in Europe to 100,000. Throughout these consultations and deployments, moreover, few signs of free-riding or defection appeared among Allies. Thus, while one of Putin's aims was to politically undermine the Alliance and weaken its presence on its Eastern flank, what he instead achieved is greater NATO political unity and a greater military presence near Russian borders.

Despite these decisions, though, a number of questions remain. First, the US deployment to Europe will not preclude a longer-term US shift to Asia, raising the issue

4 Statement by NATO Heads of State and Government on Russia's attack on Ukraine, 25 Feb. 2022, https://www.nato.int/cps/en/natohq/official_texts_192489.htm

5 The two exceptions being Hungary, which has made clear its desire to stay out of the conflict and refused passage of weapons through its territory to Ukraine, and Turkey, which remains unaligned on both EU and US sanctions against Russia; see "Hungary will stay out of Ukraine war, PM Orban tells rally", Reuters, 15 March 2022, <https://www.reuters.com/world/europe/tens-thousands-rally-support-hungarys-orban-election-nears-2022-03-15/>; "We shouldn't get involved: Ukraine a key issue as Hungary heads to polls", *The Guardian*, 1 April 2022, <https://www.theguardian.com/world/2022/apr/01/hungary-election-ukraine-a-key-issue-viktor-orban>; S. Adar, "Perceptions in Turkey about the war in Ukraine. Implications for the future of EU-Turkey relations", *SWP Comment*, Berlin, 6 April 2022.

6 Eight Allies have invoked Article 4 for consultations (Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania, Slovakia).

7 Let us note, though, that adding up official numbers of the eFP and the tailored Forward Presence (tFP) gives a result in the range of 25,000 troops under NATO command.

of US commitment to Europe's defence in the future under the current administration and beyond. Russia may have brought new urgency to the European front, but the China challenge remains a US priority. Will the US consider a long-term credible presence on two fronts? How significant can US troop commitments be in Europe without weakening America's posture in the Indo-Pacific? Lastly, to what extent will this dilemma manifest itself in renewed pressure on European states to share the burden? There is, of course, no guarantee that in the coming years governments will follow through with spending decisions taken in the wake of the invasion. And the US commitment to European security is likely to be questioned as the China challenge grows and the situation settles in Ukraine. Likewise, European states' commitment to spend more on defence (see below) will also come under scrutiny. In the past, defence spending pledges were not always implemented, in part because, as time passed, the circumstances leading to increased spending commitments changed, and in part because governments were replaced and new priorities emerged. Indeed, shifting from low defence spending policies to the two percent (or more) GDP threshold is economically, politically, and culturally challenging, as already observed in Germany.⁸ Thus, past transatlantic frictions on this issue could easily re-emerge in the future.

Second, the above-mentioned deployments challenge the 1997 NATO-Russia Founding Act, including whether its original stipulations still hold and whether new rules must be drafted to regulate future relations with Russia. In the Founding Act, NATO Allies made a commitment to Russia to avoid permanently deploying "substantial combat forces" in new member states' territory. This commitment could be potentially breached if new (or existing) deployments on the Alliance's Eastern flank were to be made permanent. US officials have indicated that forces could be deployed on a rotational basis, but nonetheless on permanent military bases.⁹ Allies addressed the issue at the Extraordinary (virtual) Summit on 25 February 2022, stating that "Russia's actions are [...] a flagrant rejection of the principles enshrined in the NATO-Russia Founding Act: it is Russia that has walked away from its commitments under the Act". Yet, Allies stopped short of formally declaring the Founding Act null and void. Practically, it is difficult to foresee how the Founding Act (which in 1997 referred to "the current and foreseeable security environment") remains binding for NATO, but this does not preclude the possibility that some Allies prefer prudence when it comes to substantial and permanent troop deployments close to Russian borders.

8 See "Ukraine war pushes Germans to change. They are wavering", *The New York Times*, 12 April 2022, <https://www.nytimes.com/2022/04/12/world/europe/germany-russia-ukraine-war.html>

9 See "Milley proposes rotational forces in permanent bases across Eastern Europe", DOD News, 5 April 2022.

Third, the real test for a military alliance comes when one of its members is attacked, not when one of its partner countries is attacked; the NATO Alliance has yet to be tested in this regard. The solidity of Article 5 in particular will be tested if or when one of the 30 Allies is indeed the object of an “armed attack”, and it remains difficult to prejudge how Allies will then react. Will they demonstrate the same cohesion and solidarity if they are called to fight Russia in one of the Alliance’s Eastern flank states? Moreover, will each Ally harbour the same interpretation of what constitutes an “armed attack” – especially when comparing views between those “attacked” and those more removed from the potential conflict? This debate is, of course, not new, but in light of the Ukraine invasion, an Article 5 invocation is today far more plausible than it was in the past, thus lending the discussion a greater sense of urgency and reality.

Fourth and related, the war in Ukraine clearly delineates the nature of the Alliance’s Article 5 guarantee and confirms that NATO is an exclusive military Alliance. The security guarantees that form the basis of Alliance membership apply solely to the Allies and to no other entities, no matter how close they are to the Alliance. The possibility of a NATO defence of Ukraine has been seriously debated – in particular the possibility of a NATO no-fly zone over Ukraine, which Ukrainian President Volodymyr Zelensky has repeatedly called for. This discussion was embarrassing for the Alliance, which systematically declined the request to the backdrop of Russian bombings against the Ukrainian population. NATO’s stance was justified through two reasons. First, it was argued that NATO Allies have no defence commitment toward Ukraine – true, yet NATO had no defence commitment towards the Bosnian or Kosovar people and nonetheless intervened to defend them. This then leads to the second reason – namely, that NATO Allies are anxious to avoid any steps that could lead to direct military confrontation with Russia. Enforcing a no-fly zone over all or part of Ukrainian territory, for instance, would inevitably require NATO aircraft to engage Russian aircraft in Ukrainian airspace (and possibly require neutralising Russia-based air defence systems that cover Ukrainian air space) with ensuing risks of escalation.

Both the non-applicability of NATO security guarantees to Ukraine and the Alliance’s unwillingness to militarily confront Russia in Ukraine were unambiguously communicated to all parties upfront. With these premises in mind, the challenge for the Alliance has been to “win the war without fighting it” – in other words, impose sanctions on Russia and deliver weapons to Ukraine without crossing the threshold of co-belligerence or outright confrontation. The debate grew more sensitive with Russia’s possible use of chemical weapons, yet the will to fight Russia militarily remains elusive and is unlikely to meet the moral outrage provoked by Russian actions in Ukraine. In the longer term, these considerations will also determine the likelihood of Ukraine’s accession to NATO.

Allies will not renege on their Open Door Policy. But the Ukrainian President has already made it clear that accession to NATO is likely off the table for now, a position implicit in Western debates before 24 February and only reinforced since. One could also ask how the credibility of the Open Door Policy might be fully maintained in light of the Ukraine renouncement. NATO's door remains open in principle, and sovereign states can decide whether to apply, yet this policy is not immune to the reality of power politics, which plays a role in determining which states make it to the club in the end. This logic will likely be illustrated if Sweden and Finland confirm their application to the Alliance and are admitted. That is not to say that accession to the Alliance would be risk-free – indeed, Russia has repeatedly warned of “consequences” for both countries if they joined NATO¹⁰ – but Allies would likely consider the case of these two closest partners “contribut[ing] to the security of the North Atlantic area”¹¹ and therefore meriting a place in the club.

Europeans getting serious on defence?

One direct consequence of the Ukraine war is the drastic change in European states' defence spending policies. The most significant is Germany's commitment not only to spend 2 percent of its GDP on defence in 2022, but also to create a special fund of EUR 100 billion dedicated to defence investment (against a defence budget of EUR 47 billion in 2021).¹² Other decisions include the upcoming referendum in Denmark regarding the country's opt-out status from the European Union's (EU) Common Security and Defence Policy (1 June 2022), significant defence spending increases in the Baltic States¹³ and Poland,¹⁴ and similar upgrades in Sweden and Finland.¹⁵

Prior to 24 February, debates over defence spending in Europe often referred to the need for a “wake-up call”, without which European states would never take defence spending

10 “Russia warns of ‘consequences’ if Finland, Sweden join NATO”, *The Moscow Times*, 15 April 2022, <https://www.themoscowtimes.com/2022/04/15/russia-warns-of-consequences-if-finland-sweden-join-nato-a77370>

11 Article 10 of the North Atlantic Treaty.

12 In Germany, these decisions were taken in addition to the German abandonment of the Nord Stream 2 pipeline. See C. Major and C. Mölling, “The war in Ukraine just caused a revolution in German military affairs”, *World Politics Review*, 22 March 2022, <https://www.worldpoliticsreview.com/articles/30413/germany-defense-spending-hike-is-a-revolution-in-military-affairs>

13 See J. Adamowski, “Estonia increases defense spending to buy air defense systems, more weapons”, *Defense News*, 25 March, 2022; “Lithuania to increase defence spending to 2.52% of GDP from 2022”, *Janes*, 16 March 2022.

14 “Poland to increase defence spending to 3% of GDP from 2023”, *Janes*, 4 March 2022.

15 “Sweden to boost defence spending by USD300 million in 2022”, Reuters, 16 March 2022; “Finland makes 70% defense spending increase in shadow of war”, *Bloomberg*, 5 April 2022.

seriously and instead continue to rely on US security guarantees. The 2014 Ukraine crisis impacted several NATO Allies' defence budgets,¹⁶ yet the increases were uneven and emerged mainly in countries geographically close to Russia.

The measures taken since 24 February, however, are of a different scale, accompanied by weapons deliveries to Ukrainian armed forces that have at times broken with longstanding policies (in Germany in particular). Within the EU, weapons deliveries have been financed through the newly created European Peace Facility (EPF), with three instalments of EUR 500 million spent to fund weapons' purchase and shipments to Ukraine.¹⁷ The activity has been coordinated by the EU Military Staff. Such a level of decisions and initiatives by European states and the EU itself would have been difficult to predict prior to 24 February. The mere idea that lethal equipment would be (or could be) financed by a European fund (the EPF is technically off-budget) was nonsensical five years ago, evidenced when the EU discussed whether it could finance equipment provisions for African armed forces trained by the EU.¹⁸

This being said, defence spending increases in Europe will also mark the beginning of a new conversation about the meaning of European defence, all at a time when the EU adopts its Strategic Compass.¹⁹ Uncertainty regarding European states' long-term implementation of their new spending commitments aside, this conversation concerns not only the types of capabilities that member states will look to develop or acquire, but also the way such capabilities will be used, the degree of intra-European cooperation that new budgets will allow, and the kind of institutional frameworks that will accommodate European defence policies. In other words, what impact will these changes have on European defence "actorness"? Will European states take this opportunity to develop the defence-industrial dimension of European strategic autonomy, or will they continue to mainly rely on US capacities – indeed, even develop independent national capacities instead? Will defence spending increases mainly benefit NATO or the EU? Lastly, will states finally agree on a sound division of tasks between

16 According to the 2021 Secretary General's Annual Report, the increase of defence spending among European Allies and Canada between 2015 and 2021 amounts to USD 270 billion. NATO Secretary General's Annual Report, 2022, p.42, https://www.nato.int/nato_static_f2014/assets/pdf/2022/3/pdf/sgar21-en.pdf

17 "EU foreign ministers agree to give Ukraine another €500 million in arms and military equipment", EU Neighbours East, 22 March 2022; "EU support to Ukraine: Council agrees on third tranche of support under the European Peace Facility for total €1.5 billion", Council of the EU Press release, 13 April 2022, <https://www.consilium.europa.eu/en/press/press-releases/2022/04/13/eu-support-to-ukraine-council-agrees-on-third-tranche-of-support-under-the-european-peace-facility-for-total-1-5-billion/>

18 "The EU's new approach to funding peace and security", Briefing – EU Legislation in Progress, European Parliamentary Research Service, 22 November 2017, [https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/589858/EPRS_BRI\(2016\)589858_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/589858/EPRS_BRI(2016)589858_EN.pdf)

19 "A Strategic Compass for security and defence", Council of the European Union, doc. 7371/22, 21 March 2022, <https://data.consilium.europa.eu/doc/document/ST-7371-2022-INIT/en/pdf>

the two institutions so that both can benefit from the new situation?

Intuitively, one lesson from the war in Ukraine and Russian aggressivity is that NATO remains *the* body that guarantees the territorial integrity of its member states while the EU provides Europe's economic response. Finland and Sweden's quest for NATO membership (not to mention Georgia and Ukraine's) is clearly "Article 5-driven": these states wish to join the club that offers security guarantees against Russia. And this is also why the Baltic States and Poland are better off as members. NATO is emerging from the crisis as the exclusive collective defence provider in Europe. In practice, this means that increases in defence spending are more likely to benefit first and foremost NATO (and its European pillar) and only then the EU.

For its part, the EU's own comparative advantage is evidenced in its demonstrated capacity to shape its environment through its economic levers, including its ability to impose sanctions against Russia, and the use of the EPF to fund the delivery of weapons to Ukraine. While this is not about defence *per se*, it reveals the EU's significant agency in the security realm, demonstrating its capacity to meaningfully respond to a war taking place in its neighborhood. This has not always been the case in the past.

In the long run, the war in Ukraine will also give greater salience to the narrative of European strategic autonomy.²⁰ This is particularly so from the perspective of Europe's economic autonomy, as Europe's energy dependence creates significant vulnerabilities if its main energy provider (i.e., Russia) is under massive European sanctions. But the security and defence dimension of strategic autonomy is nonetheless at stake, as military threats to Europe highlight both the need for Europeans to provide their own response and their dependence on US security guarantees. To summarize, if European states draw one lesson from the war in Ukraine, it is the need to get serious on defence – collectively.

The way forward

The strategic shock of 24 February 2022 will heavily shape NATO's forthcoming Strategic Concept. Yet many of the longer-term challenges on NATO's agenda prior to the current situation remain, including the rise of China, climate change, and hybrid threats. As was often repeated during the COVID crisis, new threats are added to existing ones but do not necessarily replace them. The challenge for any security actor engaged in strategy design, then, is to prioritise immediate threats without overlooking longer term developments.

20 "Ukraine war gives Macron's drive for EU autonomy new impetus", *Politico*, 11 April 2022.

Calibrating this response requires a subtle analysis of threats and available resources.²¹

In this context, the forthcoming Strategic Concept will most likely enshrine collective defence as *the* core task of the Alliance. NATO's defence *raison d'être* has no doubt been reinforced by the current crisis and a consensus on the issue will likely be reached. The document will make this explicit, with words such as "deterrence", "collective defence", and "defence posture", appearing many times throughout. This will have both strategic-level implications and more operational ones as well.

At the strategic level, the very nature of the Alliance will reflect the new environment. Ten years ago, NATO acted mainly as a crisis management organisation; today, it acts mainly as a collective defence entity. Crisis management was relegated to secondary importance following the end of the Afghan mission, and the Ukraine war will only reinforce this new reality. Yet, crisis management will remain an important instrument for responding to instability on the Alliance's periphery. Moreover, it could possibly emerge as a tool to contain Russia in places where it is keen to fill the vacuum left by retreating Western powers. This could be the case in the Middle East and North Africa (MENA) region, but also in the Western Balkans. Similarly, while the Alliance's third core task, cooperative security, is arguably less prominent in the "deterrence and defence" era, strategic competition with Russia and China could lead to calls for strengthened partnerships, if only as a means to administer a broader defence agenda. This is obviously the case with partners like Ukraine, Sweden, Finland, and Georgia, but also with states like Australia, Japan, and maybe India, each of which could play a key role in global strategic competition.

In more operational terms, the move back to collective defence against Russia raises questions about NATO's defence posture. With the Ukraine crisis in 2014, NATO recommitted to collective defence by opting for a combination of light "trip-wire" battlegroup deterrents in four countries on its Eastern flank.²² Each battlegroup is composed of approximately 1,200 troops and reinforceable with various capabilities, including the NATO Response Force, assets that fall within the NATO Readiness Initiative (the so-called "Four 30s"²³), and other heavier assets. In other words, this is deterrence by punishment. Russia is deterred from attacking because it fears a military counter-offensive – with some uncertainty regarding the nature of the reinforcements that can arrive and at what speed.

21 See M. Henke, "The 'dos and don'ts' of strategy making", *NDC Policy Brief* No.6, NATO Defense College, Rome, March 2022.

22 Poland and the three Baltic States. See on this A. Lanoszka, C. Leuprecht, and A. Moens (eds.), "Lessons from the enhanced Forward Presence, 2017-2020", *NDC Research Paper* No.14, NATO Defense College, Rome, November 2020, file:///D:/My%20Documents/Downloads/NDC_RP_14-1.pdf

23 By which Allies commit to have 30 naval ships, 30 land battalions, and 30 air squadrons, ready to be deployed within 30 days.

For the Alliance's Eastern flank members, such a posture was never considered sufficient, both on deterrence and defence grounds. Ultimately, the eFP reflected what Allies were ready to implement given the low probability of a Russian attack; it was clearly not designed as a defence mechanism.

The new situation is obviously different. If the possibility of war with Russia is now distinct, then the posture developed in the aftermath of the 2014 crisis is no longer appropriate. Following the Russian invasion of Ukraine, the deployment of US and European troops on the Alliance Eastern flank, together with the creation of four additional battlegroups, are early indications of a “reset [of] our deterrence and defence for the longer-term”,²⁴ to be further detailed in the run-up to the June 2022 Madrid Summit. In this reset, a balance must be struck between deterrence and defence. Eastern flank states call for a permanent “forward defence”²⁵ posture, with a shift away from deterrence by punishment and towards deterrence by denial (in which the potential aggressor is deterred from an attack because of the low perceived success rate of the attack).²⁶ Military experts argue that between seven and 14 brigades ought to be deployed on the Eastern flank if the intent is to counter a potential Russian offensive (although most experts acknowledge the difficulty of defending the Baltic states due to their geographic vulnerability and relative remoteness from the core of NATO territory).²⁷ In any case, more forces that would be more permanent and supported by a wide range of “posture enhancements”²⁸ are to be considered, with NATO Secretary General Jens Stoltenberg noting after the 24 March Extraordinary Summit that, “on land, our new posture should include substantially more forces in the eastern part of the alliance, at higher readiness, with more prepositioned equipment and supplies”.²⁹

Are Allies now ready to contemplate what they did not prior to the 24 February invasion? If so, what level of deployment will be considered sufficient? And what will be

24 Press conference by NATO Secretary General Jens Stoltenberg following the extraordinary Summit of NATO Heads of State and Government, 24 March 2022, https://www.nato.int/cps/en/natohq/opinions_193613.htm

25 See “What the Baltic Presidents want the West to do now against Russia”, Online event “A conversation with the Baltic Presidents”, Atlantic Council, 29 March 2022.

26 H. Binnendijk and D.S. Hamilton, “Lessons for NATO from the war in Ukraine”, *Politico*, 23 March 2022, <https://www.politico.eu/article/nato-summit-europe-brussels-war-in-ukraine/>

27 See D.A. Shlapak and M. Johnson, “Reinforcing deterrence on NATO’s Eastern flank. Wargaming the defense of the Baltics”, RAND Corporation, 2016, https://www.rand.org/pubs/research_reports/RR1253.html; B. Posen, “Europe can defend itself”, *Survival*, Vol.62, No.6, 2020-2021, pp.7-34.

28 See “Defending every inch of NATO territory: force posture options for strengthening deterrence in Europe”, *Issue Brief*, Atlantic Council, March 2022; see also J. Deni, “Yes, Russia might invade a NATO country. Here’s how the Alliance should prepare”, *Politico*, 4 March 2022, <https://www.politico.com/news/magazine/2022/03/04/nato-spread-itself-too-thin-00013933>

29 Press conference by NATO Secretary General Jens Stoltenberg following the extraordinary Summit of NATO Heads of State and Government, 24 March 2022.

the level of burden-sharing between the US and European states within this new force structure? These deployments will be lasting and will have to involve both the United States and major European powers such as France, Germany, and the United Kingdom. As mentioned earlier, will the US maintain its effort over time given its parallel needs in the Indo-Pacific? The current administration has shown unambiguous support for the Alliance, but the recent past also demonstrates how fragile such support can be.

This finally raises the issue of Europe's own commitment to the continent's defence. Can Europeans take responsibility for, say, half of the forces to be deployed?³⁰ Can Germany or the UK take a leading role in this? And what about the role of the EU? Indeed, troops deployed on NATO territory will either operate under national command (as is the case for the majority of US troops) or under NATO command. But the EU will nonetheless have to play a key role in Europe's defence: through its various Permanent Structured Cooperation (PESCO) projects (including its framework for greater Europe-wide military mobility); in support of non-NATO EU members such as Sweden and Finland (including in reference to Article 42.7 TEU, the EU's near-equivalent to NATO's Article 5); as well as through its resilience-building capacities, be it in the economic domain or in the protection of critical infrastructure and cyber-security.

Moreover, could a NATO-EU partnership be designed along a mix of geographical and thematic lines, with NATO mainly focusing on the Eastern flank while the EU takes care of its Southern flank? NATO's role on the Southern flank has always been uneasy, both politically and operationally.³¹ With NATO-led crisis management and cooperative security receding, the EU could fill this gap by revisiting its crisis management role in the MENA region in light of the new European security environment. This is all the more important as Russia and China have expanded their footprint in the region. To that end, the EU's Strategic Compass noted that enhancing the security of its African partners is "even more important as we are witnessing a growing presence of our strategic competitors, from the Sahel to the Horn of Africa".³² Neither the Strategic Compass nor NATO's Strategic Concept will explicitly reflect on this division of tasks, yet the circumstances more than ever call for such clarification.

30 In 2021 Sven Biscop was advocating that EU Allies would contribute "half of all the conventional capabilities that the NATO Defence Planning Process (NDPP) requires", as well as "three of the four multinational battlegroups" of the eFP. "EU and NATO strategy: a compass, a concept, and a concordat", *Security Policy Brief*, No.141, March 2021, p.3.

31 T. Tardy, "NATO's sub-strategic role in the Middle East and North Africa", German Marshall Fund, 11 February 2022, <https://www.gmfus.org/news/natos-sub-strategic-role-middle-east-and-north-africa>

32 Council of the European Union, "A strategic compass for security and defence - For a European Union that protects its citizens, values and interests and contributes to international peace and security", Brussels, 21 March 2022, p.43.

Conclusion

The war in Ukraine is changing the European security order in ways unseen since the end of the Cold War. In response, security actors must adapt and demonstrate strategic purpose. NATO and its Allies have so far shown this ability, yet the longer-term implications of the current crisis are still to be unpacked. More specifically, NATO must accommodate short-term requirements inherent in responding to Russia's aggressiveness but also a longer-term vision of what the Alliance will stand for in the future. This implies strategic thinking about China's role in the coming decade, the impact of climate change on NATO's activities, the role of crisis management in an unstable NATO periphery, and in dealing with both today's Russia *and* a post-Putin Russia. All this has come to the fore in the post-24 February era; and all this must be addressed in what is going to be the 2022 Madrid Strategic Concept.

Russia's military performance in Ukraine

Pierre de Dreuzy and Andrea Gilli

From the very beginning, Russian forces invading Ukraine have faced massive difficulties. During the first two months of fighting, Russian troops have failed to accomplish their core strategic objectives, suffered significant casualties and loss of equipment, and displayed an inability to execute the fundamentals of modern warfare – including logistics, basic tactics, and combined arms operations. In this chapter, we describe the challenges the Russian military has faced and provide some preliminary explanations for each. In doing so, we draw key lessons from the conflict.

Three areas of analysis deserve particular attention. First, the Russian military was likely constrained before the invasion even began due to longstanding tensions between Moscow's grand strategy and its defence planning decisions. Over the past fifteen years, Moscow developed assets, capabilities, and institutions that prepared Russian security forces to deter a NATO invasion and suppress domestic uprisings; these same capabilities, however, proved ineffective (even counterproductive) in a conventional offensive in Ukraine. Second, Russia's military strategy in Ukraine was informed by inaccurate intelligence assessments, leading to the development of unrealistic battleplans in the opening phase of the war. Lastly, the autocratic nature of President Vladimir Putin's regime undermined the operational and tactical performance of the Russian military even after it had recovered from its initial blunders in the war's first days. Putin's insular, overcentralized approach to decision-making generated confused chain of command structures that prevented military effectiveness, while endemic corruption undermined the quality and availability of assets, equipment, and supplies available to Russian troops.

From our analysis, we identify three preliminary lessons. First, Russia's struggles in Ukraine reveal that, at its core, success in modern warfare is based on the effective execution of tactical and operational fundamentals that have long been known by global militaries – including capable logistics, clear command and control, and coordinated combined arms warfare. Conversely, “future of warfare” capabilities, including drones, cyber, and

hybrid warfare have played a comparatively undersized role in the conflict, although additional research is needed. Second, Russia's challenges question the longstanding view that globalization spreads military power: Russia's lack of precision-guided munitions (PGM) and effective drone capabilities suggests that translating commercial technologies into military power remains a daunting challenge. Finally, the remarkable performance of Ukrainian forces hints at the effectiveness of Western security force assistance before and during the conflict. This effectiveness contradicts previous experience.

Difficulties from the start

On February 24, 2022, after months of steady military build-up in Western Russia and Belarus, Russia launched an invasion of Ukraine. Many observers expected Russia to achieve a swift victory. At nearly \$62 billion, Russia's defence budget is more than ten times Ukraine's. Russian armed forces totalled some 900,000 active-duty soldiers at the start of the conflict – four-and-a-half times Ukraine's 200,000-strong military. Similarly, Russia's total fleet of 16,000 armoured fighting vehicles (including tanks) dwarfed the Ukrainian fleet of 3,300 vehicles, while the Russian Air Force could call upon ten times as many combat aircraft as the Ukrainians.¹ On paper, a conflict between the two sides appeared highly lopsided.

After several weeks of fighting, however, Russia could not translate its numerical and technological advantage into battlefield success. At the strategic level, Russian forces failed to accomplish their core objective, the toppling of the government of Ukrainian President Volodymyr Zelensky through a rapid, *fait accompli* campaign. Russian forces withdrew many of their forces from around Kyiv after about four weeks of fighting and reduced their military operations to the south and east of the country – a considerable curtailment of Moscow's initial war aims. In planning the opening phases of the war, Moscow clearly acted on the misguided belief that Ukrainians would offer little resistance, anticipating that Russian soldiers would be treated as liberators. As a result, Russian forces advanced far too quickly and haphazardly in their initial advance towards their targets, sending isolated detachments that quickly outran their supply lines and were destroyed by Ukrainian defenders. Finally, at the tactical level, Russia withheld its air force in the early phase of the war, failed to suppress enemy air defences, experienced tremendous

¹ Figures in this paragraph are from International Institute for Strategic Studies (IISS), *The Military Balance*, Vol.122, No. 1, 2022, pp.164–217.

logistical problems (including lack of food, fuel, and munitions), and found itself forced to rely on easily monitored commercial-grade communication systems.² These issues were further compounded when high-ranking Russian officers, forced to operate close to the frontlines to make up for tactical shortcomings, began suffering heavy losses at the hands of Ukrainian snipers and artillery fires.³

While it is too early to predict the political outcome of the war – and it may well be that Russia will achieve some of its main objectives – it is clear that the entire campaign has been a military catastrophe for Russia. After only one month of fighting, NATO officials estimated that Russian losses ranged between 7,000 and 15,000 dead (many of these hard-to-replace officers) with thousands more wounded.⁴ By mid-April, Ukrainian officials placed Russian losses at roughly 20,800 Russian soldiers killed. These sums remain unverified by Western sources.⁵ Beyond the high body count, Russian forces have suffered extensive equipment losses, with the number of Russian tanks, armoured personnel carriers, and other vehicles destroyed or abandoned numbering nearly 3,000.⁶ Ukrainian units even managed to sink Russia's Black Sea flagship *Moskva* with domestically produced anti-ship missiles.⁷ Lastly, Russian losses have heavily affected elite units. For instance, the 331st Guards Parachute Regiment, a paratrooper unit of the *Vozdushno-Desantnye Voyska* (VDV) airborne forces, suffered dozens of visually confirmed losses in the opening days of the conflict, with some suggesting that the unit had suffered hundreds more casualties before withdrawing from the fight.⁸ Overall, by mid-April US officials estimated that Russia had

2 “Why Russian radios in Ukraine are getting spammed with heavy metal”, *The Economist*, 28 March 2022, <https://www.economist.com/the-economist-explains/2022/03/28/why-russian-radios-ukraine-war-intercepted-heavy-metal>

3 “Why are so many Russian Generals dying in Ukraine?”, *The Economist*, 31 March 2022, <https://www.economist.com/the-economist-explains/2022/03/31/why-are-so-many-russian-generals-dying-in-ukraine>

4 The lower end of this range would amount to double the number of deaths that NATO forces suffered in Afghanistan in 20 years of fighting (3,500 dead) while the upper end of the range would roughly equal Soviet losses in ten years of combat in Afghanistan (14,400 dead). E. Rauhala, D. Lamothe, A. Suliman, and J. Hassan, “Russia could have lost as many as 15000 troops in Ukraine war, NATO official estimates”, *The Washington Post*, 24 March 2022, <https://www.washingtonpost.com/world/2022/03/24/russia-troops-casualties-nato-ukraine/>; E. Knickmeyer, “Costs of the Afghanistan war, in lives and dollars”, *The Associated Press*, 17 August 2021, <https://apnews.com/article/middle-east-business-afghanistan-43d8f-53b35e80ec18c130cd683e1a38f>; M. Ray, “Soviet Invasion of Afghanistan”, *Encyclopaedia Britannica*, 11 May 2020, <https://www.britannica.com/event/Soviet-invasion-of-Afghanistan>; O. Ivshina and O. Prosvirova, “Kazhdyi piyatyj- ofitser. O chem govoriat podtverzhdennye poteri Rossii v vojne s Ukrainoj”, *BBC News Russia*, 6 April 2022, <https://www.bbc.com/russian/features-61003964>

5 “General Staff: Russia has lost 20,800 Troops in Ukraine”, *The Kyiv Independent*, 19 April 2022, <https://kyivindependent.com/uncategorized/general-staff-russia-has-lost-20800-troops-in-ukraine/>

6 S. Mitzer, J.O. Kemal, D. Janovsky, and J. Janovsky, “Attack on Europe: documenting equipment losses during the 2022 Russian invasion of Ukraine”, *Oryx*, 24 February 2022, <https://www.oryxspioenkop.com/2022/02/attack-on-europe-documenting-equipment.html>

7 J. E. Barnes and J. Galnz, “Prized Russian ship was hit by missiles, US officials say”, *The New York Times*, 15 April 2022, <https://www.nytimes.com/2022/04/15/us/politics/russia-moskva-ship-sunk-ukraine.html>

8 M. Urban, “The heavy losses of an elite Russian regiment in Ukraine”, *BBC*, 2 April 2022, <https://www.bbc.com/news/>

lost up to 25 percent of its initial combat power, including men and materiel, with many of these losses suffered by elite units.⁹

Strategic failures: a misalignment between means and ends

To provide a complete account of Russia's puzzling military performance, we must first begin with an analysis of Russia's grand strategy and its overarching defence policy in the years prior to invasion. Upon close examination, it is clear that for the past fifteen years the Russian state did not (or could not) invest in the military capabilities, institutions, doctrines, and training systems best suited for a large-scale invasion of Ukraine. Instead, the Kremlin primarily invested in capabilities that countered what it considered its main security threat: democratic regime change, spearheaded either through a full-scale NATO invasion or via Western-backed internal political destabilization. In other words, Russia's grand strategy in Europe has largely centred on a posture of defence, deterrence, and internal security against the West – each of which require capabilities, institutions, and doctrines that diverge from the requirements of a conventional military offensive.

Consider Moscow's investments in its defence and deterrence posture against NATO. As part of its fifteen-year military modernization project begun in 2008, Russia invested a large part of its defence budget in capabilities that support a defence and deterrence mission but not an offensive military campaign, including strategic nuclear forces to deter a NATO aggression, tactical nuclear forces to slow down such an invasion, and high-end conventional military capabilities designed for elastic defence against a NATO advance. In practical terms, Russia may have spent up to 17 percent of its annual budget on its nuclear arsenal and some 26 percent for its naval forces – with a significant portion of this latter percentage devoted to Russia's undersea strategic nuclear deterrent.¹⁰ Moreover, Russia also invested significant resources maintaining a domestic rail-based logistics network that would effectively serve a defensive war.¹¹

The Russian Army's military doctrine of "active defence" also explicitly devalued offensive wars launched for territorial gain, considering these overly risky due to the

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9 C. Doornbos, "Pentagon: Russia has Lost About 25% of its combat power originally used in the Ukraine invasion", *Stars and Stripes*, 19 April 2022, <https://www.stripes.com/theaters/europe/2022-04-19/ukraine-russia-war-losses-pentagon-military-aid-donbas-5737097.html>

10 J. Cooper, "The funding of nuclear weapons in the Russian Federation", Changing Character of War (CCW) Centre, *Oxford University*, October 2018; K. Zysk, "Russian military vulnerabilities: perceptions and misperceptions", in *CCW Russia Brief* No.6, Changing Character of War Centre, University of Oxford, May 2020, p.16.

11 A. Vershinin, "Feeding the bear: a closer look at Russian army logistics and the fait accompli", *War on the Rocks*, 23 November 2021, <https://warontherocks.com/2021/11/feeding-the-bear-a-closer-look-at-russian-army-logistics/>

possibility of escalation. It instead emphasized manoeuvre defence as the Army's central mission.¹² Thus, the Russian Army did not extensively train or prepare for an offensive mission on the scale of the war in Ukraine. Their most recent large-scale military exercises equally did not utilize the same number of men and materiel currently deployed in Ukraine. The September 2021 *Zapad* exercises, for instance, explicitly executed manoeuvre defence formations designed to repel a NATO invasion in either Russia or Belarus; moreover, these actions used no more than 13,000 troops at any one time, an order of magnitude less than what Russia has deployed in Ukraine.¹³

Moreover, Russia has equally failed to invest in or develop the capabilities and training that it most needed in Ukraine. The Russian Ground Forces, for example, have performed the vast majority of the fighting in Ukraine but allegedly received only 14 percent of expenditures allocated in the State Armament Program to 2020.¹⁴ The Russian Air Force (VKS) has received major funding increases as part of Russia's military modernization, but clearly did not receive funding or training in capabilities needed for Suppression of Enemy Air Defense (SEAD) missions, which have historically served as the opening move in successful offensive military campaigns.¹⁵ Likewise, the Army either did not receive the necessary funding or did not invest in the type of expeditionary airborne and ground-based logistical assets that have been sorely lacking in Ukraine.¹⁶

A similar pattern can also be discerned in terms of the strategic decisions the Kremlin made regarding its own internal security. Fearing Western-sponsored regime change, the Kremlin actively diverted scarce resources away from useful capabilities while also adopting institutional reforms that potentially undermined the Russian armed forces' combat proficiency in Ukraine. First, consider that up to 9 percent of Russia's military expenditures are devoted to a variety of paramilitary forces, including the Russian National Guard (Rosgvardia) and Federal Security Service (FSB) troops.¹⁷ The *Rosgvardia* in particular

12 M. Kofman *et al.*, "Russian military strategy: core tenets and operational concepts", Center for Naval Analyses (CNA), August 2021.

13 Both *Zapad* exercises held in 2021 and in 2017 involved Russian forces responding to a fictitious NATO intervention on behalf of a "Colour Revolution" in Belarus or Russia. See M. Kofman, "Zapad-2021: what to expect from Russia's Strategic Military Exercise", *War on the Rocks*, 8 September 2021, <https://warontherocks.com/2021/09/zapad-2021-what-to-expect-from-russias-strategic-military-exercise/>

14 Zysk, "Russian Military vulnerabilities", p.14. Admittedly, Russia's comparatively low expenditures in ground forces are due to its historical overinvestment in ground forces and underinvestment in air and naval capabilities.

15 J. Bronk, "Is the Russian air force actually incapable of complex air operations?", Royal United Services Institute (RUSI), 4 March 2022, <https://rusi.org/explore-our-research/publications/rusi-defence-systems/russian-air-force-actually-incapable-complex-air-operations>

16 Zysk, "Russian military vulnerabilities", p.14.

17 S. T. Wezeman, "Russia's military spending, frequently asked questions", Stockholm International Peace Research Institute (SIPRI), 27 April 2020, <https://www.sipri.org/commentary/topical-backgrounder/2020/russias-military-spending-frequently-asked-questions>

is well-armed and equipped for suppressing internal dissent and competes directly with the Army for budget and equipment, leading some to refer to this 400,000 strong force as a “militarized solution to a non-military threat”.¹⁸ However, the *Rosgvardia* is not equipped or prepared to fight the kind of complex conventional offensive that Russia has undertaken in Ukraine. This explains in part why *Rosgvardia* forces deployed alongside Russian regular troops in Ukraine performed poorly in combat. Likewise, the *Rosgvardia* answers directly to Putin alone, thereby sowing significant command and control issues.¹⁹ With unclear lines of communication between Russian Army commanders and *Rosgvardia* units – not to mention the possibility of budding rivalries between these two pillars of the Russian security service – it is distinctly possible that Putin’s drive for internal security actively hindered his military’s performance in Ukraine.

Russia’s mobilization system seems similarly incapable of generating either the quality or quantity of soldiers needed to launch a complex military offensive in a territory the size of Ukraine. First, the Russian regime’s autocratic prioritization of internal security – in particular, systematized corruption, above-described expenditure on domestic repression, and discouragement of initiative from actors outside of Kremlin power circles – has produced a long-term underinvestment in Russia’s broader human capital, thus lowering the quality of Russia’s manpower. Russian soldiers are on average poorer, less educated, and less encouraged to take initiative than their counterparts in the West; the Russian military is therefore disproportionately made up of poorer, less skilled segments of Russian society looking for career opportunities – a reality borne out by reports that disadvantaged populations in Russia have sustained the majority of Russian casualties in Ukraine.²⁰ This imbalance is arguably further reflected in Russia’s lack of a non-commissioned officer (NCO) corps, which has traditionally formed the link between officers and rank-and-file and historically acted as the backbone of successful military campaigns. Russian commanders instead rely on “contract serviceman”, who are trained to perform single tasks (admittedly to a high degree of proficiency) but who are nonetheless ill-prepared to engage in the flexible actions inherent in complex offensive operations. Second, wealthier, better-educated Russians are deterred from serving due to low pay, harsh conditions (including a

18 M. Pennock, M. Kofman, M. Galeotti, and A. Monaghan, “Rosgvardia: a militarized solution to a nonmilitary threat”, Webinar, *Russia Strategic Initiative (United States Department of Defense)*, 26 January 2022, <https://community.apan.org/wg/rsi/project-connect/w/events/34378/rosgvardia-a-militarized-solution-to-a-nonmilitary-threat/>

19 M. Pennock *et al.*, *op. cit.*

20 O. Ivshina and O. Prosvirova, “Kazhdyj piat’j- ofitser. O chem govoriat podtverzhdennye poteri Rossii v vojne s Ukrainoj”, *BBC News Russia*, 6 April 2022, <https://www.bbc.com/russian/features-61003964>; This suggests that it is Russia, not the United States, that deploys a “mercenary army of the poor”, like Noam Chomsky suggested. See A. Asoni, A. Gilli, M. Gilli, and T. Sanandaji, “A Mercenary Army of the Poor? Technological Change and the Demographic Composition of the Post-9/11 US Military”, *Journal of Strategic Studies* (2021), pp.1-47.

notorious hazing culture), and low prestige for those serving outside of the officer corps.²¹ As a result, Russia has had significant difficulty retaining both the quantity and quality of soldiers needed for its war in Ukraine.²² This issue is likely to persist for the duration of the war unless Russia institutes a far more stringent forced conscription system, a system that carries with it political costs that could jeopardize internal security.

Operational failures: bad intelligence, unrealistic battleplans

Beyond strategic misalignment, the Russian military's challenges in Ukraine relate directly to major failures in strategic intelligence and operational military planning. Whether due to poor intelligence collection, poor analysis of raw intelligence, or politicization of intelligence findings, Kremlin leaders clearly developed an understanding of political and military circumstances in Ukraine that were deeply distorted and inaccurate. Russian President Vladimir Putin's extensive isolation throughout the Covid-19 pandemic may have contributed to the Kremlin's misinterpretations.²³ Putin's public beratement of his foreign intelligence chief, who stood in visible fear of the Russian leader in a publicly televised meeting reminiscent of a show trial, offers further evidence of intelligence politicization in the Kremlin.²⁴ Regardless, Ukrainian capabilities were profoundly underestimated while Russian capabilities were clearly overestimated. Russian leaders apparently believed their own narrative – that Ukraine is an artificial political entity led by Nazi leaders – and expected Ukrainian citizens to embrace Russian forces as liberators.²⁵ The distortion of intelligence in the Kremlin was so far reaching that President Putin himself apparently remained unaware of the full extent of his military's troubles throughout the conflict's opening weeks.²⁶

These flawed assumptions formed the basis of a profoundly unrealistic battleplan. The Kremlin embarked on what it believed would be a “special military operation” that would last days and seize Kyiv much like Crimea was in 2014. Instead, Russian forces met heavy

21 L. W. Grau and C. K. Bartles, *The Russian way of war: force structure, tactics, and modernization of the Russian ground forces*, Foreign Military Studies Office, Army University Press, 2016, pp.2-21.

22 See also, M. N. Posard and K. Holynska, “Russia's problems with military professionalization”, The RAND Blog.

23 P. Sonne, E. Nakashima, S. Harris, and J. Hudson, “Hubris and isolation led Vladimir Putin to misjudge Ukraine”, *The Washington Post*, 11 April 2022, <https://www.washingtonpost.com/national-security/2022/04/11/putin-misjudged-ukraine-hubris-isolation/>

24 “‘Speak plainly!': Putin has tense exchange with his spy chief – video”, *The Guardian*, 22 February 2022, <https://www.theguardian.com/world/video/2022/feb/22/speak-plainly-putin-tense-exchange-spy-chief-ukraine-video>

25 L. Harding, “Demoralised Russian soldiers tell of anger at being ‘duped’ into war”, *The Guardian*, 4 March 2022, <https://www.theguardian.com/world/2022/mar/04/russian-soldiers-ukraine-anger-duped-into-war>

26 J. E. Barnes, L. Jakes, and J. Ismay, “US intelligence suggests that Putin's advisers misinformed him on Ukraine”, *The New York Times*, 30 March 2022, <https://www.nytimes.com/2022/03/30/world/europe/putin-advisers-ukraine.html>

resistance across the whole front, and many units were simply eliminated before they could even enter the fight. In the opening phases of the war, many units appeared to aimlessly wander spaces in Ukraine without supporting one another, all while advancing towards targets that were unsecured and heavily defended. The most shocking illustration of this can be found in the early battle for Hostomel Airport, to the northwest of Kyiv. Russian battleplans targeted Hostomel as a key beachhead from which to secure Kyiv, a nominally sound strategic objective, but Russian units were sent in disjointedly and in numbers far too few to capture such a significant objective against determined Ukrainian resistance.²⁷ Ukrainian forces allegedly shot down two Russian transport planes heading towards Hostomel without an escort, with reports revealing that one transport was downed with elite VDV paratroopers aboard.²⁸ Another example includes the loss of entire *Rosgvardia* units attempting to enter Kyiv and Kharkiv in the war's first days. Anticipating no resistance, these units were easily ambushed and destroyed by local defenders.²⁹

Poor planning could also explain some the challenges that Russian forces endured in the opening days of the war regarding logistics, troop morale, and missing warfighting capabilities – especially airpower and cyber. Many of Russia's battlefield officers and soldiers were likely unaware of the Kremlin's war plans, meaning that Russian units were deprived of the time (and incentive) to make the earnest preparations that conventional offensives require. Indeed, the complex military operation that the Kremlin has undertaken in Ukraine calls for extensive planning and honest assessment of capabilities, both of which are time-consuming activities. Under the shroud of Kremlin secrecy, some units clearly believed that a war would not even take place and instead prepared for a week-long exercise, much like they had done for the *Zapad* exercises held in September 2021.³⁰ Even if these officers and soldiers were able to make earnest preparations for battle, a military unit cannot maintain a high level of readiness indefinitely; it requires clear timeframes within

27 J. Marson, "Putin thought Ukraine would fall quickly. An airport battle proved him wrong", *The Wall Street Journal*, 3 March 2022, <https://www.wsj.com/articles/putin-thought-ukraine-would-fall-quickly-an-airport-battle-proved-him-wrong-11646343121>

28 K. Dilanian, C. Kube, C. E. Lee, and D. D. Luce, "US intel helped Ukraine protect air defenses, shoot down Russian plane carrying hundreds of troops", *NBC News*, 26 April 2022, <https://www.nbcnews.com/politics/national-security/us-intel-helped-ukraine-protect-air-defenses-shoot-russian-plane-carry-rcna26015>; S. Jones, J. P. Rathbone, and D. Sevastopulo, "'A serious failure': scale of Russia's military blunders becomes clear", *The Financial Times*, 12 March 2022, <https://www.ft.com/content/90421972-2f1e-4871-a4c6-0a9e9257e9b0>; H. Cooper, E. Schmitt, and J.E. Barnes, "As Russia's military stumbles, its adversaries take note", *The New York Times*, 7 March 2022, <https://www.nytimes.com/2022/03/07/us/politics/russia-ukraine-military.html>

29 M. Kofman and S. Kaushal, "Analysing the performance of the Russian armed forces in Ukraine", Royal United Services Institute (RUSI), Webinar, 7 March 2022, <https://www.youtube.com/watch?v=mfxOf3khalo>

30 A. M. Dailey, "What's behind Russia's logistical mess in Ukraine? A US army engineer looks at the tactical level", *The Atlantic Council*, 21 March 2022, <https://www.atlanticcouncil.org/blogs/new-atlanticist/whats-behind-russias-logistical-mess-in-ukraine-a-us-army-engineer-looks-at-the-tactical-level/>

which it can surge and reach peak capabilities for a particular operational start date. That kind of planning requires the free flow of information that is ostensibly absent within the Russian political system.

Without adequate preparation, Russian forces did not even attempt complex military operations in the opening days. Russia's logistical capability faltered almost immediately, with soldiers rapidly running out of food, fuel, and munitions early on, evidenced by images of Russian units looting Ukrainian gas stations within the first week of the conflict. Troop morale also suffered heavily, as some Russian soldiers (including conscripts) were unaware they were even acting as an invading force. Some expressed genuine surprise and fear when Ukrainian defenders began shooting at their positions. Others claimed they had been informed they were deploying for an "exercise". Others still were allegedly unaware that they had even left Russian territory.³¹ Lastly, operational secrecy may also explain the distinct non-use of concerted Russian cyber and airpower capabilities in the opening days of the conflict. Both effective cyber operations and air power require meticulous preparation to execute successfully.³² However, the Kremlin's insular planning process likely excluded individuals that could have launched those preparations; indeed, the Kremlin's apparent confidence in quick victory may have convinced Russian leaders that such preparations were not even necessary.

Tactical failures: the Russian autocracy at war

Russia's strategic intelligence and planning failures in the war's opening days are clearly linked to Russia's autocratic political system, which is characterised by systematized corruption aimed at co-opting regime supporters, excessive centralization designed to prevent the emergence of alternative centres of political power, and the prohibition of initiative or independent action by lower-level actors – especially military officers – to avert coup d'état attempts. Unsurprisingly, these autocratic organisational practices continued to negatively affect Russian military's performance beyond the opening days of the war as well. The Kremlin's preoccupation with regime security, then, not only undermined its strategic preparations before the conflict, but also its ability to recover from these early blunders and fulfil objectives once the war was underway.

31 L. Harding, "Demoralised Russian soldiers tell of anger at being 'duped' into war", *The Guardian*, 4 March 2022, <https://www.theguardian.com/world/2022/mar/04/russian-soldiers-ukraine-anger-duped-into-war>

32 C. Krebs, "The cyber warfare predicted in Ukraine may be yet to come", *The Financial Times*, 20 March 2022, <https://www.ft.com/content/2938a3cd-1825-4013-8219-4ee6342e20ca>; J. Bronk, "The mysterious case of the missing Russian air force", Royal United Services Institute (RUSI), 28 February 2022, <https://rusi.org/explore-our-research/publications/commentary/mysterious-case-missing-russian-air-force>

Russia's autocratic deficiencies are most apparent in the Russian military's continuing inability to execute combined arms warfare operations, which is an essential component of successful military offensives in the modern era. Today, the battlefield is extremely lethal, with precise sensors, accurate munitions, and stand-off fire all combining to deliver devastating, concentrated punishment on enemy armed forces. To fight effectively under these circumstances, armed forces are presented with two options. The first is to pursue insurgency-like warfare, which is ill suited for open environments and for offensive military operations. The second is to pursue combined arms warfare, which consists of dispersed but tightly coordinated units advancing under cover and concealment, with each type of unit – artillery, infantry, armour, and airpower – working in concert to reduce the effectiveness of enemy fire while maximizing their own firepower.³³

Successfully executing combined arms warfare requires the implementation of specific organisational practices, and these practices often run contrary to autocratic political imperatives.³⁴ Effective combined arms warfare requires a command-and-control system where high-level commanders not only delegate authority to frontline officers (who are best positioned to make immediate tactical decisions) but actively encourage them to take initiative when moving under fire. Moreover, it requires information to be shared efficiently and quickly across the entire military machine, with honest assessments enabling units to interact seamlessly. Lastly, it requires highly motivated, disciplined, and well-equipped personnel executing their diverse tasks simultaneously and with near perfect synchronicity.

Available evidence from the war in Ukraine demonstrates that the Russian regime's autocratic nature actively and deliberately undermined all these requirements, and with predictable effects: main battle tanks proceeded out in the open, infantry units advanced without cover or concealment, and complex electronic warfare and short-range air defence assets were left unintegrated. The Russian military failed to institute effective command and control arrangements, failed to provide its soldiers with adequate equipment (likely due to corruption issues), and simply lacked flexibility at the level of the individual Russian soldier for reasons raised earlier that relate to the broader structure of Russian society. In this sense, Russia's armed forces continue to reflect their Soviet past and display centralization, rigidity, poor exchange of information, and a lack of decision-making delegation to frontline officers.

33 S. Biddle, *Military power: explaining victory and defeat in modern battle*, Princeton, Princeton University Press, 2004); S. Biddle, *Non-state warfare*, Princeton, Princeton University Press, 2021.

34 For a comprehensive account of the trade-offs that autocrats face between regime security and military effectiveness, see C. Talmadge, *The dictator's army: battlefield effectiveness in authoritarian regimes*, Ithaca, Cornell University Press, 2015.

Consider a particularly jarring example in the realm of command and control. Until roughly six weeks into the conflict, US intelligence officials reported that Russia had not designated a joint battlefield commander. Instead, orders trickled down directly from the Kremlin itself, with many officers on the ground prohibited from making decisions on their own.³⁵ This undermined the coordination, improvisation, and speed needed to execute military offensives while also generating battlefield decisions that made little tactical sense when relayed with conditions on the ground. In one telling instance, Kremlin decisionmakers reportedly ordered the Russian landing ship *Saratov* to dock in the southern Ukrainian port of Berdyansk before Russian ground forces had secured the harbour; the order was followed despite poor conditions on the ground, meaning the *Saratov* pulled into port unprotected. Unsurprisingly, Ukrainian forces reportedly destroyed the ship with an unopposed missile strike as it lay undefended.³⁶

Russia's well-documented struggles with corruption – another classic symptom of autocratic governance – also played a significant role in undermining Russian combined arms warfare, in particular by denying soldiers the equipment and supplies needed to advance and survive in enemy territory. Within days of the campaign's onset, reports emerged of Russian soldiers deploying with rations twenty years past their expiry dates, with advanced encryption radios that did not function, and with poorly maintained vehicles that quickly became inoperable.³⁷ Dozens of Russian trucks, infantry fighting vehicles, and tanks were either abandoned or sabotaged due to fuel shortages; others simply suffered from basic mechanical failures, including rotting tires, dead batteries, and contaminated fuel stocks.³⁸ This points to systemic corruption, most visible in the realm of equipment stockpiling and logistics as theft of supplies, embezzlement of development funds, and cost-cutting are easy to conceal from officials charged with oversight.³⁹ Although exact

35 H. Cooper and E. Schmitt, "Russia's war lacks a battlefield commander, US officials say", *The New York Times*, 31 March 2022, <https://www.nytimes.com/2022/03/31/us/politics/russia-military-ukraine.html>; J. P. Rathbone, "Military briefing: Alexander Dvornikov, Russia's new commander in Ukraine", *The Financial Times*, 12 April 2022, <https://www.ft.com/content/7f90a244-f1da-4483-ab73-c80fa7248523>

36 H. Cooper and E. Schmitt, *op. cit.*; B. Shammass, J.S. Lee, and M. Kornfield, "In fiery video, Ukraine says it destroyed Russian warship", *The Washington Post*, 24 March 2022, <https://www.washingtonpost.com/world/2022/03/24/russian-ship-fire/>

37 H. Cooper, E. Schmitt, and J.E. Barnes, "As Russia's military stumbles, its adversaries take note", *The New York Times*, 7 March 2022, <https://www.nytimes.com/2022/03/07/us/politics/russia-ukraine-military.html>

38 S. Biddle, R. Betts, V. P. Fortna, and R. Turner, "The Russian invasion of Ukraine: military and strategic dimensions", Columbia University School of International and Public Affairs (SIPA), Webinar, 22 March 2022, <https://www.youtube.com/watch?v=6DzOLB2IERM>

39 P. Beliakova and S. Perlo-Freeman, "Corruption in the Russian Defense Sector", World Peace Foundation (The Fletcher School, Tufts University), 11 May 2018, <https://sites.tufts.edu/wpf/files/2018/05/Russian-Defense-Corruption-Report-Beliakova-Perlo-Freeman-20180502-final.pdf>; see also, S. Cranny-Evans and T. Withington, "Russian comms in Ukraine: a world of Hertz", Royal United Services Institute (RUSI), 9 March 2022, <https://rusi.org/explore-our-research/publications/commentary/russian-comms-ukraine-world-hertz>

figures regarding the extent of corruption in the Russian armed forces are difficult to ascertain, analysts suggest that between 30 percent to 50 percent of all resources expended on defence in Russia are lost through bribery, unfulfilled contracts, embezzlement, or simply outright theft.⁴⁰

Force employment, globalization, and security force assistance

Russia's poor military performance is apparent at every level of the analytical spectrum, including the strategic, the operational, and the tactical. As such, the lessons that should be drawn from the first months of the conflict are necessarily multifaceted, and no one overarching conclusion should be made. Below, we have outlined several themes that will likely possess enduring relevance beyond the conflict itself.

The enduring primacy of warfighting fundamentals

First and foremost, the war in Ukraine confirms the enduring primacy of conventional warfighting fundamentals in determining battlefield outcomes; conversely, available evidence from the battlefield casts doubt on the current effectiveness of so-called "future of war" capabilities. Over the past two decades, scholars and practitioners have paid significant attention to hybrid warfare, offensive cyber capabilities, and the potential impact of other emerging and disruptive technologies like drones. However, in Ukraine these capabilities have played a secondary role at best. Caution, then, is warranted when prognosticating about these new capabilities' potentially revolutionary impact on the battlefield.

Hybrid warfare in Ukraine is a case in point. In past statements by Russian Chief of the General Staff Valery Gerasimov, for instance, Russian military doctrine allegedly elevated so-called "nonmilitary means" of warfighting like information warfare, including the active spread of misinformation through social media.⁴¹ These capabilities were deployed in Ukraine in an attempt to demoralize the population (and quickly win the conflict) but yielded little tangible results.⁴² Instead, Ukrainian resistance has been fierce and opinions

40 S. Oxenstierna and F. Westerlund, "Arms procurement and the Russian defense industry: challenges up to 2020", *The Journal of Slavic Military Studies*, Vol.26, No.1, 2013, p.10. See also I. Gorst, "Russian military budget sapped by corruption", *The Financial Times*, 24 May 2011, <https://www.ft.com/content/961668be-8628-11e0-9e2c-00144feabdc0>

41 A. S. Bowen, "Russian armed forces: military doctrine and strategy", Congressional Research Service, 20 August 2020.

42 F. Hoffmann, "Russia's hybrid war against Ukraine", *DW News*, 18 February 2022, <https://www.dw.com/en/russias-hybrid-war-against-ukraine/a-60829873>; "What is hybrid war, and is Russia waging it in Ukraine?", *The Economist*, 22 February 2022, <https://www.economist.com/the-economist-explains/2022/02/22/what-is-hybrid-war-and-is-russia-waging-it-in>

towards Russia predictably negative. Russian leaders truly believed in the power of hybrid warfare and integrated these into their strategic plans, but battlefield outcomes in Ukraine have demonstrated that these resources would likely have been better spent on more impactful traditional conventional capabilities.

The same can be said about the impact of futuristic capabilities like drones and cyber. Consider the role of drones first. So far, we have few reasons to infer that Russia's drones played a relevant role in the conflict; Ukrainian forces have been definitively more capable in using Turkish-made TB2 drones, but their effectiveness too seems to stem primarily from Russia's tactical and operational incompetence – in particular daylight, open-field movements without infantry, electronic warfare and short-range air defence support – rather than from these drones' silver bullet-like features.⁴³ This is consistent with the effectiveness of drones in recent conflicts in Libya, Syria, and Nagorno-Karabakh, where successful drone use varied depending on the skills and capabilities of the user and the adversary.⁴⁴

Much was also made about the impending and massive use of offensive cyber capabilities that would mark the opening days of the conflict, not to mention the broader use of offensive cyber capabilities in achieving Russian objectives throughout. We have noted above that these large-scale cyber-attacks were apparently absent for reasons related to planning and intelligence failures. However, others, including high-ranking NATO officials, have noted that cyber capabilities have been used extensively and successfully in Ukraine – and to an extent not seen in conflicts prior.⁴⁵ Evidence remains limited, and the reported successes of Russian cyber-attacks may well be true, but it can hardly be argued that such successes have translated into meaningful or even tangible Russian military gains. We can say with confidence, then, that success in cyber – even if that success is profound – has certainly not produced success on the battlefield, although further research is necessary.

The double-edged sword of globalization

The available evidence from the war in Ukraine also questions decades-long debates about the effects of globalization on combat performance. Since the early 1990s, a consensus has emerged that globalization diffuses military power: commercial technologies are allegedly

ukraine

43 A. Gilli and M. Gilli, "I droni e i conflitti moderni", *Il Foglio*, 12 March 2022, <https://www.ilfoglio.it/author/Andrea%20Gilli%C2%A0e%20Mauro%20Gilli>

44 A. Calcera, A. Gilli, M. Gilli, R. Marchetti, and I. Zaccagnini, "Why drones have not revolutionized war", *International Security*, Vol.46, No.4, 2022, forthcoming.

45 D. Cattler and D. Black, "The myth of the missing cyberwar", *Foreign Affairs*, 6 April 2022, https://www.foreignaffairs.com/articles/ukraine/2022-04-06/myth-missing-cyberwar?mc_cid=9469227d2e&mc_cid=eb12ba8a07

easy to source, the argument goes, and this eases the force generation process. The war in Ukraine proves that this narrative hardly holds. In the initial phases of the war, Russia hesitated to use its air force, consequently compromising the prospects of achieving air superiority. At least part of the explanation for this non-use stems from the lack of stockpiled precision guided munitions (PGM) in Russia's arsenal. This is not surprising. Producing advanced weapon systems is difficult and has become more difficult over time – despite globalization.⁴⁶ Russia lacks a sophisticated electronics industry and must import almost all of its advanced electrical equipment – semiconductors in particular – needed for modern weapons systems.⁴⁷ Overall, whether Russia's hesitation in using its PGMs was due to overall limited numbers or instead aimed at preserving supplies in case of an escalation with Western countries is difficult to say. It is clear, however, that globalization made war harder to wage for Russia, not easier. Similar considerations apply to the production of drones. Ukraine relied on Turkish-made drones, meaning Ukraine could not easily or quickly produce them. This is consistent with previous analyses sceptical of globalization's equalizing impact.⁴⁸

The war in Ukraine also confirms the power of sanctions within the context of globalization – especially an underappreciated element of their deterrent effect. At their core, sanctions are an foreign policy instrument based on logic of deterrence by punishment – namely, the cost of sanctions will outweigh the benefit of a particular course of action being deterred against. However, in an integrated, globalized world, where advanced capabilities are necessary for complex military operations and countries are not totally independent in war production, sanctions may play an important role of deterrence by denial – in other words, in the future they could in fact prevent adversaries from executing their objectives. In recent months, for example, sanctions have prevented Russia from acquiring new chips to produce PGMs as well as component technologies and machineries its arms industry requires for the production of any platform and system.

The stunning success of security force assistance

Finally, we cannot understand Russia's poor strategic, operational, and tactical performance without taking into account Ukraine's own strong military performance. The nature of

46 A. Gilli and M. Gilli, "Why China has not caught up yet: military-technological superiority and the limits of imitation, reverse engineering, and cyber espionage", *International Security*, Vol.43, No.3, 2019, pp.141-189.

47 J. Watling and N. Reynolds, "Operation Z: the death throes of an imperial delusion", Royal United Services Institute (RUSI), 22 April 2022, <https://static.rusi.org/special-report-202204-operation-z-web.pdf>

48 A. Gilli and M. Gilli, "The diffusion of drone warfare? Industrial, organizational, and infrastructural constraints", *Security Studies*, Vol.25, No.1, 2016, pp.50-84.

this conflict, at least until the time of writing, provided much more information about the military performance of Russia than Ukraine. That said, the conflict suggests that Kyiv's armed forces operated under solid and coherent strategic plans, were well-organized and structured at the operational level, and well-trained and motivated at the tactical level. This is a far cry from Ukraine's poor performance in its 2014 conflict with Russia. What changed?

Since 2014, Ukraine has significantly reformed both its internal security and its military apparatus with the help of Western advisors. This enabled Ukrainian security services to neutralize internal threats (Russia's "fifth columns") and improve its military effectiveness. In this respect, Ukraine also received various types of support from several NATO countries as well as from NATO both before the conflict (training and exercise) as well as after its start (weapons and intelligence).⁴⁹ This is somewhat puzzling, as security force assistance is generally considered of limited effectiveness.⁵⁰ The case of Ukraine, then, warrants further scrutiny. On the one hand, there is a possible sample-selection bias in notable cases of security force assistance. Recipients perhaps suffered from a variety of other problems hampering military effectiveness. On the other hand, the effectiveness of Ukraine's ground and airborne precision-guided munitions prompts questions about the type of intelligence, surveillance, and reconnaissance (ISR) support its forces have received throughout the war. In short, the war in Ukraine at least suggests that local Allies may prove a capable fighting force given the right circumstances.

Lessons – but for whom?

In this chapter, we provided preliminary explanations for Russia's military failings in Ukraine. We identified a chain of shortcomings and errors in Russian decision-making that flowed from the strategic level down to the operational and tactical levels. Russian strategists designed a force structure largely unsuited for a ground invasion of Ukraine, compounded these planning issues with poor operational preparations for the invasion itself, and rounded off their Ukrainian misadventure by failing to execute combined arms warfare. Together, these shortcomings amount to a comprehensive failure of grand-strategic integration. As a result, Russian military prestige, rehabilitated over fifteen years,

49 D. Michaels, "The secret of Ukraine's military success: years of NATO training", *The Wall Street Journal*, 13 April 2022, <https://www.wsj.com/articles/ukraine-military-success-years-of-nato-training-11649861339>

50 S. Biddle, J. Macdonald, and R. Baker, "Small footprint, small payoff: the military effectiveness of security force assistance", *Journal of Strategic Studies*, Vol.41, No.1-2, 2018; see also, D. A. Lake, "Iraq, 2003-11: principal failure", in E. Berman and D. A. Lake (eds.), *Proxy wars: suppressing violence through local agents*. Ithaca, Cornell University Press, 2019, pp.238-263.

was shattered in fifteen days.

From our analysis, we extracted three preliminary lessons. First, despite ample publicity given to the ostensibly revolutionary effects of new technology on today's battlefield, the fighting in Ukraine confirms that conventional warfighting fundamentals still win wars, not new technologies. Even with the deployment of new capabilities in Ukraine, especially drones and cyber, effective force employment has clearly emerged as the decisive factor in the fighting. Second, rather than diffusing advanced technologies to Russia and strengthening its military, globalization and sanctions have severely hampered Russia's ability to prosecute the war in Ukraine, undermining narratives that globalization equalizes militaries over time; for Russia, globalization has made war harder to wage, not easier. Finally, Ukraine's valiant military performance underscores the success of Western security force assistance to Ukrainian units, countering scholarly pessimism that security force assistance is ineffective while raising the possibility that assistance programs in the future can succeed given the right circumstances.

Our analysis suggests that Russia will continue to struggle due to poor force employment and the effect of sanctions; meanwhile, Ukraine will likely continue to perform well due to strong force employment and continued Western security force assistance. Still, the final outcome will likely remain unknown for some time. For Ukraine, the war raises questions about its defence policy and armaments acquisition prior to the conflict. We do not know whether a more robust force structure would have enabled Ukraine to deter the war; however, the preparations it did make clearly enabled it to endure the Russian onslaught, against all odds and expectations. For NATO, the conflict carries dual implications, standing as an important case of partnership cooperation but also a dramatic failure in deterring Russia from initiating the conflict. Above all, though, the conflict demonstrates the crucial role of motivation over mass, of experience over expenditure, and of quality over quantity. Such conclusions will carry continuing relevance in maintaining defence and deterrence in the European theatre, but it will also possess ramifications for the Asia-Pacific, especially between China and Taiwan.

The Russia-Ukraine war and the European energy crisis

Marc Ozawa

“Safety and security in oil lie in variety and variety alone”

Winston Churchill¹

The war in Ukraine has brought energy security to centre stage not only in terms of international responses to Russia (in the form of sanctions) but also in Russia’s threat to European energy security. Moscow has repeatedly threatened to cut off supplies to Europe if Allies interfere in the war.² The Kremlin even argued that shutting down the Nord Stream 1 pipeline would be legal and legitimate in response to EU sanctions and the blocking of certification for Nord Stream 2. While European countries were previously of two minds about energy dependence on Russia – generally Western Europe treated energy trade with Russia as a commercial affair while Eastern Europe as a security concern – the war in Ukraine has united Europe to change course. However, extricating Europe from dependence on Russian energy, particularly natural gas, will take years, substantial investment, and political will. The European Union (EU) has already announced an ambitious roadmap to phase out Russian oil and gas imports by 2027 in addition to banning Russian coal imports by August of 2022. There are multiple paths, and it is not yet clear which one Europe will take. Europe must respond to pressing short-term demands such as preparing for a possible supply disruption if Russia cuts off natural gas pipeline flows through Ukraine and Belarus. This means finding alternative suppliers of liquefied natural gas (LNG), burning more coal, and postponing the nuclear phase out in some countries. In the medium to long-term, Europe must decide whether it will focus on building new infrastructure to support LNG imports, accelerate a transition to alternative and green energy, or some combination of both.

¹ D. Yergin, “Ensuring Energy Security”, *Foreign Affairs*, Vol.85, No.2, 2006, pp.69-82.

² J. Nasr and M. Trevelyan, “Putin tells Europe: pay in roubles or we’ll cut off your gas”, Reuters, 31 March 2022.

For NATO, the main priorities will not change in terms of supporting Ukraine as a partner, deterring Russia on the Eastern flank, and preventing the war in Ukraine from spilling over into NATO territory. Still, NATO can play a role in communication and information sharing to support a continued coordinated response to the Russia-Ukraine war. Because Russia acts along a seamless spectrum of confrontation, from hybrid to conventional military aggression, it will be important for the international community to deepen the lines and frequency of communication with Russia.

The following chapter examines Europe's dependence on Russian energy, the impact of the Russia-Ukraine war on European energy security, and strategies to extricate Europe from its energy dependence.

European-Russian energy interdependence

For decades, Russia has wielded influence over Ukraine through natural gas by either price-setting or withholding supplies. Historically, the price of natural gas sold to Europe was an indicator of the state of bilateral relations – the lower the price, the better the relations. Over the past decade, however, both Russia and Ukraine have grown less dependent on one another from an energy (natural gas) perspective. For Russia, the construction of the Nord Stream pipeline, which became operational in 2011, offered an alternative route to lucrative European markets, bypassing the need for Ukrainian pipelines. For Ukraine, with European support, natural gas may now be bought and transported from Europe, thereby supplanting Ukraine's dependence on Russian natural gas.

The fundamental problematique of European dependence on Russia remains though. This presents new challenges in the current geopolitical environment when the perceived safeguards of European-Russian economic interdependence are overshadowed by a military, economic, and diplomatic confrontation on NATO's Eastern flank. What was unthinkable to most West European leaders before Russia's invasion of Ukraine – that Russia may weaponize natural gas by cutting supplies to Europe – is now a reality. This cut-off may even be legally justified by Russia, which could claim a *force majeure* or argue that the deteriorating security environment makes it impossible to provide a secure flow of gas supplies. Russia could also blame Ukraine for “accidental” attacks to energy infrastructure within Ukrainian territory thus causing disruptions to natural gas flowing to Europe.

Given the realization of Russia's willingness to break international law and challenge the postwar international order, Europe is now eager to extricate itself from the limits of energy

dependence. Because of Europe's high dependence on Russian natural gas (39 per cent in 2020 – see Figure 1), Allies and partners have fewer options for pressuring Russia to stop the war and withdraw troops from Ukraine. The most painful sanctions on Russia that the international community could inflict would target petroleum (oil and natural gas) exports, but they are (at the time of writing) off the table because of energy security and their impact on European economies. In the meantime, having prepared for such a confrontation with Europe since the 2014 sanctions, Russia's economy may be resilient enough to withstand the new sanctions, particularly with the help of China, non-aligned states such as India, and the ability to export petroleum to the global market (excluding the US and UK).

Europe began to import natural gas from Russia during the Cold War. This occurred in two phases. The first one began in the 1960s with the construction of the first pipelines, Yamal Europe, Druzhba and Transgas between the USSR and its satellite states. The second phase began in the 1970s between Western Europe and the USSR. Although some states, such as the Federal Republic of Germany (FRG) and the UK, wanted to invest in joint ventures with the Soviet Union, concern within the Alliance prevented any substantive advances. For example, NATO Allies implemented the natural gas embargo of the USSR in 1962, which lasted until West Germany began its policy of rapprochement with the Soviet Union known as *Ostpolitik*.³ German leaders believed it was possible to influence Soviet behaviour through trade and cooperation, the notion of “*wandel durch handel*”. The German (and west European) interest to access Soviet energy supplies was compounded by the Oil Crisis of 1973 as a result of the Arab-Israeli War.

The groundwork for natural gas cooperation was laid in the negotiations leading up to the Moscow Treaty of 1970. The nature of the energy cooperation was simple. The FRG would provide pipelines, materials, and machinery needed to construct pipeline infrastructure in addition to regular payments for the supplies, which were stipulated in long-term contracts (LTCs).⁴ In return, the USSR would supply the FRG with natural gas to drive industry, electricity generation, and heating in the West German economy. This relationship deepened during the 1980s with expansion of the Yamal Europe and Druzhba pipelines. In the post-Cold War period, Western investors flooded the Russian market to invest in the petroleum industry. While the Russian government privatized many oil assets, it protected state-owned Gazprom from selling natural gas infrastructure because the export contracts were long-term and considered to be too strategic to sell to foreign investors.⁵

3 A. Stent, *From embargo to Ostpolitik: the political economy of West German-Soviet relations, 1955-1980*, London, Cambridge University Press, 2003, p.11.

4 E. H. Albert, “Bonn's Moscow treaty and its implications”, *International Affairs*, Vol.47, No.2, 1971, pp.316-26.

5 A. Åslund, “Gazprom: challenged giant in need of reform”, in A. Åslund, *et al.* (eds.), *Russia after the global economic crisis*, Washington, DC, Center for Strategic and International Studies, 2010.

This began to change in the 2000s when Gazprom planned new projects to expand natural gas exports. There were two major undertakings: the first was an LNG export facility on Sakhalin Island aimed for Asian export markets; the second was a trans-Baltic subsea pipeline, which became Nord Stream 1. The idea behind Nord Stream was that European partners would provide the steel and equipment for the construction of the pipeline while Gazprom would be able to sell natural gas to west European customers directly, bypassing the transit states of Ukraine, Belarus, and Poland.⁶ Partners of the joint venture Nord Stream 1 signed the agreement in 2005.⁷ This is a model that Germany and Russia have continued to use to this day, as exemplified by the Nord Stream 1 and 2 pipelines (before Nord Stream 2 was suspended).

Thirty years after the end of the Cold War, the level of dependence on Russian natural gas varies across Europe. Generally, the level of dependence is the greatest in the east of Europe and reduces westward as illustrated in the below figure.

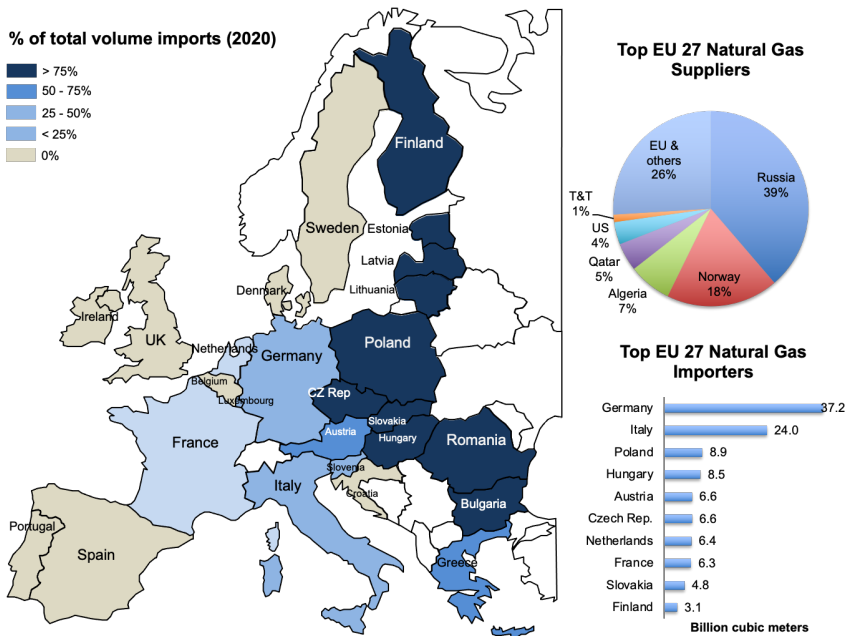


Figure 1: European Dependence on Russian Natural Gas

Source: Data from Eurostat for 2020⁸

6 C. K. Chyong *et al.*, “The economics of the Nord Stream pipeline”, *Energy Policy Research Group Working Paper Series*, Cambridge, University of Cambridge, September 2010.

7 The partners are: Gazprom, Uniper, Wintershall Dea, Gasunie, Engie.

8 “Energy Statistics Database”, Eurostat, <http://ec.europa.eu/eurostat/web/energy/data/database>.

Energy security and the Russia-Ukraine war

European-Russian energy relations

Russia's primary exports to Europe are in petroleum products ranging from crude oil and refined petroleum products including gasoline and methane (natural gas). In exchange, Russia receives payments that drive its economy and support the federal budget. This is why the price of oil is highly correlated to the value of the Russian ruble and why Russia's economy is dependent on oil and gas exports.

Likewise, Europe is highly dependent on Russian imports of oil and natural gas, especially natural gas. As much as Russia depends on access to markets to sell its oil and gas, Europe is dependent on access to energy supplies, most of which come in the form of hydrocarbons whether they are petroleum products (oil and natural gas) or coal. While there is an ongoing debate about the level of dependence that is acceptable, in practice, the level of dependence is a political one, determined by national governments and negotiated bilaterally with Russia.⁹ However, in 2009 the EU began the process of standardizing trade relations with Russia through the EU's Third Energy Package, a set of policies intended to synchronize market standards across the EU.¹⁰ Each conflict involving Russia, beginning with the 2008 Russo-Georgian war, has created more unity and political will to transition Europe's natural gas trade with Russia away from bilateral agreements to the spot market.¹¹

The war between Russia and Ukraine has accelerated EU gas policy away from bilateral agreements to the EU level. Not only has the German government suspended the Nord Stream 2 pipeline, but the EU has also announced a shift in bargaining with suppliers to Brussels.¹² This means that in the future, it is the European Commission that will negotiate natural gas contracts with suppliers thereby strengthening the bargaining power of the entire bloc. By itself, this does not change the volume of natural gas that can be traded, but it will improve the leverage of European customers in the purchasing process, with Russia as well as with other suppliers. For Russia, the policy will remove the ability to play one European country against another, which Russia has used to sow division. EU members agreed to the new procurement mechanism on 22 March 2022, and the European Commission hosted the first meeting of the "Energy Purchase Platform" on 8 April.¹³ The

9 Stent, *From Embargo to ospolitik*.

10 P. O. Eikeland, "The third internal energy market package: new power relations among member states, EU institutions and non-state actors?", *Journal of Common Market Studies*, Vol.49, No.2, 2011, pp.243-63.

11 T. Maltby, "European Union energy policy integration: a case of European commission policy entrepreneurship and increasing supranationalism", *Energy Policy*, No.55, 1 April 2013, pp.435-44.

12 M. Pronczuk, "European Union countries agree to jointly purchase gas", *The New York Times*, 25 March 2022.

13 "Energy Security: Commission hosts first meeting of EU energy purchase platform to secure supply of gas, LNG

EU has also announced a new energy security fund to help offset the costs of rising energy prices in the short term, and transition away from Russian imports in the longer term.¹⁴

The lessons of Russia's gas disputes with Ukraine will also be implemented. These include engineering reverse flows across the European natural gas pipeline system so that supplies may be delivered to where they are needed. In the past, natural gas has flowed primarily east to west (in central and eastern Europe), north to south (in western Europe), and south to north (in southwestern Europe). In recent years, Europe has managed to install reverse flow capacity thereby supplying Ukraine in case of supply disruptions from Russia.¹⁵ The process began in 2014 when Ukraine received its first shipment of natural gas from Slovakia and has expanded since.¹⁶ A new EU investment fund will also support the construction of infrastructure to enable Europe to import more LNG as an alternative to Russian pipeline delivered natural gas. Finally, new pipeline projects linking southeast Europe to supplies in Central Asia will likely gain traction from European policy makers, and consequently investors, to overcome trade and commercial barriers that have prevented direct access to Central Asian natural gas.

Political, economic, and environmental tradeoffs

Until recently, the prevailing view in Western Europe was that a Russian supply embargo would be a “nightmare scenario”, one that is highly unlikely. The scenario entails a full cut-off of petroleum supplies (both natural gas and oil) by Russia to Europe causing traumatic damage to the economies of both Russia and Europe. Europe currently depends on Russia for 45 per cent of its natural gas consumption and 25 per cent for oil according to the International Energy Agency (IEA).¹⁷ The Russian Ministry of Finance reported that petroleum exports to Europe account for approximately 40 per cent of the federal budget revenues in 2021.¹⁸ European countries who have a higher dependence on Russia would bear the highest cost, and thus, the impact would be uneven across Europe (see Figure 1). Some studies include stress tests measuring the resilience of Europe's combined energy

and hydrogen”, European Commission Press Release, 8 April 2022, https://europa.eu/newsroom/ccpc-failover/index-pr_en.htm

14 “Joint European action for more affordable, secure energy”, European Commission, 8 March 2022.

15 P. Polityuk, “EU seeking to ensure gas supply to Ukraine, Commission says”, Reuters, 12 October 2021.

16 “Slovakia opens reverse-flow pipeline to carry gas to Ukraine”, *Deutsche Welle*, 2 September 2022, <https://www.dw.com/en/slovakia-opens-reverse-flow-pipeline-to-carry-gas-to-ukraine/a-17895333>

17 “How Europe can cut natural gas imports from Russia significantly within a year - News”, IEA, accessed April 16, 2022, <https://www.iea.org/news/how-europe-can-cut-natural-gas-imports-from-russia-significantly-within-a-year>

18 “Federal budget of the Russian federation”, Ministry of Finance of the Russian Federation, <https://minfin.gov.ru/en/statistics/fedbud/>

system.¹⁹ One such study by the University of Cologne (EWI) concluded that resilience to a Russian gas disruption varies across Europe ranging from 2 months of supply storage, in the case of Germany, to 2-4 weeks for countries further to the east.²⁰ The study was conducted in 2016 before the development of reverse pipeline flows in central and eastern Europe, new storage capacity, and prior to the introduction of new LNG import facilities in Poland and Lithuania. Other advancements in Europe's energy transition, through efficiency measures and alternative/green energy, would also strengthen the resilience to a prolonged supply disruption. A more recent stress test conducted by Standard & Poor's (S&P) Global concludes that, in aggregate, Europe could withstand a supply disruption up to four months drawing primarily on natural gas storage before the economy would be drastically impacted.²¹

What these studies do not account for is the diverting of LNG supply to Europe by Allies and partners. Recently, Japan, Australia and the Republic of Korea (ROK) offered to redirect LNG supplies destined for Asia to Europe.²² In addition, natural gas exporters such as the US and Qatar have committed to providing further LNG supplies to Europe on a short-term, emergency basis.²³ Norway too has announced unscheduled supplementary production of natural gas to assist Europe.²⁴ The combined impact of these measures would buy Europe time to build new infrastructure and diversify away from reliance on Russian gas. The challenge, however, is a long-term one. Russian pipeline gas will be a cheaper energy source for Europe compared to LNG and alternative/green energy. Thus, there will be a temptation for countries and businesses to eventually break ranks and deal bilaterally with Russia if, and when, the war in Ukraine ceases.

Barriers to energy independence

In the near-term, the main barrier to achieving independence from Russian natural gas is

19 Early examples include R. Anderson, "Europe's dependence on Russian natural gas: perspectives and recommendations for a long-term strategy", Marshall Center, September 2008; "Reducing European dependence on Russian gas", Oxford Institute for Energy Studies, October 2014.

20 H. Hecking *et al.*, "Options for gas supply diversification for the EU and Germany in the next two decades", Energiewirtschaftliches Institut EWI, 2016.

21 "How could a Ukraine-Russia conflict impact Europe's gas supply?", IHS Markit S&P Global, 2022, <https://ihsmarkit.com/research-analysis/energy-infrastructure-ukraine-russia-crisis.html>

22 L. Lewis *et al.*, "Japan to divert energy supplies to Europe in solidarity over Ukraine", *Financial Times*, 9 February 2022.

23 J. Alexander, "The Ukraine crisis is vindicating Qatar's bold gas expansion strategy", Arab Gulf States Institute in Washington, 24 February 2022.

24 N. Adomaitis and N. Buli, "Norway to supply more gas to Europe this summer", Reuters, 16 March 2022. <https://www.reuters.com/business/energy/norways-equinor-raise-gas-output-major-fields-2022-03-16/>
<https://www.reuters.com/business/energy/norways-equinor-raise-gas-output-major-fields-2022-03-16/>

infrastructure and pricing. Europe is married to Russian natural gas because of existing pipelines and the structure of some states' economies (dependence on natural gas for electricity, heating, and industrial production). To extricate from this dependence, LNG terminals must be constructed. These facilities bear a high price tag and lead time of one to four years to become operational. For example, the Świnoujście LNG terminal in Poland cost nearly EUR 1 billion and four years to complete.²⁵ Given that Nord Stream 2 is already constructed, there will be a temptation to refer back to Russian pipeline natural gas because of the comparably higher cost of LNG to pipeline transported gas. This was the initial economic argument for new natural gas pipelines including Nord Stream 1 and 2, that pipeline transported natural gas would be a cheap and secure supply resource.²⁶ The price of Russian natural gas originating next door and flowing through existing pipelines would be arguably more price competitive than gas coming from far away in liquefied form, transported by tankers and then re-gasified from a liquid form.

Finding alternatives to natural gas as an energy source is another barrier because they require a more expanded change of infrastructure. For example, changing the power source for electricity generation from natural gas to coal is impossible unless the plant has dual-fuel capacity. Electricity generation from wind or solar also requires new infrastructure and depends on local weather patterns. While nuclear generation could replace a substantial portion of Russian supplies, it carries other risks ranging from environmental to political. Plus, the experiences of constructing new facilities in the UK (Hinkley Point C) and Finland (Olkiluoto-3) demonstrate that nuclear plants require participation from multiple commercial and governmental entities. The costs and lead times make them unattainable in the near to mid-term.²⁷ Moreover, public support for nuclear energy varies across Europe. For example, there is a long tradition of nuclear opposition in Germany, which contributed to the German nuclear phase out under the Merkel government.²⁸ Even restarting moth-balled nuclear power plants would probably be untenable politically. Countries in Eastern Europe, however, are more open to nuclear power, particularly if it contributes to energy independence from Russia.

Furthermore, other energy sources that are available, cost effective and compatible with existing infrastructure may not be compliant with the EU's strategy to achieve carbon

25 D. Zarzecki, "Development of the LNG Terminal in Świnoujście, Poland", in K. Liuhto (ed.), *The future of energy consumption, security and natural gas: LNG in the Baltic Sea Region*, London, Springer, 2022, pp.191-220.

26 "What is Nord Stream 2 and how does it link to Russia-Ukraine crisis?", Euronews, 24 January 2022, <https://www.euronews.com/my-europe/2022/01/24/what-is-nord-stream-2-and-how-does-it-link-to-the-russia-ukraine-crisis>

27 E. O'Byrne Mulligan, "Finland opens nuclear power plant amid concerns of European Energy War", *The Guardian*, 12 March 2022.

28 "Germany's long anti-nuclear protest ends", *Deutsche Welle*, 29 December 2021.

neutrality by 2050.²⁹ This is the main problem for coal. Yet, given the public outrage over Russia's actions in Ukraine, there may be a public willingness to accept coal-fired power generation, at least in the near term, until alternative-green energy sources, such as wind/solar and hydrogen, are developed. While the EU can plan a role in devising policy and regulations, the political and economic barriers to implementing energy policies will vary from country to country.

Current and future trajectory

It is still uncertain that Russia will cut gas in response to Allies' sanctions and military support for Ukraine. While it appears that the EU may follow suit with the US and UK's announcements to cease imports of Russian oil and gas, there are still states such as Austria and Hungary who are overtly opposed to a petroleum embargo of Russia.³⁰ This could change given the growing momentum behind the embargo, but what appears more likely is that the EU will implement a staged embargo targeting oil before natural gas to give countries, such as Germany, time to secure alternative supplies and begin construction of new LNG terminals.³¹

With respect to Russia, Moscow needs the revenue to fund military operations in Ukraine and to maintain the economy. At the same time, Russia is more prepared today to sacrifice European exports compared to 2014 after the annexation of Crimea. This is because Moscow has built new facilities to transport natural gas to China and expanded LNG export terminals to export globally. In recent years, Russia has also concentrated on building trade relationships with the developing world instead of Europe. The combined effects will likely make the Russian economy more resilient to European and North American sanctions than in the past, even if US-EU sanctions target the energy sector. Russian analysts are also preparing the domestic audience for a wide sweeping economic shift to build industrial self-sufficiency reminiscent of the Cold War.³² This would entail producing more goods domestically even if they are inferior to foreign (western) products for the sake of greater independence.

29 "2050 long-term strategy", European Commission, January 2020, <https://ec.europa.eu/clima/eu-action/climate-strategies-targets/2050-long-term-strategy-en>

30 B. Smith-Meyer, "Austria rejects sanctions against Russian oil, gas", *Politico*, 4 April 2022.

31 M. Stevis-Gridneff, "Europe reluctantly readies Russian oil embargo", *The New York Times*, 14 April 2022.

32 "Bols'haya Igra, Chast 3, Spetsialnyi Vypusk", 1 Kanal, 8 April 2022.

If either Russia cuts supplies or Europe sanctions Russian petroleum exports, then the long-term contracts (LTCs) that have bound Europe and Russia for decades will be broken. If both sides respect current LTCs, then there will likely be a staged weaning off of Russian natural gas in the coming years. This will create diversity of supply for Europe and would probably include new LNG terminals, reverse flow installations and subsidies for alternative energy sources to natural gas. To this end, the German government announced the intention to construct two new LNG terminal on the Baltic Sea coast.³³ Likewise, the *Energiewende* (or “energy transition” from the German popularized term) to alternative and greener fuels will accelerate. Efforts to quickly reduce dependence on Russian natural gas could, on the one hand, prolong the phase out of nuclear and on the other, spark a nuclear renaissance in some countries where the population is more accepting of nuclear power. Already, authorities in Belgium have announced the extension of the Doel 4 and Tihange 3 reactors.³⁴ Europe’s newest nuclear plant recently opened in Finland, a country that depends on Russia for 65 per cent of its total energy consumption and 100 per cent of natural gas demand (see Figure 1).³⁵

For Europe’s long-term energy security, building the infrastructure to diversify supply is the optimal approach as eventually, due to high prices, commercial and political pressure, Europe will probably continue to import natural gas from Russia after the war in Ukraine is over. Trade would likely resume either when a long-term stalemate between Ukraine and Russia is reached or in the case of a change in Russian foreign policy or leadership. By that time, however, Europe will have more options and therefore a better bargaining position to renegotiate trade terms with Russia.

In this long-term game, NATO’s role will remain limited to energy infrastructure protection and raising awareness of energy developments that impact the security environment of the Alliance. NATO’s three-pronged approach to energy security – through situational awareness, supplying military operations, and efficiency measures – will continue to be important. However, because of the nexus between energy exports, Russia’s ability to wage war with Ukraine, and Ukraine’s hand in negotiations, Allies and partners will need to coordinate their energy security strategies in accordance with military developments in Ukraine. Thus far, coordination has been relatively effective, albeit *ad hoc*, with the US driving bilateral dialogue with allies and partners to secure as much supply as possible.³⁶ While those efforts have accomplished commitments of support from

33 “What happens if Russia shuts off gas supplies to Europe?”, Euronews, 24 February 2022.

34 L. Pronina, “Belgium to extend life of nuclear reactors by another decade”, Bloomberg, 19 March 2022.

35 Mulligan, “Finland opens nuclear power plant amid concerns of European energy war”.

36 Lewis *et al.*, “Japan to divert energy supplies to Europe in solidarity over Ukraine”.

suppliers, such as rerouting LNG from Japan, ROK, and Australia, it is not enough to carry Europe's economy for a prolonged supply disruption. Europe imports about 230 million cubic meters per day (cm/d) from Russia, and the current spare capacity to import LNG is about 50 million cm/d.³⁷ According to one recent S&P Global study, even if Europe expands coal-fired electricity generation and restarts recently mothballed nuclear plants (adding the equivalent of further 40 million cm/d), this will leave a shortfall of 140 million cm/d in the short-term.³⁸

Europe's energy reckoning

In case energy supplies are cut, either by Russia or due to European sanctions, diverting supplies from Asia and North America to Europe would blunt the initial impact. The greatest hardship would be experienced in the winter months when demand is the highest. Therefore, the EU's goal of achieving 80 percent capacity of its gas reserves by November 2022 is of strategic importance.

Short of risking a global economic recession that could undermine popular support of Ukraine, Allies and partners have few options to wean from Russian natural gas dependence. In the immediate future, rerouted LNG from Asian Partners and the US along with a revival of nuclear and coal can blunt the impact of 40 percent of Russian natural gas imports. However, replacing Russian energy imports will require a combination of new LNG terminals and pipeline infrastructure. All of them carry a high cost and will take time to implement. In addition to oil, gas, and coal infrastructure, investing in alternative and green energy resources are also important but excluding investments in natural gas (and nuclear energy) will prolong the process of substantive energy diversification.

At the same time, Russia appears to be moving forward with its own plan to find alternative markets to sell oil and gas. In doing so, both Europe and Russia are embarking on parallel journeys, to create new options. For Russia, this will mean developing LNG export terminals and courting non-European customers, most likely in China, India, and the developing world. While China is an existing customer, in February of this year Russia signed an agreement with its eastern neighbour to further deepen energy trade with the expansion of the Power of Siberia natural gas pipeline.³⁹ India has indicated its intention

³⁷ IHS Markit S&P Global, 2022.

³⁸ *Ibid.*

³⁹ "Power of Siberia 2 pipeline puts ever more pressure on Europe", *Pipeline Technology Journal*, 15 February 2022.

to maintain regular trade relations with Russia despite the war in Ukraine.⁴⁰ This would mean a return to a type of non-aligned status that India experienced during the Cold War. Considering China and India's lucrative trade with North America and Europe, it remains unclear how pressure from Allies and Partners will influence their bilateral relations with Russia should the Russia-Ukraine war continue into this summer or beyond.

The Russia-Ukraine war underscores the need to accelerate the *Energiewende* in Europe and put pressure on policy makers to make the choices and trade-offs that they could postpone or avoid in the past. Another important requirement to realizing diversification away from Russian energy dependence, will be unity among the Allies and partners. Maintaining sanctions and making hard decisions on energy supplies will demand public support. Alliance cohesion is also required on this front.

40 C. Rajghatta, "Ukraine crisis: US urges India to abide by sanctions, but says New Delhi buying crude from Russia does not violate embargo", *The Times of India*, 16 March 2022.

Ukraine and nuclear weapons

Cynthia Salloum

On February 24th, 2022, the day Russia invaded Ukraine, Russian President Vladimir Putin issued a thinly veiled threat to the West: “no matter who tries to stand in our way”, he said, “the consequences will be such as you have never seen in your entire history”. Russia, he added, remains “one of the most powerful nuclear states, with a certain advantage in several cutting-edge weapons”.¹ Three days later, Putin ordered Russia’s nuclear forces be placed on high alert. In the days that followed Putin’s announcement, the Alliance’s nuclear powers – the United States, the United Kingdom (UK), and France – made no effort to reciprocate the Russian move, leaving their respective nuclear alert levels unchanged. In early March, moreover, the US Department of Defense postponed a scheduled intercontinental ballistic missile test launch, presumably to lessen the risk of accidental escalation with Russia. Finally, to avoid a direct confrontation between NATO and Russia, the Biden administration initially limited the delivery of military aid to Ukraine to “defensive weapons”.

Vladimir Putin’s rhetoric and actions are a blunt reminder that Russia remains the world’s largest nuclear power and that nuclear weapons remain a disturbing if not terrifying reality in international politics. And while Putin’s nuclear signaling did not trigger reciprocal measures amongst Allies, it has shaped the West’s overall response to the invasion. In the current stand-off, it seems that Russia and NATO have implicitly defined what is acceptable and what is not to avoid an escalation that may at some point involve nuclear weapons. Many believe the Kremlin would not dare use a nuclear weapon in Ukraine – even a low yield tactical device – and thus have pushed Allies to deliver more aid to Kyiv.² Some

1 Transcript of the address of Vladimir Putin, President of the Russian Federation, 24 February 2022, The Kremlin, Moscow, <http://en.kremlin.ru/events/president/transcripts/67843>

2 Notably in the United States where “Congress – which typically takes a back seat on foreign policy matters – has repeatedly driven the White House beyond its comfort zone with bipartisan demands for more assertive policies”. See Rachael Bade, “Something unusual is happening between Biden and Congress”, *Politico*, 14 March 2022. Even in the House of Commons, notably with conservative British member of parliament Tobias Ellwood, who chairs the Parliament Defence Committee

recall that Putin ordered nuclear exercises be held during the early days of Russia's 2014 annexation of Crimea, only to subsequently deescalate. They thus apply this analogy for today's conflict.

Yet, the possibility of nuclear escalation over Ukraine appears more distinct today – and not simply because the current invasion is far larger than Russia's actions in 2014. In 2022, Putin is more isolated, a leader cut off from the international community who appears surrounded by a shrinking inner circle of yes-men advisers. Observers in academic and political circles have thus raised fears that limited nuclear use, previously unthinkable, is possible – especially if Putin finds himself in a scenario where nuclear use appears “more attractive than accepting defeat”.³ The current looming danger, then, is of a radicalized Putin, a leader willing to use one or more tactical nuclear weapons either to demonstrate his regime's resolve or, out of desperation, to gain some kind of political or battlefield victory. Indeed, that such a scenario is even deemed a possibility today weakens the long-standing nuclear taboo.⁴

This chapter first reviews the challenges of nuclear deterrence in the current Russia-Ukraine conflict. It then assesses the potential consequences of the Ukraine war for nuclear non-proliferation in the coming decades.

Limits and success of nuclear deterrence

Deterrence – either nuclear or conventional – is achieved by changing the calculus of costs in the mind of an adversary. Deterrence has thus a paradoxical characteristic: it relies as much on the actor that issues the deterrent threat as it does on the way the adversary appreciates the costs of that threat. At its core, deterrence is about credibility – including whether the deterrer has the actual capabilities and means to carry out its threat but also whether its intention to follow through is believed by the adversary. When trading deterrent threats in the nuclear realm, moreover, the perceived costs for a given leadership are very high – oftentimes nothing short of the survival of their country. For rational actors, then, the imperative is to avoid a nuclear strike.

“who believes Putin is bluffing when he raises the spectre of nuclear weapons and that Nato should be doing more”. See F. Gardner “Ukraine: three ways this war could escalate and drag NATO in”, *BBC News*, 10 April 2022.

3 A. Faiola, “Why Putin's nuclear threat could be more than bluster”, *The Washington Post*, 15 March 2022.

4 The term is from N. Tannenwald, “The nuclear taboo: the United States and the normative basis of nuclear non-use”, *International Organization*, Vol.53, No.3, Summer 1999, pp.433-468 ; see also her chapter on “The legacy of the nuclear taboo in the twenty-first century”, in M. Gordin, D. G. John Ikenberry (eds.), *The age of Hiroshima*, Princeton University Press, 2020.

Denial if you can

At its core, deterrence occurs by denial or by punishment. Deterrence by denial is achieved when an adversary believes they will be unable to accomplish their objectives because the “deterrer” has both the capabilities and the intention to prevent an adversary from reaching their goals. Ukraine does not possess the capabilities needed to deny the Kremlin its objectives – including a shield to intercept incoming Russian missiles or capabilities to respond at the same level. Very few countries do. The US developed the so-called Terminal High Altitude Area Defense (THAAD) system, designed to intercept short, medium, and intermediate-range missiles in their terminal phase with a counter-missile. This umbrella provides increased security to the area covered by denying the adversary their capacity to reach it. For example, to counter a possible incoming nuclear missile from Iran, the US had planned to deploy such a system in Poland and the Czech Republic in 2009. Russia strongly opposed this initiative and the Obama administration opted instead for a naval rather than a land-based system – seemingly less threatening to Moscow –, the so-called Aegis Ballistic Missile Defense System. The system has since been deployed for use on land and “Aegis Ashore” is already operational in Romania and expected to be in Poland by the end of 2022.⁵

Another, more modest, US missile defense capability is the current Patriot system designed to defend against short- and medium- range ballistic missiles in their terminal stage. Ukraine has asked for that kind of shield to protect part of its territory. But the system requires around 100 US servicemen to be operated and the US has so far refused to send its own forces directly into Ukraine in order to avoid the risks of direct confrontation with Russia. As a next best option, Ukrainian President Volodymyr Zelensky strenuously requested that Ukrainian air space be declared a no-fly zone by NATO forces, but this call was left unheeded by Western leaders. Alternatively, Slovakia will provide a Russian S-300 air defense system to Ukraine and in return Washington will reposition one US-run Patriot missile system to Slovakia.⁶ However, this system offers only limited protection, and as such does not constitute a credible deterrent tool. In fact, the introduction of such systems on the Ukrainian battlefield could even provoke Russia to escalate by using tactical nuclear weapons. If a Patriot system is deployed and holding a crucial area that Putin is adamant to control but unable to reach, his temptation to use a tactical nuclear weapon might increase.

5 See K. Reif, “Romania missile defense site activated”, *Arms Control Today*, June 2016; and B. Judson, “Construction of aegis ashore in Poland nearing completion”, *Defense News*, 9 March 2022.

6 See A. Restuccia and G. Lubold, “Biden: US will reposition US Patriot missile system to Slovakia”, *The Wall Street Journal*, 8 April 2022.

Punish if you will

In contrast to deterrence by denial, deterrence by punishment requires that an adversary fear the prospect of costly retribution. Of course, when dealing with nuclear deterrence, the prospect of the worst-case scenario – the destruction of one’s entire country – must be avoided at all costs. Since survival is the minimal goal of any government, deterring a nuclear strike becomes a priority. To achieve an equilibrium, a range of capabilities is needed – in particular, a capability to launch a so-called “second strike” after absorbing the “first strike” of an adversary. Deterrence thus becomes effective when, in the enemy’s mind, there is a belief that one will strike back whatever the devastation it has suffered. Of crucial importance, then, is the credibility of the signal, especially in the case of extended deterrence, where one state’s deterrent is extended to its allies.⁷ Is one willing to risk the destruction of their nation in order to protect an ally? This dilemma is at the core of NATO’s Article 5, where an attack against one is an attack against all but where the answer by each Ally only occurs “as it deems necessary”.

Regarding Ukraine, the US and even more so the Europeans have sent mixed signals about both their deterrent posture and their commitment to that posture. First, the process of bringing Ukraine into NATO, a decision that was certified in principle at the 2008 NATO Summit in Bucharest, was never effectively implemented – even after the 2014 crisis. At that time, European capitals – and especially Paris and Berlin – indicated their willingness to pursue a path of dialogue with Russia.⁸ Indeed, it was the prospect of a US intervention in Ukraine rather than further Russian aggression that finally pushed Europeans to the negotiating table in 2014. For European governments, the only credible posture to deter Moscow relied on the logic of deterrence by punishment; however, the signals sent by Europeans to Moscow contained very few prospects of costly or credible punishment. Only modest sanctions were decided after 2014 and dialogue was always preferred.⁹ Eight years later, when in early 2022 Russia began amassing some 175,000 troops on the Russian border with Ukraine, the European preference again – particularly in Paris and Berlin – was to prioritize the diplomatic path. In these conditions, Moscow arguably did not feel deterred and followed on its plan to “settle” the Ukrainian issue by force.

7 On “extended deterrence” and the “credibility of the threat”, i.e. the problem of uncertainty over the willingness of the deterrer to risk war over the defense of another state, see T. Schelling, *Arms and influence*, Yale University Press, 1966 (new 2020 edition available). See, also, T. Delpach, “Nuclear deterrence in the 21st century: lessons from the Cold War for a New Era of Strategic Piracy”, Rand Corporation, 2012.

8 D. Allan, “The Minsk conundrum: Western policy and Russia’s war in Eastern Ukraine”, Chatham House, May 2020.

9 Since Russia invaded Ukraine on 24 February, many German politicians have publicly admitted they got Vladimir Putin wrong. Even German President Frank-Walter Steinmeier has apologized, saying “it was a mistake to use trade and energy to build bridges with Moscow”. Quoted by D. McGuinness, “Germany’s conundrum over its ties with Russia”, BBC News, 17 April 2022.

Nuclear escalation

How can one ensure that the conflict in Ukraine does not escalate to nuclear confrontation, whether at the tactical or strategic level? Since the credibility of a deterrent threat can only be judged in the mind of the opponent, factors such as the nature of Putin's political regime, his individual rationality, and his final objectives must be taken into account and evaluated.

First, the nature of Putin's personalist regime is today well understood; for years, though, many in the West hoped that Russia's slide toward ever-more repressive dictatorship could be avoided by tying Russia to Europe through diplomatic engagement and trade relations. However, Europe's general policy of outreach and integration has only strengthened Putin's grip on domestic political power while increasing his regime's legitimacy and wealth.¹⁰ What renders personalist regimes distinct from other forms of autocracy, though, is their idiosyncratic character, which naturally reflects the individualistic preferences of the dictator in power. In today's Russia, Putin has established a regime built around his "patronage and his absolute authority".¹¹ He is the decider in chief of all strategic directions, the ultimate arbitrator of inter-elite disputes, and exercises control over large parts of the economy (most notably the energy sector) and Russia's armed forces, including its nuclear arsenal. As Scott Sagan reminds us, then, "when nuclear bombs are controlled by personalist dictators... there are few constraints on their decisions, the weapons are theirs".¹²

Second, the personalist nature of Putin's regime could alter what Western observers perceive as rational behavior from the Russian head of state. Because Putin has suppressed dissent internally, punished free expression, and rewarded personal loyalty, he likely fails to understand what his own people feel towards his regime as well as how other states perceive Russia and his actions. To that end, Putin clearly received poor intelligence about the potential for resistance in Ukraine and the likelihood of a united Western response. Maybe he failed to pose the right questions or he chose to ignore facts presented to him that did not fit his pre-existing beliefs. At minimum, it appears that "the black box of the Kremlin's information system", is, if not "irrational", at least seriously flawed.¹³ Putin lives in a bubble of isolation and disinformation, reinforcing his paranoid fear of NATO, his

10 And still today, the daily bill of gas and oil import from Russia amounts to hundreds of billions of dollars which partially feed Putin's war chest. See "Putin may collect \$321 billion windfall if oil and gas keep flowing", *Bloomberg News*, 1 April 2022.

11 D. Remnick, "What is Putin thinking", *The New Yorker*, 27 March 2022.

12 Scott D. Sagan, "The world's most dangerous man", *Council of Foreign Relations*, 16 March 2022.

13 K. Marten, "President Putin's rationality and escalation in Russia's invasion of Ukraine", *PONARS Eurasia*, 9 March 2022.

desire to revive the Russian empire, and his delusions of Russian military prowess.

Third, the distinction between a goal-driven leader and an information-seeking leader – in other words, between a leader that stubbornly pursues predetermined goals through a particular strategy despite evidence that undermines that strategy and a leader that amends their goals and strategy in the light of new information – is important in determining whether Putin is likely to escalate the war in Ukraine. Because personalist rulers are more insulated from the consequences of their actions, they can afford to be more violent and less risk averse than more politically constrained leaders.¹⁴ Since at least the 2008 Russian invasion of Georgia, Putin has been pragmatic and sensitive to the costs of war. It is not obvious that he remains so, yet there is no indication that Putin today is suicidal – only that he is unpredictable and possesses a rationality that is not “ours”. Already, Putin’s decision to wage a full-scale war in Ukraine surprised many observers in the West, and Putin may yet produce more surprises in the coming weeks. For instance, Putin’s penchant for risk could lead him to double down on his force deployments to secure some modicum of success in Ukraine. As US Director of National Intelligence Avril Haines put it, this is a war that Putin “cannot afford to lose”.¹⁵ To avoid that prospect, could he use nuclear weapons?

Thus far, Putin has not explicitly threatened the use of nuclear weapons in Ukraine. Instead, he has directed his threats to NATO more generally, warning against direct involvement and excessive sanctions that he considers an act of war. NATO has ruled out any action that resembles the former while European Allies have so far refrained from banning the import of Russian gas – much to the dismay of President Zelensky.¹⁶ Some have argued that Putin’s initial nuclear signaling made at the start of the conflict was just talk, an attempt to instill fear in Ukrainian and Western leaders minds along the lines of the “madman theory” of deterrence.¹⁷ For now, though, such signaling remains a bluff.

Deterrence failures

Even if Putin is not actually suicidal, the West must reaffirm its willingness to avoid direct confrontation with Russia while also strengthening its deterrence posture in the East. This

14 See A. E. Casey and S. Gunitsky, “The bully in the bubble”, Council of Foreign Relations, 4 February 2022.

15 Quoted by A. Kendall-Taylor and E. Frantz, “Why Putin probably won’t give up anytime soon”, *Foreign Policy*, 17 March 2022.

16 However, some progress was made regarding a Russian oil ban. See B. Moens and A. Hernandez, “EU closes in on Russian oil ban – but how tough will it be? Europe is weighing up various options that fall short of an all-out embargo”, *Politico*, 20 April 2022.

17 In 1974, US President Nixon unsuccessfully pursued a strategy of appearing so irrational and angry that he would contemplate the use of nuclear weapons, all in an attempt to force North Vietnam to surrender. For some, the current stalemate in Ukraine may increasingly lead to that kind of posture. See I. Krastev, “Putin lives in historic analogies and metaphors”, *Der Spiegel*, 17 March 2022.

implies a build-up on NATO's Eastern flank and assistance to Ukraine; to that end, the West has delivered massive quantities of weapons assistance to Ukraine (including armored vehicles, thousands of anti-tanks missiles, and a significant number of drones) and adopted a comprehensive package of economic and financial sanctions targeting the Russian economy. NATO has also decided to beef up its Eastern flank by, *inter alia*, deploying four more battlegroups and strengthening defense posture in the Baltics. The West must also prepare its response in case Putin uses a nuclear weapon against any NATO nation. Some say this would lead to a Third World War, as Washington could potentially answer in kind to defend the Alliance.¹⁸ Others consider different options to avoid such an outcome: for example, by calibrating a strong but conventional reprisal against Russian military forces and/or by targeting only the base that launched the nuclear attack.¹⁹

Finally, there is the possibility that Putin opts to use nuclear weapons in Ukraine. In this scenario, Putin has decided to force the capitulation of the Zelensky government by using a nuclear weapon either in a relatively deserted area or, in a more extreme case, on a Ukrainian urban center to demonstrate his determination to achieve victory and compel Ukraine's leadership to come to the negotiating table. In an even worse case, where Russian troops are facing defeat, a desperate Putin might approve the use of tactical nuclear weapons to turn the tide on the battlefield, preferring further destruction rather than unilateral defeat.

Some clues about when and why Russia might use a nuclear weapon do exist. Back in 2000, a new Russian military doctrine coined the concept that has since become known as "escalate-to-de-escalate". Its logic is simple. If faced with a conventional attack that threatens Russia's existential interests, Russia might respond with a limited nuclear strike to compel the aggressor to back down.²⁰ This new doctrine, supervised by Putin when he served as the secretary of Russia's Security Council, was adopted in the spring of 2000 and signed by Putin in his capacity as President. Although the notion of de-escalation via a limited nuclear strike seems paradoxical, its aim is to force an opponent to accept a return to the status quo ante by offering a credible signal that more nuclear strikes will come if the opponent continues its attack. Such a threat was envisioned as a deterrent against the United States and its Allies, in particular when it comes to conflicts in which Russia has an existential stake. In this sense, Russia views the doctrine as essentially defensive in nature.²¹

18 See D. Zak, "Meet the nuke the US keeps in Europe, waiting to not be used", *The Washington Post*, 25 March 2022.

19 The Obama administration did run in 2016 a top secret, high-level wargame charting out what could happen if Russia launched a single nuclear missile at a NATO airbase in the Baltics. One team advocated a nuclear response, another favored a conventional attack. Quoted by S. D. Sagan, "The world's most dangerous man", Council of Foreign Relations, 16 March 2022.

20 See N. Sokov, "Russia's 2000 military doctrine", *Nuclear Threat Initiative*, 30 September 1999.

21 Such a threat must also be credible. To that end, all large-scale military exercises that Russia conducted beginning in

How should the West respond to the use of a tactical nuclear weapon in Ukraine? Such an act would be a game changer, of course, but there is prudence in avoiding further escalation in its aftermath. We can only speculate as to the response options available to the West and the United States in particular: for instance, an attack against Russian forces in Ukraine by B-2 stealth bombers may be too risky and prompt fears in Russia of a broader impending nuclear attack, while a wave of Tomahawk cruise missile strikes may be considered too weak a response. In this respect, US hawks have publicly lamented the Biden's administration's decision to cancel development plans for a nuclear-capable sea-launched cruise missile (SLCM). For these observers, the administration's decision announced in the end of March 2022 could "needlessly create doubt in Moscow about Washington's will in a nuclear stand-off" and may leave Washington with poor escalatory choices in case of a crisis.²² Yet, the morality of wisdom, as Raymond Aron put it, calls for a continued avoidance of direct confrontation.

After Ukraine, a call for nuclear arms?

A bomb shields you

A key strategic lesson that countries might draw from the war in Ukraine lies in the importance of either acquiring a nuclear weapon or refusing to relinquish possession once a state has one – in other words, the opposite of the path Ukraine chose with the 1994 Budapest Memorandum. As one defense expert succinctly put it, "if you have nuclear weapons, keep them. If you don't have them yet, get them".²³ Such a strategic lesson will bear significant consequences for the nuclear landscape in the future, both from a strategic and a moral standpoint.

The war in Ukraine and the looming threat of nuclear weapons use should revive moral debates regarding both the righteousness and immorality of a nuclear deterrent and these weapons' ability to sustain international peace and order. Above all, the lessons of the current conflict might bring about new conditions that fuel nuclear proliferation; many

2000 featured simulations of limited nuclear strikes. See N. N. Sokov, "Russian military doctrine calls a limited nuclear strike 'de-escalation'. Here's why", *Bulletin of Atomic Scientists*, 8 March 2022.

22 One of the arguments of the Biden administration is that US conventional firepower – largely superior to Russia's – could accomplish similar objectives using conventional weapons which are inherently more credible and far less taboo normatively. For a critical view on this decision see J. Willick, "Biden sends Putin a muddled nuclear message", *The Washington Post*, 31 March 2022.

23 M. O'Hanlon and B. Riedel, "The Russia-Ukraine war may be bad news for nuclear nonproliferation", Brookings, 29 March 2022.

so-called “middle” powers could choose to go nuclear as nuclear weapons confer ultimate security. If nuclear weapons grant a shield against potential adversaries, as is the case for Putin vis-à-vis the US and NATO, then more countries fearful for their security will crave the same ultimate guarantee of their territorial integrity through the deterrent effect of nuclear weapons. This logic equally applies to autocratic leaders entrenched in power but fearful of external interventions against their regime. This is well-illustrated by the case of Libya, where Muammar Qaddafi gave up his state’s nuclear program only to be deposed through an external intervention in 2011. However, it is also well-illustrated in the contrary case of North Korea, where Kim Jong-un and his predecessors refused to relinquish their pursuit of a nuclear arsenal and were subsequently rewarded with their own nuclear guarantee. Ultimately, regime change is likely impossible if a state possesses nuclear weapons. Moreover, the impunity that Putin is likely to enjoy despite his war of aggression (and the related violations of International Humanitarian Law) is clearly linked to Russia’s nuclear arsenal and its ability to threaten nuclear use as a saber-rattling deterrent.

If you get one, keep it!

After the fall of the Soviet Union in 1991, Ukraine, Belarus, and Kazakhstan inherited a significant portion of the Soviet nuclear arsenal. Ukraine’s own nuclear stockpile after the breakup amounted to some 1,656 strategic nuclear weapons, which would place Ukraine comfortably as the world’s third-largest nuclear power.²⁴ In 1994, with the ratification of the Budapest Memorandum, the US, the UK and Russia each provided security assurances to Kyiv in exchange for Ukraine’s nuclear weapons and its commitment to join the Nuclear Non-Proliferation Treaty (NPT) as a non-nuclear weapon state. The 1997 Charter on a Distinctive Partnership between NATO and Ukraine further outlined these commitments.²⁵

Of course, Ukraine’s decision at the time was not without controversy. Intellectual positions *vis-à-vis* Ukraine’s opportunity to acquire a nuclear deterrent varied as much back then as they do today. For instance, some concluded then that a Ukrainian nuclear deterrent was the only reliable means to prevent future Russian aggression. Today, the logic goes that, had Ukraine maintained its nuclear capability, Putin today would have thought twice before invading. One early vocal defender of this position was John Mearsheimer, who noted at the time that, “the United States and its European allies have been pressing Ukraine to

24 Including 130 22-19s (6 warheads each), 46 SS-24s (10 warheads each), and 30 Bear-H and Blackjack bombers (together carrying 416 bombs). See J. J. Mearsheimer, “The case for a Ukrainian nuclear deterrent”, *Foreign Affairs*, Vol.72, No.3, Summer 1993, p.57.

25 Cf. Charter on a Distinctive Partnership between NATO and Ukraine, 9 July 1997. Last updated 4 March 2009, https://www.nato.int/cps/en/natohq/official_texts_25457.htm

transfer all of the nuclear weapons on its territory to the Russians, who naturally think this is an excellent idea. President Clinton is wrong [...] Ukraine cannot defend itself against a nuclear-armed Russia with conventional weapons, and no state, *including the United States*, is going to extend to it a meaningful security guarantee”.²⁶ Concurrently, Mearsheimer also argued against any extension of NATO’s security umbrella to Ukraine as unwise and a provocation against Russia, one that could potentially cause them to act belligerently in the future. Thus, for him, nuclear weapons were absolutely crucial to deter “against a Russian conventional attack or nuclear blackmail”.²⁷

Others, though, argued against a Ukrainian nuclear deterrent. For Steven Miller, it was simplistic to believe that “if nuclear weapons may have contributed to peace during the Cold War [...] they will have the same effect in dramatically different settings and conditions”, adding that, “most of the factors working for peace in Soviet-American relations [were, and arguably remain] absent from the Russian-Ukrainian context”.²⁸ *Inter alia* Miller deemed that the risk of inadvertent use of nuclear weapons was too high. In circumstances where the possibility of proliferation in the post-Soviet states was considered likely, a key rationale motivating Kyiv to surrender its nuclear weapons was that of international status. By giving up these weapons, Kyiv gained legitimacy in its quest for independence. While Ukraine initially gained tangible benefits, in the longer term these benefits turned out to be much hollower than was first anticipated. Putin could invade Ukraine because it was free from nuclear weapons; with them, the Zelensky government would have deterred the Kremlin.

More is better?

If the value of a nuclear weapon is the main lesson drawn from the conflict and widely shared amongst expansionist dictators, it is reasonable to expect renewed efforts at proliferation efforts globally. The NPT has thus far enjoyed relative success in limiting the number of nuclear states. That only nine countries have nuclear weapons remains a significant achievement. Yet, since the early 2000s the non-proliferation regime has undergone a steady erosion and seen itself gradually weakened by long-term geopolitical developments.²⁹ First, North Korea’s successful acquisition of a nuclear weapon and Iran’s violations of its nuclear obligations under the International Atomic Energy Agency (IAEA) damaged the strength (if not the legitimacy) of the NPT regime. Second, the 2010 New

26 Emphasis added. See J. J. Mearsheimer, “The case for a Ukrainian nuclear deterrent”, *Foreign Affairs*, Vol.72, No.3, Summer 1993, pp.50-51.

27 *Idem*, p.57.

28 S. E. Miller, “The case against a Ukrainian nuclear deterrent”, *Foreign Affairs*, Vol.72, No.3, Summer 1993, p.70.

29 P. Hassner, “Who killed nuclear enlightenment?”, *International Affairs*, Vol.83, No.3, 2007, pp.455-467.

START treaty (Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms), negotiated by the Obama administration and extended in early 2021 by the Biden administration for another five years, now stands as the final pillar of nuclear arms control cooperation between the United States and Russia.³⁰ This treaty does not place limitations on the deployment or production of tactical weapons. Third, the rise of China's nuclear ambition may complicate decision-makers' strategic risk calculations by introducing a third major nuclear power in the strategic landscape.³¹ Lastly, in a multipolar world where regional ambitions and irredentism is expected, the enduring importance of the bomb – either pursuing it or retaining it – in the minds of statesmen may produce an increasingly unstable strategic environment. In such a landscape, Kenneth Waltz would argue that more may indeed be better: the proliferation of nuclear weapons may induce moderate behaviors and restraints.³²

Conclusion

UN Secretary General António Guterres stated on 14 March, 2022 that, with the war in Ukraine, the prospect of nuclear conflict is “now back within the realm of possibility”. In remarks to reporters, Guterres called Putin's move a “bone-chilling development” and suggested that further escalation in Ukraine could threaten all of humanity. His concern resonated globally. Fears about a nuclear exchange often appear exaggerated. Yet even a cursory review of nuclear crises, from Cuba in 1962 to Kargil in 1999, reveals a string of close calls that only narrowly avoided catastrophe. The logic of deterrence has thus been effective in avoiding a nuclear Armageddon; yet, a catastrophe may also come by accident or negligence. When the Russians shelled Europe's largest nuclear power plant in Zaporizhzhia, the prospect of a nuclear catastrophe – this one by accident or miscalculation

30 The New START treaty was signed by Barack Obama and Dmitry Medvedev in 2010, setting new limits to each country: 1,550 nuclear warheads on deployed ICBMs, deployed SLBMs, and deployed heavy bombers equipped for nuclear armaments. See the Treaty between the United States and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms at <http://www.state.gov/t/avc/newstart/c44126.htm>

31 “China is continuing the gradual modernization of its land-based, nuclear-capable missile force. The pace and scope of this effort appears to be increasing significantly with the construction of nearly 300 new silos in at least three missile silo fields, as well as construction of several new bases for road-mobile missile launchers”. H. M. Kristensen, M. Korda, “Nuclear notebook: Chinese nuclear forces, 2021”, *Bulletin of the Atomic Scientists*, Vol.77, No.6, 15 November 2021, p.324. See also A. F. Krepinevich, Jr, “The new nuclear age. How China's growing nuclear arsenal threatens deterrence”, *Foreign Affairs*, May/June 2022.

32 K. N. Waltz, “The spread of nuclear weapons: more may be better”, *The Adelphi Papers*, Iss.171, May 1981.

– rose significantly. The IAEA called the incident a “close call”.³³ Furthermore, the threat of an accidental nuclear exchange as a result of a cyber-attack on nuclear command-and-control systems, including by actors not directly involved in the conflict, remains a possibility.³⁴ After the Hiroshima and Nagasaki bombings, Bernard Brodie warned that “thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them”.³⁵ While Vladimir Putin is focused on the former, let’s hope that he does not discard entirely the latter.

33 A. (Eli) Levite, T. Dalton, “Averting a nuclear dystopia”, Carnegie Endowment for International Peace, 25 March 2022.

34 B. Bender, “How the Ukraine war could go nuclear”, *Politico*, 25 March 2022.

35 B. Brodie (ed.), *The Absolute weapon*, Brace, New York, Harcourt, 1946, p.76.

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