

Stepping Back from the Brink

**The Myths of
Tactical Nuclear Weapons
and Limited Nuclear War**



NET Nuclear
Education Trust

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GLOSSARY

ABMT	Anti-Ballistic Missile Treaty	USA	United States of America
AI	Artificial intelligence	WW2	World War Two
BMD	Ballistic missile defense	WW3	World War Three
CTBT	Comprehensive Nuclear Test Ban Treaty		
FMCT	Fissile Material Cut-Off Treaty		
ICAN	International Campaign to Abolish Nuclear Weapons		
INF	Intermediate-Range Nuclear Forces treaty		
KT	Kilotons		
MOD	Ministry of Defence		
NAS	Nuclear armed state		
NATO	North Atlantic Treaty Organisation		
NET	Nuclear Education Trust		
NNWS	Non-nuclear weapon state		
NPR	Nuclear posture review		
NPT	Treaty on the Non-Proliferation of Nuclear Weapons		
NWS	Nuclear weapon state		
OSCE	Organisation for Security and Co-operation in Europe		
RevCon	Review Conference		
SIPRI	Stockholm International Peace Research Institute		
SSBN	Ship submersible ballistic nuclear		
START	Strategic Arms Reduction Treaty		
TPNW	Treaty on the Prohibition of Nuclear Weapons		
UK	United Kingdom		
UN	United Nations		

Note on terminology

The ‘official’ nuclear weapon states (NWS) under the nuclear non-proliferation treaty (NPT) are China, France, Russia, the UK, and the US. The NPT defines an NWS as one “which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967”. Members of the NPT without nuclear weapons are known as non-nuclear weapon states (NNWS). The four nuclear-armed states (NAS) that are not members of the NPT are North Korea, India, Pakistan, and Israel. NWS and NAS collectively are referred to in this report as nuclear weapon possessor states.¹

The Nuclear Education Trust wishes to thank the Marmot Charitable Trust for funding this research project.

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EXECUTIVE SUMMARY

Introduction

The world is in a very perilous state. Conflicts involving the nuclear armed states (NAS)—the United States, Russia, the United Kingdom, France, China, India, Pakistan, North Korea and Israel—in Europe, the Middle East and South Asia, as well as increasing tensions in East Asia, could escalate to nuclear war, potentially engulfing the world.

Meanwhile, nuclear arms control and disarmament treaties have either ended, or participating states have withdrawn from them. These include the Intermediate-Range Nuclear Forces (INF) Treaty, which was officially terminated in 2019, and the New START treaty, which is due to expire in 2026. The Nuclear Non-Proliferation Treaty (NPT), meanwhile, is facing significant challenges, with all nine NAS modernising their nuclear arsenals.

Critically, this new era of nuclear rearmament includes Russia and the US modernising their so-called ‘tactical’ nuclear weapons (TNWs), in their ongoing pursuit of warfighting capabilities. This report investigates the dangers posed by TNWs and the equally dangerous concept of limited nuclear war, with which these weapons are associated. The myths connected with both these ideas are exposed and challenged, with more sustainable bases for state’s security outlined.

The report examines in detail the policies and strategic behaviour of the NAS, with a particular focus on Russia and the US, as well as China and the UK. This report also addresses some of the key existential questions of our time, including: is the nuclear taboo eroding; how do we step back from the brink of nuclear war and revive nuclear arms control, non-proliferation and disarmament; and what role does the UK have in getting the world back on a path to peace and strategic stability?

Key findings

Chapter One: Edging Closer to Nuclear War?

- **Escalation to nuclear use involving the US / NATO and Russia is all too possible without an end to the Ukraine conflict and a sustainable political agreement addressing the core security concerns of all parties.** It is also vital that the major powers convene top-level summits to consider what form sustainable regional and international security arrangements should take which support reductions to, and the ultimate elimination of, nuclear weapons.
- **A common view amongst mainstream analysts is that Russia’s illegal invasion of Ukraine, and its use of nuclear threats during the conflict, pose an unprecedented threat to European security.** Fears persist amongst NATO members that the alliance is not capable of effectively responding to Russian nuclear blackmail and that Moscow could directly attack an alliance member. Russia has a large number of (what it designates as) ‘non-strategic’ nuclear weapons which, certain experts believe, have an increasing prominence in Russian doctrine as a result of the Ukraine war.
- **Recent developments with the US’s nuclear weapons and military posture pose serious challenges to Chinese and Russian security.** The US’s new nuclear capabilities (such as the W76-2 warhead and B61-12 bomb) demonstrate a warfighting intent. In addition, the US’s deployment of advanced conventional military capabilities threatens the survivability of Beijing and Moscow’s nuclear forces. The threat perceptions of China and Russia must be considered if these state’s military and nuclear build-ups are to be fully understood.
- **Strategic stability between the major powers is under threat and requires cooperative action.** Negative contributing factors, which often overlap, interact with and drive one another, include: the spread of regional conflict and tension; rising incentives and pressure for national leaders to

consider nuclear use options (particularly for China, Russia and the US); widespread nuclear modernisation—which includes more ‘usable’ nuclear options, in some cases; the rapid erosion of arms control and disarmament regimes; and the re-emergence of nuclear warfighting doctrines.

- **The UK’s decision to join NATO’s nuclear sharing arrangement is a step in the wrong direction.** This is because the acquisition of F-35A fighter jets and hosting of US B61-12 bombs are unnecessary and unwarranted from a security point of view, and likely contravene the UK’s obligations under the NPT.

Chapter Two: The erosion of the nuclear taboo and the risk of nuclear war

- **The nuclear ‘taboo’ is eroding and needs to be reinforced.** Russia and the US practised nuclear signalling during the Russia-Ukraine war. Many experts thus believe that, whilst the likelihood is still low, the world is in increasing peril from nuclear use. Large sections of the public in certain nuclear armed states are also increasingly perturbed by the potential for World War Three and / or a nuclear war to occur in the near future. At the same time, public opinion could act as a restraint on nuclear use if properly understood and harnessed by political leaders.

- **The likelihood of nuclear use would rise if a nuclear armed state felt threatened by regime change.** The leaderships of China, North Korea or Russia could turn to nuclear escalation to preserve their hold on power, for example. Avoiding arms races and conflict will require the major powers to engage in sustained dialogue and diplomacy. Concerns—from all sides—about the development and deployment of new military technologies need to be understood and discussed if responsible and cooperative security policies are to be developed.

- **Several nuclear armed states are involved in adversarial relationships which could escalate to nuclear use.** The size and alert levels of US and Russian nuclear forces, their geopolitical confrontation and unpredictable leaderships,

means that these two states (plus NATO) are most prone to nuclear conflict. India and Pakistan are not far behind given the potential for flashpoints over contested territory. China’s growing nuclear arsenal, regional ambitions, and the possibility that it could clash in future with one of several nuclear powers, has increased the potential for it to become involved in an escalating conflict.

- **The likelihood that a conflict which escalated to nuclear use would remain limited is most probably low.** This is because of the fundamental unpredictability involved in such situations, and the high difficulty in controlling nuclear conflict. It is therefore imperative that the nuclear powers take steps to maintain the firebreak between conventional and nuclear weapons.

Chapter Three: Political, humanitarian, environmental and legal impacts of nuclear weapon use

- **The consequences of any use of nuclear weapons are likely to be very severe—even at relatively low levels of explosive power.** Any nuclear use would have far-reaching consequences and change the nature of a conflict. Moreover, any use of nuclear weapons carries the risk of uncontrollable escalation, regardless of the initial intended scope or yield. In addition, it is most probable that any use of nuclear weapons would violate the principles and rules of international humanitarian law.

- **The use of TNWs would provide uncertain military advantages but there would be significant political and strategic ramifications.** A nuclear conflict, even involving relatively low numbers of nuclear weapons, would risk triggering a ‘nuclear winter’. The most responsible approach for nuclear armed states to take regarding their nuclear forces is one of utmost caution, pending the elimination of these weapons.

- **Governments should focus on conflict prevention, de-escalation, diplomacy, and using conventional force only when strictly legal, proportionate and necessary.** Contingency

planning to control conflict escalation and avoid nuclear use is useful but insufficient. It is questionable whether, in the heat of battle, highly stressed leaders will reach for such models or remember their training.

- **There are several gaps in our understanding of the impact of nuclear use that need to be addressed.** It would be beneficial for the forthcoming UN study on the effects of nuclear war, and other future studies, to consider the various specific impacts of different types and levels of potential nuclear use.

Chapter Four: Key lessons from history on tactical nuclear weapons and limited nuclear war

- **The TNW concept originated in the US's need to maintain nuclear superiority and credibility, particularly in terms of NATO and extended deterrence.** The US wanted to make nuclear threats meaningful whilst reducing the risk of all-out war, yet this made TNWs more attractive and useable. The deployment of TNWs increases the incentive to escalate, thus undermining strategic stability.

- **TNWs are an inherently risky and destabilising type of nuclear weapon—increasing their deployment and role in nuclear postures, whether this is done by Russia or the US, is imprudent.** The deployment of US Ground Launched Cruise Missiles to the UK and US Pershing ballistic missiles to West Germany in the 1980s (as well as the Soviet Union's deployment of SS20s), significantly heightened worldwide fears of nuclear conflict. The fact that the INF Treaty led to the elimination of these weapons was a major contribution to the end of the Cold War. The demise of the INF and other arms control treaties, on top of Russia and the US's pursuit of nuclear warfighting capabilities, is thus a matter of great concern.

- **The major power's ongoing reliance on nuclear weapons for their perceived security needs prevents the cooperation needed to solve key problems of war and peace.** For most

of the Cold War, the West's belief in the necessity of nuclear deterrence constrained moves towards peace and disarmament with the Soviet Union. As several scholars argue, the West's fear of Soviet aggression was overblown and the Soviet Union's approach to nuclear deterrence was widely misunderstood. To avoid repeating the mistakes of the past, current leaders of NATO member states should focus on understanding the core security needs of China and Russia.

- **TNWs have major cost, safety, security, storage and control issues.** In recent years, NATO's nuclear sharing arrangements have raised concerns about the security of nuclear weapons in Turkey as well as the significant costs involved, for example, of procuring F-35 nuclear-capable jets and B61 bombs.

- **Decision makers should revisit the lessons from the Cuban Missile Crisis, and other Cold War episodes, to understand how nuclear conflict can be avoided.** Previous agreements to reduce international tensions and ensure strategic stability should also be studied and built upon. Furthermore, in recent years, experts have made a range of specific proposals to limit, control and eliminate TNWs which should be considered by the relevant nuclear armed states.

Chapter Five: Nuclear deterrence and the Russia-Ukraine war

- **Russia's nuclear signalling has limited NATO's involvement in the Ukraine conflict.** However, despite Russia's recent public declarations widening the circumstances in which it would consider using nuclear weapons—and the ongoing modernisation of its nuclear force—it remains unclear whether Russia has lowered its actual threshold for nuclear weapons use. Claims that President Putin came close to using a nuclear weapon when Russia was on the back foot in the conflict should also be treated with caution. At the same time, if the West tries to force Putin from power, or seriously weaken Russia, then the incentives for Moscow to consider using its nuclear arsenal in response will increase.

- **Concern that the West's deterrence policy failed to prevent Russia's invasion of Ukraine is being used to justify massive military spending increases.** Despite NATO members possessing a formidable military, including diverse nuclear forces, the alliance has concluded that there are gaps in its ability to respond effectively to Russia, particularly in terms of nuclear escalation. However, strengthening NATO's military power risks further antagonising its adversaries and wasting billions on unnecessary nuclear modernisation programmes.

- **The major powers' continued reliance on nuclear deterrence prevents sustained diplomacy and reduces the prospects for detente, arms control and disarmament.** Those who claim nuclear deterrence worked, whether during the Ukraine-Russia conflict—or any other time—must accept the risks involved in the continuation of nuclear confrontation, including the potential for miscalculation, misjudgement and escalation.

Recommendations

International

- The US and Russia should not deploy TNWs, and begin negotiations aimed at agreeing a legally binding treaty for eliminating TNWs with verification measures.
- The major powers should reinforce the nuclear taboo, including by: making joint statements renouncing nuclear warfighting; abiding by international law regarding the threat or use of force; prioritising diplomacy; and practising restraint regarding the development and deployment of nuclear weapons.
- The US and Russia should act to revive nuclear non-proliferation and disarmament, for example, by renewing New START, negotiating a replacement, or ensuring both parties abide by its limits even if it expires. In addition, the nuclear powers should work cooperatively to support the NPT and ensure that the 2026 Review Conference has a positive outcome.

- Addressing the root causes of conflict, such as political tensions, territorial disputes and economic disparities, is essential to prevent escalation to nuclear war. To this end, Russia should agree to a ceasefire and take part in good faith negotiations to end the war in Ukraine, alongside all key participants in the conflict. In order to accomplish this, the framework of a longer-term ceasefire, which involves a sustainable peace settlement, should be agreed.

UK-focused

- The minimum the UK should do is commit to transparency over its defence nuclear enterprise (including spending, acquisition, maintenance, deployment and nuclear weapons use policy) as a contribution to the renewal of the NPT and a more democratic security policy.
- As chair of the P5 process, the UK should ensure that crisis stability between the major powers and the avoidance of arms races are prioritised. Such efforts need to be backed up by actions, including for example, on transparency, concerning the UK's nuclear use doctrine and its red lines on force escalation and deterrence options.
- The UK should support the UN panel examining “the physical effects and societal consequences of a nuclear war on a local, regional and planetary scale.” The UK should also attend TPNW meetings as an observer in order to keep up to date with developments, provide briefings on negotiations to parliament and the public, and demonstrate support for UN processes aimed at advancing nuclear disarmament.
- The UK should not join NATO's nuclear sharing arrangement, and thus not acquire F-35A aircraft or host US B61-12 bombs. The UK should also rule out developing a sovereign TNW capability (for example, given the assessment of this system outlined in the 2013 Trident Alternatives Review).

Conclusion

This paper's examination of the concepts of tactical nuclear weapons and limited nuclear war finds them both to be largely based on myths. This is firstly because any use of nuclear weapons would have far-reaching consequences. Even the use of nuclear weapons in relatively small numbers or involving lower yields would have severe impacts. The unpredictable results of nuclear use, and the risks of escalation, thus necessitate nuclear decision-making to be handled with the utmost caution and care.

It is imperative that action on nuclear threat reduction, arms control, non-proliferation and disarmament is revived. This should include finding ways to remove TNWs from deployment and eliminate them from possessor state's stockpiles, in addition to firmly rejecting the notion that nuclear warfighting can be reliably controlled and restricted.

2026 is set to be a key year for the future of nuclear arms control and disarmament, not to mention the future of global peace and security. Whilst the political outlook appears unpromising, there remain opportunities for the major powers to step back from the brink of nuclear war and find common ground. The UK can play an important role by bolstering international agreements that restrain nuclear proliferation and use. Continuing down the path of unending militarisation, nuclear rearmament and conflict can only end in catastrophe. Diplomatic and political solutions to the world's problems are still within reach and must be grasped.

DEFINITIONS OF KEY CONCEPTS

This section provides an overview of three key concepts discussed in the report: tactical nuclear weapons, limited nuclear war and nuclear deterrence. These are complex topics and so, whilst the discussion is by no means comprehensive, the main definitional questions and debates are highlighted.

What are tactical nuclear weapons?

We must begin our discussion by recognising that there is no agreed definition of tactical (or nonstrategic) nuclear weapons (TNWs) amongst experts, or indeed, whether the term should be used.² A key part of the problem when discussing TNW is that the term conjures up the idea that these are small weapons that can be used on the battlefield, in a similar way to, or alongside, non-nuclear artillery. TNWs do have a smaller explosive yield—generally below 20 kilotons (kt) of TNT—than the strategic nuclear weapons, such as Intercontinental Ballistic Missiles (ICBMs)—ranging between 90-450 kt in the US arsenal—that could strike an adversary's cities, military bases, or nuclear weapons infrastructure.³

However, it is a mistake to think that the use of a TNW would have a small impact. For example, one of the weapons discussed in this report, the US's W76-2 nuclear warhead, has an explosive yield of about 6 kt. Andrew Facini, senior fellow at the Janne Nolan Center on Strategic Weapons, makes the important point that 6 kt is “still 500 times more powerful than the most powerful conventional explosive in the American arsenal”.⁴

To try and define TNWs, some focus on range, the nature of what is targeted, or the implications for the conflict in which the weapons are used.⁵ TNWs can also be defined by what existing US-Russia strategic arms agreements do not cover.⁶ Yet this would mean defining certain nuclear weapons owned by the seven other nuclear armed states as TNWs—which these states treat as strategic. Hans Kristensen and Matt Korda of the Federation of American Scientists therefore observe that:

“the distinction between a strategic and

nonstrategic nuclear weapon or mission is inherently fuzzy and will probably remain so, given that strategic nuclear weapons can be used in a tactical manner and that any use of a nuclear weapon, no matter how small the yield or short the range, would have far-reaching strategic consequences.”⁷

James Mattis, former US Secretary of Defense, has argued that “I do not think there is any such thing as a tactical nuclear weapon. Any nuclear weapon used any time is a strategic game changer.”⁸ In 2022, a US State Department report explained that it “no longer uses the term ‘tactical nuclear weapons’ because the United States does not envision any use of nuclear weapons to be tactical in character or effect.” In addition, the report identified the term “nonstrategic” as a “misnomer” because “the use of a nuclear weapon would fundamentally change the nature of a conflict.”⁹ The reasons why this might be the case are explored in Chapter 2. Professor Lawrence Freedman has also expressed scepticism regarding placing clear “distinctions” between tactical and strategic nuclear weapons. He notes that Trident provides the UK with a “‘sub-strategic’ capability which can be targeted ‘against a military formation,’ although he notes that this is “a very expensive and rather brutal way of doing it.”¹⁰

Many of the US's nuclear weapons can be modified to increase or decrease their yield.¹¹ This can be done with a strategic weapon by only using the primary in the warhead.¹² In addition, some TNWs, such as the US's new B61-12 bomb, have an adjustable yield capability. The yield of US TNWs can range from 0.3, up to around 50 kt in the case of the B61-12, and up to 170 kt, in the case of the B61-3.¹³ By comparison, the yields of the bombs used by the US on Hiroshima and Nagasaki were 16 kt and 21 kt respectively.¹⁴ Moreover, a TNW, such as a B61 bomb, can have a higher yield than a strategic nuclear weapon.

Other experts use the term “hybrid” to characterise some nuclear weapons. For example, the authors of the report *Ending Tactical Nuclear Weapons* explain that:

“this designation is meant to indicate that certain capabilities have a blend of potential tactical intent or utility (either by the possessing nation or highly likely to be interpreted as such by other nations), and strategic intent (i.e., deterring nuclear attacks) even if they were not included in past treaties that limited strategic nuclear weapons.”¹⁵

Owing to the problems raised by the terms ‘tactical’ and ‘non-strategic’ nuclear weapons, this report mainly refers to nuclear weapons, whilst distinguishing between the many types and varieties of these weapons (including those considered to be ‘strategic’), where necessary. This is done to emphasise the overarching catastrophic risks of nuclear weapons, given the possibility of uncontrollable escalation involved in any nuclear use, regardless of the initial intended scope or yield. Moreover, as noted above, those who distinguish between tactical and strategic nuclear weapons often focus on intended use, target, range and yield, but these categories can overlap.¹⁶ A particular weapon system could therefore be considered tactical or strategic depending on the context of the conflict and the adversary involved.

Concerning the question of how TNWs can be included in arms control and disarmament treaties and negotiations, the authors of the 2000 UN Institute for Disarmament Research report *Tactical Nuclear Weapons: Options for Control* state that “an urgent task” is to:

“codify the existing achievements into a treaty. For this purpose, a precise definition does not have a high priority. It would make more sense to explicitly list those systems that should be included into a treaty on reductions. All nuclear weapons that have not yet been covered by an arms control treaty should be considered.”¹⁷

Where the term TNW has perhaps most relevance is in analysing historical nuclear strategy and development. Understanding how nations designed and considered using different types of nuclear weapons during the Cold War, for example, requires acknowledging the distinction between such capabilities. Thus because ‘tactical,’ and related terms, are so commonly referred to in this

literature, it has not been possible to avoid their use when discussing other’s work. In conclusion, whilst the distinction between tactical and strategic nuclear weapons exists and has historical and analytical relevance in specific contexts, it is crucial to emphasise the overarching threat posed by any nuclear weapons use and avoid language that might normalise or minimise the potential for catastrophic escalation.

Limited nuclear war

Limited nuclear war generally refers to the idea that a conflict involving two or more nations could be controlled and contained. This means that the conflict would not escalate from a relatively restricted use of nuclear weapons, focusing on specific targets, to wider and much more destructive use, possibly involving strategic nuclear weapons. In terms of how nuclear weapons and limited nuclear war are connected and how they interact, security expert Manpreet Sethi of the Centre for Air Power Studies- New Delhi, observes that:

“While there is no accepted definition of ‘limited nuclear war,’ it can be described as one in which a limited number of nuclear warheads with relatively smaller yields are employed to attack limited military targets to impact a limited geographical space for limited objectives. Its purpose would be to signal deterrence by showing that levels of nuclear violence or the scope of nuclear use can be restricted by choosing military targets instead of cities, thereby making nuclear use more credible and even legally defensible.”¹⁸

Later chapters will explore in more detail how the TNW / limited nuclear war concepts developed and became entwined.

A note on nuclear deterrence—and other uses of the bomb

At the simplest level, nuclear deterrence concerns the use and manipulation of fear by one leadership group against another. Deterrence involves one state trying to stop another state from taking an

undesirable course of action through threatening them with unacceptably costly consequences or 'damage'. The question for the deterring state is whether the threat will be seen as both sufficient and credible by the opponent. Kevan Jones (now Lord Beamish) has argued that there are "five criteria" which underpin a "credible and effective nuclear deterrent," namely: "readiness, reach, resolve, survivability / invulnerability and destructive power".¹⁹ Ultimately, nuclear weapons are terror weapons—deterrence is therefore innately psychological.

Professor Dan Plesch has observed that "deterrence boils down to arguing that the more dangerous things are the safer we are."²⁰ For the proponents of TNWs, because these arms are more 'usable,' deterrence is thus strengthened. According to this logic, raising the risk of nuclear use more effectively influences an adversaries' decision-making. Deterrence will therefore have failed if nuclear war takes place.

Whilst the two concepts are closely related, deterrence differs from defence in the sense that the former seeks to discourage or prevent an attack prior to the onset of a conflict, whereas the latter seeks to deny an attacker succeeding and making gains from an attack after a conflict has begun.²¹ Those who posit that the arrival of nuclear weapons heralded a 'revolution' in international affairs argue that this was because traditional forms of 'defence' were no longer effective, since it was not possible to prevent a nuclear strike.²²

Deterrence also differs from using nuclear weapons for compellence / coercion, which concerns efforts to force an actor to take a particular course of action. In addition, nuclear warfighting involves using nuclear weapons to win, rather than prevent, a conflict.

There are several forms of deterrence i.e. basic / central (covering the territory of the possessor state) and extended (whereby a possessor state uses its nuclear arsenal to deter an attack on its allies). There is also deterrence by punishment (whereby the threat of retaliation is used to prevent undesirable action) and deterrence by

denial (whereby the threat of a strike removes the opponent's nuclear, or other destructive, capability). It is also important to recognise that nuclear possessors / the major powers see nuclear deterrence as one part of their 'deterrence spectrum'. Other tools in the spectrum include economic tools (e.g. sanctions) and conventional force, which can be used to pressure and persuade other nations to act in certain ways.

An alternative definition of deterrence is provided by Hans Kristensen, Robert Norris and Ivan Oelrich, who write that it has come to be defined as whatever it is that nuclear weapons do. They therefore observe that "U.S. ICBMs and SLBMs are often called the "land-based deterrent" and the "sea-based deterrent," respectively. And nuclear bombs deployed in Europe are called the "extended deterrent." Nuclear weapons have simply become deterrence no matter what mission they have."²³ Debates concerning nuclear deterrence primarily concern its: effectiveness; financial and other opportunity costs; legality; morality; and necessity. The proponents of nuclear deterrence argue that it prevents great power conflict, as shown by the Cold War.

Critics of nuclear deterrence argue that the assumption of rationality in crises may not always hold, and misperceptions or technical failures could lead to unintended escalation and nuclear war. They also cite the spread of nuclear weapons to more states, including potentially unstable ones or non-state actors, as increasing the risk of nuclear use and making deterrence more complex. Another criticism is that while nuclear weapons may deter major attacks, they may not prevent smaller-scale conflicts, cyberattacks, or other 'hybrid' warfare tactics. Finally, some critics argue that relying on the threat of mass destruction is inherently immoral and that it entails unacceptable, existential risks. Alternatives to nuclear deterrence include: non-nuclear defence; conventional-based deterrence; diplomacy, peace-building and disarmament.

INTRODUCTION

The world is in a very perilous state. Conflicts involving the nuclear armed states (NAS)—the United States, Russia, the United Kingdom, France, China, India, Pakistan, North Korea and Israel—in Europe, the Middle East and South Asia, as well as increasing tensions in East Asia, could escalate to nuclear war, potentially engulfing the world. In addition, nuclear arms control and disarmament treaties have either ended, or participating states have withdrawn from them. These include the Intermediate-Range Nuclear Forces (INF) Treaty, which was officially terminated in 2019, and the New START treaty, which is due to expire in 2026. The Nuclear Non-Proliferation Treaty (NPT), meanwhile, is facing significant challenges, with all nine NAS modernising their nuclear arsenals.²⁴ The Treaty on the Prohibition of Nuclear Weapons (TPNW) has divided the international community, with NAS and their allies largely opposing the treaty, whilst non-nuclear weapon states (NNWS) and civil society groups largely support it.²⁵

Russian President Vladimir Putin's threats to use nuclear weapons, in the context of Russia's illegal invasion of Ukraine, has placed the question of how states should respond to nuclear coercion in the spotlight for the first time in several years.²⁶ Meanwhile the key drivers of Moscow and Beijing's strategic behaviour and nuclear weapons policy include a shared distrust of the United States and its allies' nuclear posture, NATO expansion, a desire to challenge the existing international order and a belief in the necessity of nuclear deterrence.²⁷

The possibility of the US and China going to war is of great concern, as Washington continues with its policy of containment in East Asia. Elsewhere, Israel's offensive against Palestinians in the Gaza Strip—which a UN Commission found in September 2025 to involve genocidal acts—and strikes against Iran, risks sparking a regional conflict.²⁸ Israel is believed to possess ninety nuclear weapons, greatly raising the stakes for all parties involved. Nuclear-armed India and Pakistan continue to engage in territorial disputes, which could intensify if opportunities to improve relations are squandered. Meanwhile, North Korea

has recently conducted numerous missile tests, showcasing its improved ability to strike the US with nuclear weapons and significantly heightening tensions on the Korean peninsula.

In this very challenging context, the independent charity, the Nuclear Education Trust recently conducted a research project surveying political, expert and civil society opinion on how the UK can help the world to get back onto the path towards peace and nuclear disarmament. The resulting report was entitled: *The Future for UK Defence, Diplomacy and Disarmament—50 proposals for a more peaceful world*.

This new report builds on that project by focusing on the dangers posed by so-called 'tactical' nuclear weapons (TNW), and critically analyses the concept of limited nuclear war. It concludes with a discussion of ways to revive nuclear arms control, non-proliferation and disarmament in relation to TNW, and reduce the incentives for, and drivers of, nuclear conflict. This report mainly focuses on the US, UK and NATO, Russia and China—with a much briefer overview of the other nuclear possessors—and explores the global context in which nuclear policy is being developed, as well as the key factors shaping it, past and present.

The main questions addressed across the five chapters of this report are:

- What are the key myths, misconceptions and other issues concerning TNW?
- What are the nuclear doctrines and approach to limited nuclear war of Russia, the US / NATO and China? How are these doctrines changing and how do they compare and contrast?
- Are nuclear weapons being deployed as part of war fighting plans in current conflicts? To what extent are current nuclear plans a change from previous conflicts and periods? What are the consequences of these developments?
- How should we understand and respond to the UK's recent decision to join NATO's nuclear sharing

arrangement?

- Is the nuclear taboo eroding?
- What would be the likely humanitarian; political; and legal impacts of TNWs use by Russia / the US / NATO / China?
- Is nuclear war a possibility and how likely is it to be 'limited'? What are the likely scenarios that might develop leading to the use of a TNW, for example, in the Russia-Ukraine war, regional war in the Middle East involving Israel, or between the US and China? What would be the consequences of any such use?
- What key things should we learn from the history of TNWs and thinking around limited nuclear war (including during the Cold War e.g. Cuban Missile Crisis)?
- What does the Russia-Ukraine war reveal about the limitations of nuclear deterrence, both in theory and practice?

Chapter 1: Edging Closer to Nuclear War?

This chapter provides an overview of key recent developments concerning the nuclear weapons policies of the major powers in the context of ongoing conflicts, particularly the Russia-Ukraine war, and events in other regions of heightened tension. It must be acknowledged at the outset that such policies are purposely cloaked in secrecy and ambiguity, so it is often very hard to pinpoint what 'official' nuclear policy really is. Given this limitation, the discussion focuses on what we know about the nuclear doctrines of the US and NATO; Russia; and China, before briefly reviewing those of the other nuclear armed states, based on publicly available information. This includes a longer section on the UK and its recent decision to join NATO's nuclear sharing arrangement. The final section considers the extent to which current nuclear policies and postures represent continuity or change from the past, and what these developments mean for international peace and security.

1.1 How are nuclear doctrines changing and how do they compare and contrast? Are nuclear weapons being deployed as part of warfighting plans in current conflicts?

The United States and NATO

In 2018 nuclear security expert, Bruce Blair, provided a summary of the United States' nuclear posture, which he described as:

"a vestige of the Cold War that reflects the following long-standing and anachronistic operational practices":

- methodically programmed massive nuclear-strike plans independent of any immediate circumstance;
- directed mainly against Russian and Chinese nuclear forces and their supporting launch and C3 systems;
- continuously and immediately enabled by alert U.S. nuclear forces capable of covering primary targets in several categories—nuclear forces,

war-sustaining industries, and leadership facilities; and

- technically configured and operationally inclined for rapid reaction in preemptive or launch-on-warning modes despite a commitment in theory and doctrine to second-strike retaliation only in response to enemy nuclear aggression.²⁹

The United States has therefore maintained a range of nuclear capabilities tailored to various targeting requirements.³⁰ The purpose of these forces ranges from being able to conduct massive strikes against Russia and China to decapitation strikes, for example, against deeply buried targets, focused on countries such as Iran and North Korea.³¹ Blair argued that the US's nuclear strategy includes warfighting roles for its nuclear forces. Kristensen and Arkin also point to the warfighting intent of the new US nuclear capabilities.³² For example, implementing a 'counterforce' strategy would enable the US to limit the damage it suffered in a nuclear war by striking an adversaries' nuclear forces and supporting infrastructure.³³ Both Kristensen and Blair have thus argued that the United States should instead move to a (minimal) deterrence strategy.³⁴

In recent years there have been several very notable changes to US nuclear policy. For example, the first Trump administration's 2018 Nuclear Posture Review (NPR) included plans for the US to deploy two new types of nuclear weapons: a low-yield nuclear warhead deployed on long-range, submarine-launched ballistic missiles; and a nonstrategic sea-launched cruise missile.³⁵ Rear Admiral John Gower commented on the NPR that "there is a risk that countering Russia...lowers nuclear thresholds and blurs traditional NATO separation of conventional and nuclear conflict."³⁶ In late 2019, a so-called 'low-yield' warhead, the W76-2, was deployed on a US ballistic missile submarine.³⁷ As Mike Sweeney notes, this is "the first time in three decades that U.S. tactical nuclear weapons are again at sea".³⁸ The deployment of this weapon is, according to senior US military officers who spoke to Newsweek in 2020, "explicitly intended" to make the threat of a nuclear first strike against Iran "more credible."³⁹ Joe Biden

had criticised the W76-2 as making the US “more inclined” to use nuclear weapons, but endorsed it when President in 2022.⁴⁰

The US nuclear weapons assigned to NATO (see below) are part of a wider ‘family’ of B61 bombs. These bombs are undergoing a highly expensive life extension (to the 2040s) and modernisation programme. This involves the four existing versions of the B61 bomb being consolidated into one type—the B61-12.⁴¹ The modifications to these weapons will make them more accurate than current non-guided gravity bombs, and, according to the former head of US Strategic Command, General James Cartwright, they “likely could be more usable”.⁴² Kristensen has expanded on this, pointing out that the new bomb “opens up a portfolio of enhanced targeting options with less radioactive fallout – more useable nuclear strike scenarios.”⁴³

In addition, the B61-12 can detonate underground, significantly increasing its destructiveness against targets—up to 1,250 kt.⁴⁴ Remarks in January 2025 by Jill Hruby, of the US National Nuclear Security Administration (NNSA), suggested that deployment of the B61-12 to Europe had begun.⁴⁵ In 2023, the Biden administration added a new nuclear gravity bomb—the B61-13—to the US arsenal. Kristensen argued that this bomb fulfilled a “political” rather than a “military” need.⁴⁶

President Joe Biden’s 2022 NPR outlined how the US would “further strengthen regional deterrence, “particularly in relation to China and Russia, with a range of “tailored” nuclear capabilities, including “low yield” warheads and dual capable fighter aircraft.⁴⁷ This review was criticised by Daryl Kimball of the Arms Control Association on the grounds that it “walks back Biden’s pledge to narrow the role of U.S. nuclear weapons”.⁴⁸ In addition, he argued, the NPR “rubber-stamps most of the long-planned multibillion-dollar program for modernizing the U.S. nuclear arsenal, which will cost at least \$634 billion over the next decade.”⁴⁹ For the Congressional Research Service, the US’s interest in new deployments of nuclear weapons “differs sharply from previous years, when Members of Congress, while concerned about

Russia’s larger stockpile of such weapons, seemed more interested in limiting these weapons through arms control than expanding U.S. deployments.”⁵⁰

According to political commentators William Arkin and Marc Ambinder, writing in 2022, the US’s wider nuclear war plan has also changed in important ways in recent years. These authors describe how:

“for the first time, the war plan fully incorporates non-nuclear weapons as an equal player. The non-nuclear options include the realm of cyber warfare...Rather than strengthen deterrence, the emergence of countless options and hidden cyber attack schemes weakens deterrence, obscures the nuclear firebreak and makes escalation more likely.”

The increased risk of escalation occurs because a US opponent, such as Russia, may misunderstand or misinterpret US actions, for example, concerning “where preparations for nuclear war start, and whether a multi-domain attack is merely a defense or the makings of a first strike.”

In addition, Arkin and Ambinder state that:

“Though it is not widely known, U.S. nuclear strategy today is no longer centered around the threat of a one-time massive American retaliatory nuclear strike, the severity of which is perceived as so great that it deters Russia (or any other adversary) from attacking in the first place. The strategy today, adopted in the Obama administration, is to have the flexibility to assess the purpose of an attack (that is, is it a massive strike or a limited strike or even an accident) before acting. The war plan today is modeled around the ability to absorb any first strike—to “ride it out,” as war planners put it, including blunting it with defenses and secret capabilities—before deciding on the nature and size of the American response.”⁵¹

The emergence of advanced conventional capabilities, such as the Joint-Air-to-Surface standoff missile and Tomahawk sea-launched cruise missile, weapons which the US is incorporating into its strategic war plans, are

particularly significant as they threaten the survivability of Chinese and Russian nuclear forces. Professor Dan Plesch and Manuel Galileo have explored this issue in their recent report, *Masters of the Air*. These authors explain that “ongoing” and “revolutionary...technological changes” to “highly-accurate conventional weapons” means that there is compelling evidence that the US and its allies have “a plausible present day capacity with non-nuclear forces to pre-empt Russian and Chinese nuclear forces by Detecting, Defeating and Defending against them.”⁵² These advances in conventional military power—alongside developments in US nuclear weapons—must be considered if China and Russia’s threat perceptions and responses to US power and plans, are to be properly understood.

NATO Nuclear Sharing

Until 2023—when Russia reportedly deployed nuclear weapons to Belarus—the US was the only nuclear possessor deploying nuclear weapons on foreign soil. An estimated 100 B61 gravity bombs are deployed by the US across five European NATO member states—with the UK, as of July 2025, probably now the sixth, as discussed further below. A further 100 B61 bombs are centrally stored in the US, for the purpose of, according to Kristensen and Korda, “backup and potential use by US fighter-bombers in support of allies outside Europe, including northeast Asia.”⁵³ In addition to the UK, NATO’s nuclear weapons are hosted in six bases, including in Belgium, Germany, Italy, the Netherlands and Turkey.

Nuclear weapons have been deployed by the US in Europe since the mid-1950s in an arrangement known as ‘nuclear sharing’. During the early years of the Cold War the US began basing nuclear weapons in Europe under the framework of collective defence. In terms of today’s arrangements, whilst the US retains ownership of and control over use of the weapons, formal policymaking on nuclear sharing requires consensus between NATO’s 32 member states. On a practical level, 15 nations are involved in NATO nuclear sharing and 31 nations (i.e. all alliance members except France) participate in the

Nuclear Planning Group, which discusses operational, deployment and management issues for NATO-assigned nuclear weapons.⁵⁴ The targeting and conduct of alliance nuclear operations is the responsibility of the Supreme Allied Commander Europe, who is also the Commander of US European Command (EUCOM), with the final decision on nuclear use being made by the US President.⁵⁵

For Ian Davis, there is an “informal hierarchy” within NATO, whereby “the voices of the nuclear powers (the UK and US) and those directly involved in nuclear policy carried more weight.”⁵⁶ Whilst the alliance stopped targeting its nuclear forces against anyone in 1996, John Ainslie argues that NATO “developed and enhanced a computerised network that can rapidly create such plans.” For Ainslie, the “US has dominated nuclear planning within NATO” so that US nuclear weapons deployed in Europe can be used under either EUCOM, or NATO command structures. He also notes that “it is likely” that coordination between the US’s nuclear war plans, and NATO’s own plans, “has been a significant feature of US nuclear planning.” In addition, Ainslie states that, since 1959, targeting for the UK’s strategic nuclear forces have been “progressively integrated” into the US’s nuclear war plans.⁵⁷

Importantly, in 1981 the NATO Nuclear Planning Group described how the alliance’s ‘sub-strategic’ nuclear weapons provide “the crucial link between the conventional defence of NATO Europe and the United States’ strategic nuclear forces, the ultimate guarantee of Western security.”⁵⁸ Ainslie thus notes that NATO’s TNW are a “bridge between conventional and strategic nuclear weapons” and that this remained the focus of alliance nuclear policy even though the Soviet threat disappeared. For example, the 1991 NATO Strategic Concept stated that TNW based in Europe would “provide an essential link with strategic nuclear forces, reinforcing the trans-Atlantic link,” a phrase which was repeated in the 1999 Strategic Concept.⁵⁹

The debate in NATO concerning its nuclear weapons has evolved in recent years from removing them from Europe to potentially

enlarging their role and further dispersing them across the continent. Dispersal is needed, it is argued, to evade Russian conventional missile strikes.⁶⁰ Former British diplomat Peter Jenkins has written that although the military alliance's "Strategic Concept states that the circumstances under which NATO might have to use nuclear weapons are 'extremely remote'", officials explain privately that these could include their use in response to a Russian conventional, non-nuclear attack on one or more of the Baltic states.⁶¹ NATO thus does not rule out the first use of its nuclear weapons. This position stems from the alliance's 'General Political Guidelines for the Employment of Nuclear Weapons in the Defence of NATO' published in 1986, which stated that "nuclear weapons should be used first by NATO, if necessary, even against a conventional attack in order to terminate the war."⁶²

Professor Nick Ritchie observes that NATO documents published in 1991 "significantly reduced the role of sub-strategic nuclear weapons".⁶³ However, in recent years the tide has turned, although, as defence analyst Karl-Heinz Kamp notes, it is difficult to know in what ways NATO's nuclear strategy may have been "enhanced" as it has kept classified recently published documents discussing these topics.⁶⁴ In 2023, the Congressional Commission on the Strategic Posture of the USA recommended that 'theater' nuclear weapons be: forward deployable, survivable against preemptive attack, have a range of yield options (including low yield), and capable of penetrating advanced missile defenses.⁶⁵

Russia

Russia has a far larger number of (what it designates as) 'non-strategic' nuclear weapons than the United States, which are kept in central storage during peacetime, but which can be deployed on ships, planes, and with ground forces.⁶⁶ Analysts have estimated that Russia has 1,500 of these weapons—though the precise number is shrouded in secrecy and may be lower.⁶⁷ The yield of these weapons is broad, from very low to over 100 kt.⁶⁸ Moscow has traditionally insisted upon the removal of US nuclear weapons

from Europe before it engages with Washington and NATO on accounting for and reducing these weapons. However, some analysts believe Russian nuclear strategy today includes a significant role for TNW. For example, Kristensen and Korda argue that some TNW "potentially could be used if Russia was losing a conventional war with NATO".⁶⁹

Analysts explain the fact that Russia continued to maintain a large 'tactical' nuclear arsenal after the end of the Cold War by its perceived need to respond to NATO's superior conventional military forces.⁷⁰ As Amy Woolf notes, in recent times it has often been claimed by "analysts both inside and outside the U.S. government" that Russia has a policy of "escalate to de-escalate". This essentially means that a key part of Moscow's nuclear doctrine is that to de-escalate a non-nuclear (conventional) conflict, Russia would escalate it first through the threat of a limited or tactical nuclear strike. However, as Woolf also notes, this "interpretation" of Russia's nuclear doctrine is disputed by "Russian officials, along with some scholars and observers in the United States and Europe."⁷¹

According to some experts, TNW have an increasing prominence in Russia's doctrine as a result of the Ukraine war. The authors of the *Ending Tactical Nuclear Weapons* report argue that Russia is "mostly isolated" in having a "wide-ranging warfighting utility for its tactical nuclear weapons," whilst acknowledging that "public perceptions" of Russia's nuclear doctrine may be "incorrect."⁷² Until recently, the United States was the only nuclear possessor to practice nuclear 'sharing'. Then, in 2023, President Putin announced that Russian TNW had been deployed to Belarus. Analysts, such as Olga Karach, have pointed out that Russia retains full control of these warheads.⁷³ Questions remain, however, as to whether these warheads have in fact been deployed in Belarus. There are also concerns regarding Russia's deployment, in 2016, of nuclear capable short-range missiles to Kaliningrad, which lies between Poland and Lithuania.⁷⁴

In May 2024 Russia announced that it would hold exercises to test the readiness of its "non-strategic" nuclear weapons.⁷⁵ The exercises—which Claire

Mills noted—were the first of their kind, were framed by Moscow as a direct response to NATO countries' "highly destabilising actions." For example, Russia objected to suggestions that Western troops could be sent to Ukraine and that Ukraine was permitted to use Western-supplied equipment to strike targets in Russian territory.⁷⁶ Despite a burgeoning strategic partnership between Beijing and Moscow, potential conflict with China is also an issue for Russia, with whom it shares a long border. An investigation in 2024 by the Financial Times discovered that Russia had rehearsed using TNW to respond to a Chinese invasion. The article, based on leaked military files, "describe a threshold for using tactical nuclear weapons that is lower than Russia has ever publicly admitted."⁷⁷

In November 2024 Russian President Putin signed an executive order approving "the fundamentals of Russia's state policy in the field of nuclear deterrence." This declaration sets out Russia's nuclear weapons use doctrine. The revised guidelines now refer to "a critical threat" to "sovereignty" as well as the "territorial integrity" of Russia and Belarus.⁷⁸ However, whilst the document publicly lowers the threshold for nuclear use, Kristensen warned that it was for "public consumption and propaganda", so that it remains unclear whether Russia's actual nuclear weapon use policy has changed. Whilst Russia's nuclear doctrine is contested by experts, what is generally accepted is that Russia is substantially modernising its nuclear arsenal, including the delivery systems for its non-strategic weapons, with new variants being introduced.⁷⁹ NATO's *2022 Strategic Concept* stated that this process includes Moscow "expanding its novel and disruptive dual-capable delivery systems, while employing coercive nuclear signalling."⁸⁰

China

China does not define its shorter-range nuclear weapons as tactical, although the US military does.⁸¹ Experts disagree on whether China has ever developed or deployed TNW, or would use nuclear weapons in a limited manner.⁸² China is generally seen as being more responsible than Russia when it comes to nuclear weapons policy,

hitherto focusing on minimum deterrence. Since acquiring the bomb in 1964, China, for many years, possessed only a small number of nuclear weapons, which were, Jeffrey Lewis observed, "based largely on a single mode of delivery, kept off alert and under the most restrictive declaratory posture—a categorical no first-use pledge."⁸³ According to nuclear expert Tong Zhao, Chinese nuclear strategy was thus "modest" and "prioritized achieving nuclear stability with the Soviet Union and the United States."⁸⁴ In recent years, however, Zhao explains, China's:

"nuclear expansion, increasing interest in new nuclear postures such as launch-under attack, and its declared ambition to build a 'powerful strategic deterrent capability system' raise urgent questions about whether China still commits to the traditionally limited goal of maintaining nuclear stability with the United States."⁸⁵

The estimated size of China's nuclear arsenal increased from 500 warheads in January 2024 up to 600 in January 2025, and it is expected to keep growing over the next decade.⁸⁶ Some experts also believe that China's cautious nuclear policy could be shifting. China is closely watching the Russia-Ukraine war and the major power's nuclear behaviour.

Analysts such as Greg Weaver have considered the possibility that China could consider using TNW during a conflict over Taiwan. Beijing may thus now be rethinking its No First Use (NFU) policy. For example, Weaver argues that "China's nuclear forces potentially play both deterrence and warfighting roles in a Taiwan invasion scenario. Only some of those roles are consistent with China's declared policy of "No First Use" of nuclear weapons."⁸⁷ However, for Zhao, the risk "is relatively low" that China would break its NFU pledge and use nuclear weapons first "if it were losing a conventional war over Taiwan." Instead, he argues that "it is increasingly likely that China could engage in explicit nuclear signaling tactics" and "may respond to a Taiwan conflict" by seeking "escalation management capabilities" potentially consisting of more "accurate" nuclear missiles capable of overcoming US missile defence

systems.⁸⁸

Nuclear doctrines of other nuclear armed states: France, India, Israel, Pakistan, North Korea

Of the 'smaller' nuclear possessors, only Pakistan has explicitly developed 'tactical' nuclear weapons as part of its expanding nuclear arsenal. Pakistan claims that this has been done to counter-balance India's superior conventional military forces.⁸⁹

India has chosen not to develop TNW, according to several sources, and does not believe that there is a distinction between tactical and strategic uses of nuclear weapons.⁹⁰ Whenever flashpoints occur between India and Pakistan there is always the potential for nuclear escalation. The tensions over Kashmir in April 2025 thus led to the spectre of nuclear conflict between the two nations being raised once more.

Analysts have expressed different views regarding France's 'sub-strategic' nuclear capability.⁹¹ For example, Claire Mills states that Paris retains a strategic and tactical nuclear capability.⁹² However, Bruno Tertrais has commented that, for Paris, "since 1996 all nuclear weapons are explicitly considered "strategic". He goes on to note that, "the same logic seems to be increasingly in use in NATO circles."⁹³

Avner Cohen has stated that Israel "opted to refrain" from developing TNW in the later 1970s, when it was acquiring its nuclear force.⁹⁴

North Korea claims it has a TNW capability, but it has not been possible to verify this.⁹⁵ Some experts argue that Pyongyang would use TNWs for coercive purposes, rather than to deter an aggressor, for example, the United States. North Korea already uses its missile and nuclear capabilities as political tools to influence the US and other regional states so it can gain economic and security advantages.⁹⁶

1.2 Understanding the UK's new nuclear mission

The UK Government published its latest *Strategic Defence Review* (SDR) in May 2025. The main theme of the review was the need for the UK, as a nation, to move to "warfighting readiness" and thus increase its military budget to 2.5% of GDP. This decision was officially justified by the "multiple, direct threats" to the UK's "security, prosperity, and democratic values".⁹⁷ Of these, the threat posed by Russia to the UK and its allies was singled out.

In an interview with the Guardian in June, Fiona Hill, one of the three reviewers of the SDR, stated that "Russia was already 'menacing the UK in various different ways'... The conclusion, Hill said, was that 'Russia is at war with us.'"⁹⁸ The claim that the UK is being directly menaced by Russia was challenged by several leading political and academic figures (including Lord Robert Skidelsky), in a letter to that newspaper, who argued that Hill's "assessment of the Russian threat to Britain is a classic example of how a seemingly rational argument based on a false premise and scanty evidence can lead to a mad conclusion".⁹⁹

Further military spending increases are now on the cards for the UK. Prior to the June 2025 NATO summit, the Government announced in its Spending Review a "new commitment" to spend 5% of GDP "on national security", entailing "a projected split of 3.5% (core defence) and 1.5% (resilience and security)... with a target date of 2035."¹⁰⁰ This became a NATO-wide commitment at the June summit.¹⁰¹ Nuclear weapons are a key driver of increased UK military spending. According to a 2024 report by the International Campaign to Abolish Nuclear Weapons, the UK spends the greatest proportion of its defence expenditure ("about 12%" for 2022 / 23) on nuclear weapons out of the nuclear armed states.¹⁰² UK spending on nuclear weapons and submarines now takes up nearly 20% of the UK's annual defence budget, and is forecast to consume almost 40% of Ministry of Defence (MOD) equipment spending between 2023 and 2033.¹⁰³

Joining NATO ‘nuclear sharing’

The UK’s nuclear weapons spending is only set to increase further following recent announcements. A report in *The Sunday Times* in May 2025 revealed that the MOD had held discussion with US officials concerning the acquisition of US fighter jets capable of carrying B61-12 nuclear bombs.¹⁰⁴ The SDR itself recommended that the UK should commence “discussions with the United States and NATO on the potential benefits and feasibility of enhanced UK participation in NATO’s nuclear mission”.

Significantly, the Review also emphasised that it was “imperative” that the UK continued to provide “leadership within the NPT.” To achieve this, it was argued, a “strong NATO nuclear mission” is “essential,” because this is “one of the most significant non-proliferation tools available to assure Allies that they do not need nuclear weapons of their own”. This statement, and the UK’s subsequent actions, can be seen as justifying an expanded nuclear posture (i.e. vertical proliferation) in order to prevent horizontal proliferation.¹⁰⁵

An interview with Lord Robertson—one of the other reviewers of the SDR—in the *Daily Telegraph* last June stated that, with reference to the SDR’s recommendation: “some have taken that to mean mounting air-dropped nuclear-bombs on F-35As jets, but Robertson says: ‘It’s not in the report because we found a huge diversity of opinion about that, ranging from the best nuclear platform to the suitability of the F35.’”¹⁰⁶ Later that month, Lord Robertson was also reported as stating, during an evidence session with the Defence Committee, that such an acquisition was considered by the SDR’s authors, going on to say that, “the fact that it’s not there indicates that we weren’t terribly enthusiastic about it... We said it should be the subject of further discussion. We did not rule it out.”¹⁰⁷

However, before the NATO Summit in June, the UK announced the purchase of twelve F-35A fighter jets.¹⁰⁸ These aircraft will be located at RAF Marham, which was one of several RAF airbases, in the UK and overseas, where the UK once housed its air-launched nuclear bombs, until

they were decommissioned in 1998.¹⁰⁹ Robertson later commented—referring to the SDR—that, despite his misgivings, the Government had “made a decision independent of the review” to participate in NATO’s dual capable aircraft (DCA) arrangement.¹¹⁰ US-owned B61 bombs are located in five European countries (Belgium, Germany, Italy, the Netherlands and Turkey, with the UK becoming the sixth host) as part of NATO ‘nuclear sharing’. All of the NATO members hosting these bombs (which are being replaced with the new B61-12 variant) are purchasing the F-35A to carry them and replace their existing aircraft, except Turkey.¹¹¹ Wolfgang Richter, retired army colonel of the German Federal Armed Forces, has commented that the new guided tail kits of the B61-12, the stealth-capability of the F-35A, and conventional support for potential nuclear strike operations are:

“meant to increase the penetration capability of tactical nuclear operations and the precision in delivering TNW on the selected target in a potential nuclear warfighting scenario. It is noteworthy that the US initiated building such capabilities long before Russia launched its full-scale invasion into Ukraine”.¹¹²

The UK’s hosting of B61-12 bombs represents a significant expansion in the UK’s nuclear posture. As the chair of the Defence Select Committee, Tan Dhesi MP, outlined in his urgent question to Parliament on 2nd June, these developments raise several issues of the highest importance for the UK’s nuclear weapons policy.¹¹³ Moreover, former UK Defence Secretary, Lord Des Browne, recently commented that, “It is a matter of some concern to me that twenty-five years later it is a Labour Government that is set on re-acquiring this capability in the UK.”¹¹⁴ The Government must therefore explain what rationale it is using to justify the UK joining NATO’s nuclear sharing arrangement. An explanation is urgently needed so that the public and parliamentarians can properly assess the decision. The current lack of transparency and parliamentary oversight raises multiple concerns—explored further below.

Justifications for the decision

Whilst the Government has neglected to provide a detailed justification for its nuclear decision-making, beyond its explanation in the 2025 SDR, the rationale for a new 'tactical' nuclear capability has been put forth by several pro-nuclear voices over the past year. These arguments focus on a so-called 'gap' in the UK's deterrence posture, and the idea that Russia may use a nuclear bomb to prevail in its war with Ukraine, or against a NATO member in Eastern Europe. For example, Andrew Brookes (former V bomber pilot and the last operational Commander at RAF Greenham Common airbase) has argued that "every few days, some Russian official brandishes a tactical nuclear sabre, and we must be able to respond with something less awesome than Trident."¹¹⁵

Put another way, there is a concern that the UK would not respond to a low-yield Russian nuclear strike against British allies or interests with a Trident missile, and would thus be self-deterred. This is because, whilst it is possible that the UK is still able to use a 'sub-strategic' nuclear weapon—which some experts believe it retains with Trident—adversaries (i.e. in Moscow) may believe, upon detecting a missile launch from a UK submarine, that it is a strategic, higher yield warhead, and respond in kind.¹¹⁶ Others argue that the UK would not use Trident for a sub-strategic strike as this would reveal the submarine's position and thus make it incapable of conducting a strategic launch.¹¹⁷

Eoin McNamara has argued that the UK should "augment" its nuclear forces, because "the US is the main backstop for NATO's extended nuclear deterrence," yet if this is "paralysed" by Trump, "more responsibility will fall to the UK and France to uphold NATO's full-spectrum of deterrence."¹¹⁸ Elsewhere, James Rogers and Marc De Vore have argued that it is important for the UK to acquire its own TNWs so as not to let France provide European NATO members with a nuclear "umbrella", which would reduce the UK's strategic influence on the continent.¹¹⁹

Notably, in July 2025 the UK and France

announced the Northwood Declaration, to "deepen their nuclear cooperation and coordination".¹²⁰

A comment piece by IISS observed that this arrangement would provide a "possible backstop should the United States' nuclear commitments to Europe be weakened or withdrawn" and "raise the UK's status" because "London can now claim the role of a nuclear bridge between Washington and Paris."¹²¹

Concern has also been expressed by David Blagden that the UK's ballistic missile submarine (SSBN) fleet is under severe strain, so that the UK's nuclear forces need "augmenting just to preserve existing credibility".¹²² Another reason suggested regarding why the UK may be joining NATO's 'nuclear-sharing' arrangement, is that it will assist with making attacks against the alliance's nuclear sites more difficult by distributing its forces across more locations.¹²³ Finally, it is also possible that NATO nuclear weapons that are currently in Turkey may be withdrawn, for security reasons, and that they may be moved to the UK.¹²⁴

Notably, the idea of the UK acquiring an air-launched nuclear capability (albeit instead of, rather than alongside, SSBNs) was explored in 2012 in the then coalition Government's Trident Alternatives Review, and, reportedly, in 2016 by the Labour Party when Jeremy Corbyn was leader.¹²⁵ Interestingly, then Labour MP Kevan Jones produced a critical assessment of the proposal for the UK to acquire F-35s armed with B61-12 bombs instead of the Trident system—which had been made by Toby Fenwick, who was an adviser to the Liberal Democrats. Jones' review is notable as it contains several points of relevance to current developments. For example, he focuses on three areas of criticism: the negative impact of such a move on the UK's non-proliferation and disarmament commitments; the limited capability of F-35s, which would not provide "credible deterrence"; and the costs involved in acquiring F-35s.¹²⁶

The UK has two (non-conventional) options for arming its F-35As. It could either develop its own 'non-strategic' nuclear capability, including new warheads, and / or host US B61-12 bombs.

Although the UK is currently pursuing the latter option, the problem with deploying off-the-shelf US nuclear weapons is that Washington is not as reliable a partner as in the past. Some therefore argue that it would be better for the UK to develop a sovereign tactical nuclear capability.¹²⁷ Owing to the cost and time involved in this endeavour, and the UK's poor record of domestic military procurement, however, it is much more likely, as noted above, that the UK will continue opting to take part in NATO's 'nuclear-sharing' arrangement.

Objections to the UK participating in NATO nuclear sharing

Critics of the UK participating in NATO nuclear sharing make several objections, including:

- The use of B61-12 nuclear weapons would involve a significant escalation. As Marion Messmer, Senior Research Fellow at Chatham House, notes, "Even the use of a low-yield nuclear weapon would represent a massive escalation that would bring unimaginable death and destruction, risking the spread of radiation far beyond its target area. In other words, any escalation to the nuclear level would carry massive consequences for the side that uses such a device."¹²⁸
- Acquiring an additional nuclear weapons platform amounts to vertical proliferation. This move would thus damage the nuclear non-proliferation and disarmament regime by potentially breaching the NPT.¹²⁹ NATO argues that nuclear sharing is not illegal under the NPT because the US retains custody of the weapons.¹³⁰ However, critics such as Offried Nassauer have pointed out that "according to the current understanding of most non-NATO parties to the NPT, NATO nuclear sharing probably violates Articles I and II of the Treaty".¹³¹ In the case of the UK, as a nuclear weapon state, only Article I would be relevant here.

Lord Browne has also drawn attention to the implications of the UK's F-35A acquisition for its obligations under the NPT, commenting that:

"Given that the (strategic defence) review also

reaffirmed the necessity of continued leadership within the NPT, it's not impossible to discern some creative tension between these two suggestions. I fear reacquiring tactical nuclear weapons may be interpreted as a breach of the irreversibility of disarmament as affirmed by the NPT Review in 2000, which we were at the vanguard of doing."¹³²

This comment relates to the UK's decision to relinquish its previous air-launched nuclear weapons in 1995, which is explored further below. Moreover, the NPT Review Conference is in 2026 and the UK is chairing the P5 process (involving China, France, Russia, the UK and the US) in 2025 / 26, so the UK should be acting to decrease rather than increase the salience of nuclear weapons in its security policy at this time.

- The UK's nuclear weapons budget is already skyrocketing. The UK spent £10.9 billion on its 'defence nuclear enterprise' in 2024, which is about 18% of the entire defence budget.¹³³ The cost of the UK joining NATO's nuclear sharing arrangement will likely be in the hundreds of millions (if not billions) of pounds. This is because it will not only involve the F-35A purchase and the UK potentially contributing to the cost of B61-12 bombs; but also refurbishing RAF bases to a high safety specification; as well as recruiting and training mission crews.¹³⁴ Acquiring this weapon system thus presents huge opportunity costs, to either civil goods and services or other military capabilities.¹³⁵
- NATO already has sufficient conventional and nuclear capabilities, which are more than capable of responding to potential adversaries. These include the UK's own Trident system (which is assigned to NATO) and NATO's existing nuclear forces. Lord Robertson himself has noted that the UK could purchase conventional munitions to "fill" any "gap" not met by Trident.¹³⁶ In addition, it is unclear what mission the UK-hosted B61-12s would have and what targets they would strike.¹³⁷ There are also technical considerations concerning range and refuelling which would make this option challenging to execute.¹³⁸
- There has been no public consultation, and little

sustained debate in the UK media or parliament, on recent decisions concerning nuclear sharing, or hosting US nuclear bombs on the British mainland. This again highlights the lack of democracy, transparency and accountability concerning the UK's nuclear weapons programme. The refurbishment of RAF Lakenheath, presumably to host US B61-12 bombs, only became clear in 2022 following the release of documents by the US Department of Defense.¹³⁹ The UK formerly hosted US nuclear weapons until 2008. As the Federation of American Scientists note regarding this move, "the addition of a large nuclear air base in northern Europe is a significant new development that would have been inconceivable just a decade-and-a-half ago."¹⁴⁰

- Public opinion polls show significant opposition to deploying US nuclear weapons in the UK. For example, a January 2023 study conducted by Savanta for British Pugwash showed that "British public opinion is split over allowing the US to deploy nuclear weapons on UK territory". The poll found that "34% of UK adults oppose, and 32% support, allowing the US to again station nuclear weapons in the UK"¹⁴¹. An August 2023 poll conducted by YouGov for CND asking "Would you support or oppose allowing the US to station nuclear weapons in Britain?" found that 20% were somewhat opposed while 39% were strongly opposed.¹⁴² More recently, a May 2025 YouGov poll found that 61% of British respondents were opposed to the US stationing nuclear weapons in the UK, with 24% supportive.¹⁴³

- A recent study by Dr Peter Burt argues that the UK Government's decision to join NATO nuclear sharing is principally about "providing political 'smoke and mirrors' to distract attention from questions relating to the US – Europe relationship within NATO rather than developing a must-have military capability".¹⁴⁴ Linde Desmaele, Assistant Professor of Intelligence and Security at Leiden University, has similarly observed that the value of US TNWs in Europe is not "primarily" about "deterrence or reassurance," but the role these weapons have as "tools of alliance management".¹⁴⁵ The UK's acquisition of the F-35As—which will not be delivered until 2030—and

hosting of B61-12 bombs, can thus be seen as a way of bolstering the alliance and the UK's place within it rather than directly contributing to national security.¹⁴⁶ Dr Phil Webber also suggests that the move is an "expensive political gesture that panders to the US," which will provide the aircraft, and make the UK "dependent on regular US software upgrades and parts."¹⁴⁷

- It is hard to envisage circumstances where the use of nuclear weapons, including those in the 'non-strategic' category, would meet international humanitarian law provisions concerning discrimination and proportionality.¹⁴⁸

In conclusion, the UK's decision to join NATO's nuclear sharing mission should be opposed on several grounds. The timing of the decision is particularly bad given that the UK is chairing the P5 process and the NPT Review Conference is in 2026. Parliamentarians and civil society groups should seek to discover more information on these issues and the process by which decisions have been made by the government, including by posing the following questions:

- What is the government's / MOD's rationale for the potential hosting of US TNWs e.g. F35As carrying B61-12 bombs? Moreover, will the government explain what has changed since the 1995 decision to withdraw the UK's 'sub-strategic' nuclear capability (the WE177 free fall-bomb) that warrants acquiring this capability?
- Will the government provide information on discussions it has had with the US and other NATO allies (particularly France and Germany) on this matter?
- What options and platforms for a potential TNW capability are under consideration by the government? What costings and plans have been produced, including for producing a new UK 'tactical' warhead in the UK?
- Will the government provide information on the stationing of US-owned nuclear weapons at RAF Lakenheath, including costs and discussions on this matter with US officials?

- Will the government restate its commitment to the CTBT; and to not undertaking nuclear weapons testing in support of any new nuclear weapons projects, as it has done with the Astraea warhead which the UK is developing?
- What are the implications of US involvement in the options for UK F-35s carrying nuclear gravity bombs that appear to be on the table (including nuclear sharing; or domestically produced versions of the B61 bomb), and how does the government respond to the argument that this arrangement will increase UK dependence on the US?

Box 1: UK nuclear history

As Professor Paul Rogers has explained, the UK formerly had a range of tactical / sub-strategic nuclear capabilities whose role extended beyond deterring an attack on the UK.¹⁴⁹ The WE177 tactical nuclear bomb was carried by RAF aircraft, while army tactical missile systems were also part of the UK's nuclear arsenal. The WE177 bombs, the UK's last 'tactical' nuclear capability, entered into service in 1966.¹⁵⁰

The decision to relinquish the UK's WE177 bombs was taken in 1995 by the Conservative Government. These weapons were removed from service in 1998 and the replacement missile system was cancelled.¹⁵¹ These decisions were taken for several reasons, including cost-savings and the entry into service of the Trident nuclear weapon system.¹⁵²

The UK's current position regarding the 'sub-strategic' or 'tactical' capability of its Trident nuclear weapons system is somewhat unclear. The UK stopped using the phrase 'sub-strategic' in relation to its nuclear weapons in 2006.¹⁵³ However, several experts believe the UK retains such a capability.¹⁵⁴

1.3 To what extent are current nuclear plans a change from previous conflicts and periods? What are the consequences of these developments?

One way of considering how the nuclear policy of the major powers has evolved is to compare key developments across the three 'nuclear ages,' as analysed by Professor Andrew Futter: the first nuclear age (1945-1990), the second nuclear age (1991-2010s), and the third nuclear age (2010s-present).¹⁵⁵

The main conflicts in the first nuclear age were WW2 and the Cold War (which also included several regional conflicts). During this age the nuclear policy of the two superpowers—the United States and the Soviet Union—dominated and nearly led to nuclear use on several occasions, including, most notably, during the Cuban Missile Crisis in 1962 and NATO's Able Archer exercise in 1983.¹⁵⁶ These incidents of near use owed as much to accidents, miscalculation and incorrect information as purposeful intent.

The superpower rivalry evolved in relation to military, technological, political and strategic developments. Key technological advances included: the development of the H-Bomb; the intercontinental ballistic missile (ICBM) and the nuclear triad—a three-pronged military force structure of land-based ICBMs, submarine-launched ballistic missiles and strategic bombers with nuclear bombs and missiles. In addition, during this period, the US deployed TNWs in response to the USSR's conventional military superiority in Europe, whereas this situation was reversed in the second and third nuclear ages. Elsewhere, the authors of the *Ending Tactical Nuclear Weapons* report argued that in the late Cold War, "the world's major nuclear powers and their allies were moving away from viewing nuclear weapons as having warfighting utility and more toward nuclear weapons serving the narrower purpose of deterrence."¹⁵⁷

The second and third nuclear ages cover the

post-Cold War period, which began with the possibility of a peace dividend and détente with Russia, before moving to the US's 'unipolar moment.' Thereafter followed NATO expansion, US wars of regime change and counter-terrorism, the rise of China (as part of the BRICS group of states), Russian military adventurism in Europe, Syria and Africa, the emergence of disruptive and dual-use military technologies (such as artificial intelligence, autonomy, cyber warfare, hypersonic systems, space systems and quantum technologies), the decline of the international 'liberal' order, rising authoritarianism, declining democracy, and the onset of great power competition.

Susan Breau observes that during the administration of President George W. Bush, "officials argued the US should develop and deploy not only low-yield mini-nukes but higher-yield bunker busters. The purpose of these weapons was for use in conflicts with Third World countries or for attacks on terrorist groups."¹⁵⁸ The 2010 US NPR continued to identify the "main threat" as being "nuclear terrorism." As Oliver Thränert notes, since that review, there have been "massive shifts in the international environment". These include the revived enmity between the US / NATO and Russia following Russia's annexation of Crimea in 2014, and its subsequent invasion of Ukraine.

Moreover, he reflects, China's assertive approach in Asia is "challenging Washington's allies", and it is also engaged in a substantial nuclear build-up.¹⁵⁹ Hawks in Washington have thus recently argued that the US is in a two-peer nuclear competition with Beijing and Moscow and are calling for the US to pursue its own nuclear expansion—in addition to its current comprehensive nuclear modernisation programme involving the replacement of every major US delivery system and upgrades to its nuclear command and control infrastructure.

The 'third nuclear age', involves the rapid development of hi-tech warfare and the mixing of conventional and nuclear forces for strategic missions. As Futter explains:

"technological innovation across a range of weapons and supporting capabilities has the

potential to undermine nuclear weapons systems previously thought of as being relatively secure, this in turn may create the political space for greater risk taking, strategic coercion, or even facilitate pre-emptive or disarming conventional counterforce strikes; these capabilities are being developed by all leading NWS."¹⁶⁰

In recent years, nuclear warfighting has also re-emerged, to varying extents, in the doctrines and policies of the major powers. As we have seen, the United States is developing more 'useable' lower-yield nuclear weapons like the W76-2 and B61-12. Yet if strategic stability is to become embedded amongst the major powers, it is necessary to ensure that no nuclear possessor feels that they would benefit from using nuclear weapons. Arms control can support stability by limiting the size and type of weapons, as well as instituting transparency and confidence-building measures. However, as SIPRI observe, not only is a "new arms race" looming, but arms control regimes have been "severely weakened."¹⁶¹ Moreover, as noted above, so-called TNWs have mostly not been subject to arms control or disarmament regulations.¹⁶²

In terms of thinking about how the impasse on nuclear arms control and disarmament between Washington and Moscow may be overcome, the Russian perspective needs to be considered. For several years, Moscow's view has been that it is at a notable disadvantage in terms of the overall military balance with NATO, especially given US advances in ballistic missile defence and conventional strategic weapons. Together, these capabilities pose a serious threat to Russia's nuclear arsenal, particularly if it continues to reduce in size over time.¹⁶³ As Anya Loukianova Fink and Olga Oliker observe, "Russia nurtures longstanding concerns about the vulnerability of its ability to engage in nuclear retaliation in the face of evolving U.S. capabilities and Washington's deployment of strategic assets worldwide."¹⁶⁴ This situation explains why President Putin stated in 2012 that his nation would develop "high-precision weapons" in order to "overcome any missile defence system and protect Russia's retaliation potential".¹⁶⁵

In addition, Fink and Olikier note that Russia's nuclear modernisation has been driven by the decline of arms control agreements and "evolutionary U.S. and allied capabilities."¹⁶⁶ It is important to recognise that both Russia and the US must take their share of the blame for the decline of nuclear arms control and disarmament, though it is important to differentiate between the two state's relative responsibility for the current situation, for example, concerning key agreements such as the Comprehensive Nuclear-Test-Ban Treaty (CTBT), NPT, Anti-Ballistic Missile Treaty (ABMT) and the INF Treaty.

With the CTBT, Steven E. Miller (Director of the International Security Program at the Harvard Kennedy School) has highlighted how the US has "failed to ratify the agreement" so that it cannot enter into force until Washington and others, "formally adopt the treaty." Moreover, Miller notes that the US's withdrawal from the ABMT in 1972, "eliminated what had been regarded as the essential foundation of strategic arms control and opens up the possibility that the offense-defense dynamics feared in the earlier years of the nuclear age might resurface."¹⁶⁷ Russia and the US share responsibility for the decline of the INF given Moscow is in violation of the agreement, though several experts argue that Washington should have done more to preserve it.¹⁶⁸

Russia and the US's commitment to conventional and nuclear weapons modernisation, in addition to the dire and volatile state of their relationship (notwithstanding efforts by the Trump administration to reset it and improve diplomatic and economic interactions), means that achieving progress on nuclear arms control and disarmament is thus likely to continue to be difficult in the near-term. Yet opportunities still exist on the domestic and international fronts, including for NATO member states to press for the withdrawal of US nuclear weapons from Europe. Reducing and eliminating Russian TNWs is a greater challenge and will likely at least require cordial relations between Moscow and Washington. If Russia is to move towards making deeper cuts across its nuclear arsenal then this will also likely require significant domestic reforms to improve the

democracy, transparency and accountability of its political system.¹⁶⁹

Summary

The severe challenges to strategic stability between the major powers are a key concern as the current geopolitical outlook is poor and could quickly worsen. Negative contributing factors, which often overlap, interact with and drive one another, include: the spread of regional conflict and tension; rising incentives and pressure for national leaders to consider nuclear use options (particularly for China, Russia and the United States); widespread nuclear modernisation—which includes in some cases more 'usable' nuclear options; the rapid erosion of arms control and disarmament regimes; and the re-emergence of nuclear warfighting doctrines.

Existential dangers are thus ever more threatening, and are rising. The possibility of renewing existing nuclear treaties, or crafting new agreements and 'rules of the road', is made more difficult both by the nature of new technologies (such as AI and cyber), ongoing hostilities, and a lack of trust and goodwill between the major powers. The restoration of strategic stability requires reviving diplomacy and disarmament negotiations to address the pressing contemporary problems of regional and global security.

Chapter 2: The erosion of the nuclear taboo and the risk of nuclear war

2.1 Is the nuclear taboo eroding?

The renowned international relations scholar Nina Tannenwald elaborated the concept of the nuclear taboo in her 2007 book, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons Since 1945*. This section begins by exploring this concept, before considering what might incrementally erode such a taboo—including, for example, nuclear threats or signalling—short of actual detonation.

Tannenwald argued in the aforementioned work that “the ‘nuclear taboo’ refers to a powerful de facto prohibition against the first use of nuclear weapons. The taboo is not the behavior (of non-use) itself but rather the normative belief about the behavior.” She goes on to state that, “it is widely acknowledged today among nuclear policy analysts and public officials that a ‘nuclear taboo’ exists at the global level. It is associated with widespread popular revulsion against nuclear weapons and widely held inhibitions on their use.”¹⁷⁰ Tannenwald argues that the ‘nuclear taboo’ helps explain “why the United States has not used nuclear weapons since 1945.” She therefore challenges a narrower deterrence-based explanation of non-use and claims that norms constrain military capabilities and the practice of “self-help” by states.¹⁷¹ Notably, Tannenwald distinguishes the taboo from the idea of a “tradition” of non-use, an idea which Professor of Political Science at Stanford University, Scott Sagan, and the Canadian political scientist T.V. Paul, have advanced.¹⁷²

In addition to providing an alternative explanation to the phenomenon of nuclear ‘non-use’, Sagan challenges the nuclear taboo concept. For example, he has commented (in an article with Benjamin Valentino) regarding US public opinion on nuclear use, that “When provoked, and in conditions where saving U.S. soldiers is at stake, the majority of Americans do not consider the first use of nuclear weapons a taboo, and their commitment to noncombatant immunity in wartime is shallow”.¹⁷³ This point raises the important question of whose ‘norms’ are being considered in this discussion,

as well as how deep and wide such norms are amongst different groups? For example, to what extent is the taboo embedded in the thinking of political and military elites and experts in nuclear possessor states, or the citizens of these countries?

Another international relations scholar, Joshua A. Schwartz, has similarly argued that: “optimists significantly overstate the strength of the norm against nuclear use. In particular, public support for nuclear weapons use—even by foreign countries—is shockingly high. Policymakers have also seriously considered nuclear use on many occasions. Regrettably, there appears to be no nuclear taboo.”¹⁷⁴

Does this mean that the nuclear taboo is overstated? Tannenwald’s own assessment in 2018 was that, despite “some developments” seeking to “strengthen” it—such as the nuclear ban treaty—the nuclear taboo is “under pressure”. This is a result, she wrote, of “renewed major power rivalry, bellicose rhetoric, fading memories of Hiroshima, and increasing reliance on nuclear weapons in nuclear states’ military doctrines”.¹⁷⁵

The main case to consider regarding the robustness of the taboo today is the Russia-Ukraine war, and how this has impacted on the strategic calculations and treatment of nuclear policy by the nuclear powers (primarily Russia, the US and China). In 2022 Tannenwald thus asked whether the nuclear taboo was still effective, observing that “the worry is that if the war continues going badly for Russia, Putin might reach for a tactical nuclear weapon...out of frustration.”¹⁷⁶ Several months later, Tannenwald observed that the taboo restraining Russia and NATO from nuclear use “continues to hold.” In the case of the former, this was because, she argued, world leaders had made clear to Putin that “nuclear use would be unacceptable” so that “a Russia that breaks the taboo would instantly become a pariah.”¹⁷⁷

However, there is no reliable way of knowing

whether Putin ever seriously considered the use of nuclear weapons (for example, given the uncertain consequences), or whether the threat itself was designed to have a deterrent effect via signalling alone. Military analysts therefore had to make best guesses as to what the implications of the Russia-Ukraine war would be, based on how it proceeded. For example, Lt. Gen. Scott Berrier, director of the US Defense Intelligence Agency, wrote in a 2022 report that:

“As this war and its consequences slowly weaken Russian conventional strength, Russia likely will increasingly rely on its nuclear deterrent to signal the West and project strength to its internal and external audiences.”¹⁷⁸

On the other hand, in her 2023 study of Russian sources and debates, Lydia Wachs concludes that whilst Russian elites “valued nuclear threats,” the deterioration in the nation’s conventional forces resulting from the war with Ukraine, “does not appear to have caused a move toward a lowered nuclear threshold.”¹⁷⁹

It may not be possible, however, to draw an informed conclusion regarding the Kremlin’s nuclear thinking from a review of Russian nuclear signalling, since these activities have limited value in terms of revealing the degree to which any Russian ‘taboo’ on nuclear use has eroded. Nonetheless, the House of Commons Library briefing *Russia’s use of nuclear threats during the Ukraine conflict* includes a useful timeline of “Russian nuclear pressure” from the beginning of 2022 to the end of 2024. The timeline highlights prominent statements and actions from Russian President Vladimir Putin, Foreign Minister Sergei Lavrov and Dmitry Medvedev, Deputy Chairman of the Russian Security Council, whom, the author notes, “frequently refer to Russia’s nuclear arsenal within the context of Ukraine.”

The entries in the timeline for 2022 include the following statements:

- 24 February – President Putin warned against any interference in Ukraine from outside or of a direct attack on Russia and said Russia would respond

immediately and the consequences would be “such as you have never seen in your entire history”.

- 27 February – President Putin orders Russian nuclear forces to move to a heightened status of alert. Putin said he was issuing this order in response to escalating economic sanctions and “aggressive statements” being issued by the West following Russia’s invasion of Ukraine.

- 12 May – Medvedev says NATO military aid to Ukraine risks conflict with Russia and “fully fledged nuclear war”.

- 21 September – In an address to the nation President Putin says that in the event of a threat to the territorial integrity of Russia, “we will certainly make use of all weapon systems available to us. This is not a bluff”.

- 30 September 2022 and 16 June 2023 – President Putin makes reference to the use of nuclear weapons in Hiroshima and Nagasaki, suggesting that the US had “created a precedent”.¹⁸⁰

A number of analysts weighed in on how President Putin’s behaviour had impacted upon the nuclear taboo during this time. It was instructive to note how views on Putin’s nuclear posturing evolved over the course of the war as experts sought to interpret his behaviour. For example, in October 2022 Swedish lawyer and former executive director of ICAN, Beatrice Fihn, highlighted Putin’s threats as “the latest evidence of the erosion of the nuclear taboo.”¹⁸¹ Around a year later, Lawrence Freedman argued that, “prompted by China, Putin may have appreciated that the nuclear taboo had not gone away, so that nuclear threats were backfiring.”¹⁸² In January 2023 Daryl Kimball thus argued that the nuclear taboo “remains strong for now” with Putin retreating from nuclear rhetoric following a “crescendo of global condemnation against nuclear threats of any kind from non-nuclear-armed states and later from nuclear-armed states, as well as Russia’s few remaining enablers.”¹⁸³ There was thus a growing sense amongst Western commentators that Putin’s nuclear rhetoric was hollow.

As evidence of Russia's warlike intent, much was made in Western media of Russian commentators' bellicose language around nuclear weapons. Yet Freedman argues that this posturing did not represent or affect the Kremlin's decision-making calculus.¹⁸⁴ Another source of evidence for Russian nuclear bellicosity cited in the UK media was data on Russian public opinion on nuclear use. The Daily Express reported in September 2024 that:

"a survey of Russians in July this year found that 34 percent would support the use of a nuclear weapon in the Ukrainian war. It marks the highest level of support for nukes since the war in Ukraine began. The findings from the Levada Centre show 31 percent are definitely against the use of weapons, while 21 per cent are likely against it."¹⁸⁵

Whilst these findings are significant, we should bear in mind Schwartz's observation that Russia is not the only major power whose citizens may, in particular circumstances, support nuclear use, based on the fact that, "experimental studies find that a majority or near majority of citizens in multiple major powers approve of their own governments' nuclear strikes if they create military advantages or protect co-national soldiers."¹⁸⁶ It is also reasonable to expect (as some recent studies suggest) that citizens in Western nuclear possessors will be more likely to indicate support for nuclear possession or use during periods of greater international tension or conflict.¹⁸⁷ Furthermore, some recent polling evidence from the UK shows that those sections of the public with existing preferences for nuclear possession may hold these views more strongly during wartime.¹⁸⁸

Looking more widely at the state of the nuclear taboo, and factors affecting it, it was notable that in January 2022 the members of the P5 signed the *Joint Statement of the Leaders of the Five Nuclear-Weapon States on Preventing Nuclear War and Avoiding Arms Races*.¹⁸⁹ China and the three NATO nuclear possessors therefore seek to present themselves as responsible powers by pointing to their careful approach to nuclear discourse and stewardship. For example, the UK states that it "would consider using our nuclear weapons only in extreme circumstances of self-defence, including

the defence of our NATO allies."¹⁹⁰ The UK's position is shared by France.¹⁹¹ China, meanwhile has repeatedly declared that it "undertakes not to be the first to use nuclear weapons at any time and under any circumstances".¹⁹² If we are to assess the extent to which nuclear possessor's action are impacting positively or negatively on the nuclear taboo, we need to consider such statements alongside these state's wider behaviour—including in terms of militarisation, nuclear modernisation, military deployments and diplomatic behaviour—and whether they are contributing to international peace, security and stability, or undermining it.

Whilst there has generally been continuity between the Biden and Trump administrations concerning nuclear modernisation, their nuclear rhetoric is quite different. For example, in his first Presidential term, Trump said North Korea "will be met with fire and fury" if it threatens the US, and in 2017 "cavalierly discussed the idea of using a nuclear weapon against North Korea" according to the White House chief-of-staff, John Kelly.¹⁹³ In March 2022, Trump also suggested that Biden should respond to Russia's invasion of Ukraine by threatening to destroy Russia with nuclear weapons.¹⁹⁴ Overall, Trump's approach to nuclear risk sharply differed from Biden's more measured approach. As Professor Caitlin Talmadge observed, "what has changed, unfortunately, is the propensity for Trump's tendencies to produce more serious nuclear risks."¹⁹⁵ Six months in to Trump's second term, this point was borne out when the United States followed Israel by bombing Iran's nuclear programme. For nuclear expert Tarja Cronberg, among others, these strikes were "illegal" and will "endanger the future of the NPT" by militarising non-proliferation.¹⁹⁶

Trump's critics are right to point to his unstable demeanour as eroding the nuclear taboo. However, his often wild and unpredictable public persona is not inconsistent with how top-level US planners have thought about nuclear brinkmanship. For example, the 1995 document published by US Strategic Command, entitled *Essentials of Post-Cold War Deterrence* outlined how "It hurts to portray ourselves as too fully rational and cool-headed...the national persona we project" should

make clear “that the U.S. may become irrational and vindictive if its vital interests are attacked” and that “some elements may appear to be potentially ‘out of control.’”¹⁹⁷ In addition, Trump’s predecessors, whilst claiming to be committed to reducing nuclear risks, pursued extensive nuclear modernisation and, in Biden’s case, did not stop the development of the nuclear weapons programmes Trump pursued in his first term.

Under Putin’s leadership, Russia has conducted military interventions in Chechnya, Georgia and Ukraine. In June 2022 Putin compared himself to Peter the Great in his quest for retaking “Russian lands”.¹⁹⁸ Historian Serhii Plokhyy has argued that the Kremlin has thus “jumped on the bandwagon of rising Russian nationalism, seeing in it an important tool to strengthen the regime both at home and abroad,” which includes the goal of keeping “the post-Soviet space within the Russian sphere of influence.”¹⁹⁹ Whilst Moscow’s recent behaviour means that it bears considerable responsibility for eroding the nuclear taboo, Washington’s triumphalist behaviour since the end of the Cold War—from the bombing of Yugoslavia, via NATO expansion, and withdrawal from key arms control agreements (such as the ABM Treaty, INF Treaty and Treaty on Open Skies), to the invasion of Iraq in 2003—has significantly damaged international peace and security, driven nuclear proliferation, and exacerbated nuclear risks. As respected commentator Joe Cirincione thus observes, there is nothing that the US did that “justifies what Putin is doing...but it has certainly set the stage for what Putin is doing”.²⁰⁰

If we accept Tannenwald’s concept of the nuclear taboo, it is thus reasonable to conclude that it is under significant challenge, which as Tannenwald herself observes, comes from many directions. The perception of many informed observers and experts is that the world is in increasing peril from the risk of nuclear use. Persistent conflict, ongoing militarisation and nuclear modernisation together build up a sense of pessimism or even inevitability that World War Three could soon start and nuclear weapons will likely be used in the near term, a perception that is held amongst large sections of the global public, according to recent polls in China,

the UK, US and elsewhere.²⁰¹ Whilst international institutions and moral opprobrium have hitherto acted as brakes on nuclear use, how long can this hold, especially with new and unpredictable leaders such as President Trump in charge, someone who does not subscribe to the same principles and strategies as his predecessors?

Moreover, Trump may say that he wants to “see if we can denuclearize,” working with China and Russia to reduce nuclear arsenals, and end the Russia-Ukraine war, but his track record of delivering on both these and his other key foreign policy goals, has been poor.²⁰² To make progress on the former, Daryl Kimball notes that Trump and Putin should “strike a simple, informal deal” to maintain the New START agreement after it expires in 2026. Such a deal would, Kimball argues, “reduce tensions, forestall a costly arms race that no one can win, and buy time for talks on a broader, more durable, framework deal,” whilst also providing “new diplomatic leverage to curb the buildup of China’s arsenal.”²⁰³

2.2 Is nuclear war a possibility?

Beyond the question of the nuclear taboo and first use is the broader question of nuclear war. The simple answer to the question of whether nuclear war is a possibility is: yes. This is because the possibility is built into nuclear possession, postures and doctrines. It would thus be hard to find anyone who has studied this field deeply who would say that nuclear war isn’t a possibility—but they would certainly have different views on how likely it is. Importantly, gauging whether nuclear war is possible is far easier than gauging how probable it is—an issue which is discussed later.

One of the key challenges with making assessments of this type is that ‘nuclear war’ means many different things to different people. As previously noted, various levels of nuclear conflict exist, ranging from a relatively low yield nuclear ‘exchange’, to an all-out nuclear conflagration. Nuclear conflict could also, in theory, involve any combination of the nuclear possessors, though there are obvious potential combatants including: the US and NATO vs Russia; and the US and

NATO vs China; the US vs North Korea; India vs China; and India vs Pakistan. Moreover, it is reasonable to propose that the layperson primarily conceives of nuclear war as involving Russia and the United States given their history and the fact that they possess 88% of the world's nuclear weapons.²⁰⁴

A more detailed answer to the question would need to look at the factors making nuclear war possible today. For some analysts, the short to medium term possibility of a nuclear war seems at least realistically conceivable, if not more likely than in previous periods. Looking at the longer term, scholars, such as Professor Nick Ritchie, also argue that at some point nuclear deterrence will fail as it cannot continue indefinitely.²⁰⁵ There are thus different ways of assessing or calculating such questions, which several experts have provided insights on.

For example, the Bulletin of the Atomic Scientist's assessment of the likelihood of nuclear war informs their Doomsday Clock, which is now set at 89 seconds to midnight, the 'latest' it has ever been. This assessment is based on the judgment of the Bulletin's Science and Security Board, which "tracks numbers and statistics—looking, for example, at the number and kinds of nuclear weapons in the world" and also "takes account of the pace of leaders' and citizens' efforts to reduce nuclear dangers."²⁰⁶

Whether a particular event or series of events will result in nuclear war is deeply uncertain, as are the consequences. To address this, Seth Baum, an American researcher involved in the field of risk research, has compiled sixty historical incidents that might have threatened to turn into nuclear war. He also identifies two main types of scenarios in which nuclear war could occur: intentional nuclear war, in which one side decides to launch a first-strike nuclear attack, as occurred in WW2; and inadvertent nuclear war, in which one side mistakenly believes it is under nuclear attack and launches nuclear weapons. Finally, there is information about specific events that may provide a guide to how and why nuclear war may happen, for example, the mental state of leaders of

nuclear armed states and developments in conflicts involving one (or more) nuclear powers, such as in the Russia-Ukraine conflict.²⁰⁷

Notably, whilst Baum and his co-authors highlight how their model can be "used to produce estimates for the probability of specific nuclear war scenarios and for the total probability of nuclear war across all scenarios," they point out that their paper does not attempt to "estimate these probabilities," because this "would require considerable guesswork and is likely to be quite mistaken".²⁰⁸

Elsewhere, Martin Hellman, an American cryptologist and mathematician, has provided a quantitative estimate of the "risk of a full-scale nuclear war," which is at roughly 1% per year. Hellman explains that this risk is "highly unacceptable," pointing out that "a child born today may well have less-than-even odds of living out his or her natural life without experiencing the destruction of civilization in a nuclear war".²⁰⁹

Other studies, such as that conducted by Jamie Kwong, Anna Bartoux and James M. Acton, have investigated the utility of forecasting in estimating "the overall risk of nuclear conflict" and providing decision makers with practical ideas on how to "reduce the likelihood and consequences of a nuclear war." The authors concluded that in addition to showing a "shocking" degree of "uncertainty" between experts concerning nuclear escalation dynamics, their study illustrates the benefits that forecasting can have in identifying and understanding disagreements amongst analysts. Whilst forecasting cannot "tell the decisionmakers how to act," it can thus highlight "the range of the possible" and the extreme dangers involved in a nuclear crisis.²¹⁰

Nuclear deterrence analyst, John K. Warden, provides another useful perspective on the question with his observation that "nuclear-use stability resides on a spectrum. In the most stable situation, neither combatant has an incentive to conduct nuclear strikes." The presence of such stability, Warden explains:

"indicates that two conditions have been met.

First, both combatants believe they can achieve an acceptable outcome in the conflict without crossing the nuclear threshold. Second, neither combatant believes it has a reasonable chance of markedly improving its political and military position—at a bearable cost—by crossing the nuclear threshold. In the most unstable scenario, a combatant is unwilling to accept the opponent's settlement terms and is confident that it can coerce a better offer by conducting limited nuclear strikes.”²¹¹

Warden's analysis is applicable to current conflicts, including the Russia-Ukraine war, and is useful to clarify actions that nuclear possessors can take to de-escalate tensions and avoid nuclear use.

Based on the criteria used by the studies outlined above, an initial assessment of the possibility of nuclear war can be constructed by considering several factors, including, for example:

i) How stable the international system is and the extent to which any of the nuclear possessors has an incentive to conduct a nuclear strike, for example, given conflict dynamics

ii) The number and kind of nuclear weapons in the world

iii) Efforts to limit and restrain nuclear use (both within nuclear possessors and internationally, for example, the nuclear non-proliferation and disarmament regime)

iv) The state of mind of leaders in nuclear armed states (i.e. given the centralised control of nuclear use decisions)

v) Public opinion and elite views on nuclear possession and use (primarily in nuclear armed states)

In terms of indicators for these areas, there are different levels of relevant data available for each, which are used here to develop initial conclusions. As noted below, it is easier to reach conclusions in some areas than others. The following summary points are based on the data and analysis compiled for this report in each chapter:

i) **The present geopolitical situation is unstable** with the potential to worsen significantly without sustained diplomacy focused on strategic stability and resolving political disagreements. Nuclear possessors are involved in several ongoing conflicts and areas of tension including: the Russia-Ukraine war (Russia; US / NATO; France; UK); Middle East (Israel / US; Russia); Pakistan and India; East Asia (China; US / NATO); and the Korean peninsula (North Korea; the US; and China). Rapid advances in the accuracy and destructive power of conventional weaponry (as well as AI, cyber and other disruptive technologies), add a further escalatory element into the mix.²¹²

ii) **Each of the nuclear powers is undertaking nuclear modernisation**, with the type and variety of nuclear weapons growing; there are also significant risks of proliferation involving threshold states, albeit to different degrees (especially involving Germany, Iran, Japan, Poland, Saudi Arabia, and South Korea).

iii) **The nuclear arms control handbrake is rickety**. Institutions such as the NPT are holding steady but are under threat as international tensions affect the ability for states to reach agreements at conferences and the war involving Iran, Israel and the US 'militarises' non-proliferation; the TPNW is a bright spot but requires political support from nuclear possessors and their allies to move forward; the nuclear taboo is gradually eroding.

iv) **The quality of leadership in nuclear armed states is at a low point**. Although this area is more difficult to assess, based on their rhetoric, of the P5, President Trump and President Putin have engaged in overt nuclear threats. President Xi, Prime Minister Starmer and President Macron provide more continuity with previous cautious approaches to nuclear rhetoric. Yet France and the UK maintain a nuclear weapons policy which does not rule out first use, France has offered to extend its nuclear arsenal to 'protect' its European allies, the UK is expanding its nuclear capabilities, and China is engaged in a substantial nuclear build-up.²¹³ The salience of nuclear weapons in these three states' security policies is thus growing,

albeit to different degrees, which must have a corresponding influence on the decision-making calculus of national leaders concerning nuclear use. Elsewhere, the leader of North Korea, Kim Jong Un, has warned that North Korea could ‘pre-emptively’ use nuclear weapons, whilst Israeli cabinet members have engaged in nuclear threats against the people of Gaza.²¹⁴

v) NAS citizens’ views on nuclear matters provide a mixed picture. This is perhaps the most wide-ranging and subjective area, and thus the most difficult to summarise. Data can be gathered from opinion polls, media reports, civil society analysis, academic publications and government documents. Elite views on these areas are discussed in other places across this report (particularly in relation to China, Russia, and the United States). Below, the focus is therefore on public views on nuclear weapons matters.

It is firstly important to recognise that there is far more reliable data here amongst the Western, formally democratic, nuclear possessors i.e. France, the UK and United States. Whilst data on this subject does exist for China and Russia, their societies are more authoritarian and less free, with little or no public debate permitted on these issues. In addition, it is necessary to look at findings which reflect both public views on nuclear possession and use; and arms control and disarmament, to get a rounded sense of how these groups view nuclear issues. Broadly speaking, based on a brief survey of relevant public opinion polling, the following conclusions can be reached regarding views on nuclear possession and use amongst the five NWS:

Public views on nuclear possession

Public support for nuclear possession appears to be strong in China²¹⁵, France²¹⁶ and Russia²¹⁷, according to recent opinion polls, but the picture is a complicated one for all NWS based on the results of different polls over the last two decades. For example, a 2023 poll of US public opinion by the Chicago Council on Global Affairs found that respondents were “unsure” as to whether nuclear weapons make the US safer, so that “while the public believes nuclear weapons are an effective

tool in deterring aggression, less than half say they make the country more secure.”²¹⁸

Nick Ritchie and Paul Ingram observed in 2013 that UK public opinion “remains deeply divided on nuclear weapons and choices around Trident Replacement,” whilst also highlighting the “relatively low salience of nuclear weapons policy in UK politics”.²¹⁹ Recent polls showing support for nuclear possession amongst UK respondents should be considered alongside polling data which reveals significant enthusiasm amongst the British public for policies which would control, limit, and even eliminate the UK’s nuclear weapons—including amongst supporters of nuclear possession.²²⁰

In particular, the lack of public awareness or discussion on the realities of nuclear possession likely impacts citizen’s positions on this topic, whether this concerns their ability to form and provide opinions, or otherwise. For example, a 2024 poll by Sciences Po asked “Which of the following statements best describe your attitude towards the current debate over the future of nuclear weapons?” In response to the eight statements provided, 56.5% of French respondents and 45.1% of British respondents chose the option “I don’t know enough about the issue.”²²¹ This finding helps explain why other recent polls in the UK and US have found that the public would like more information on nuclear matters.²²²

Public views on nuclear use

Public support for nuclear use amongst the NWS appears to be significantly more limited than support for possession. For example, polls of British²²³, Chinese²²⁴, French²²⁵, Russian²²⁶ and United States²²⁷ citizens show significant support for their governments not being the first to use nuclear weapons in a conflict, or not using nuclear weapons under any circumstances. As previously discussed, however, Sagan and Valentino’s 2017 study of US public opinion and Schwartz’s 2024 survey experiments in the US complicates this picture.

Public support for nuclear arms control and disarmament

Public support for multilateral arms control is popular in both Russia and the United States.²²⁸ Recent polls also show significant support for nuclear disarmament and the TPNW in France, the UK and United States.²²⁹

Taken together, the data on public views on nuclear matters across the NWS are significant because they show that public opinion could act as a restraint on nuclear use. In addition, public support for nuclear non-proliferation and arms control and disarmament could, if properly harnessed, act as a powerful means of making progress in these areas.

Nuclear war scenarios

These preliminary findings on the five areas considered indicate that nuclear war is a possibility for any of the nuclear possessors in the short term (i.e. the next five years). But, given the US and Russia's nuclear stockpiles, their geopolitical confrontation and unpredictable leaderships, they are most prone to nuclear conflict. The recent conflict in Kashmir between India and Pakistan, which draws on a violent past, means that these two states are also at a relatively high risk of nuclear escalation.²³⁰ China is also of growing concern, as is North Korea. Moscow, Beijing and Pyongyang perceive existential threats to their regimes from the United States, which puts them in a different category from Washington and the other nuclear possessors. Returning to Warden's logic, China, North Korea and Russia may thus have a higher incentive for nuclear use, though much depends on the specific situation. Russia's geostrategic position in particular appears to make it have a (relatively) greater set of incentives to use nuclear weapons first.

2.3 How likely is nuclear war to be limited?

Leaving aside cases involving the use of a nuclear weapon for a 'demonstration' strike, a conflict that escalated to nuclear use is unlikely to be

limited, primarily because of the fundamental unpredictability involved in such situations, and the high difficulty in controlling nuclear conflict. In terms of how likely a nuclear conflict is to be limited, the historical record provides little comfort. For example, Paul Bracken describes how in June 1983 NATO's 'Proud Prophet' war game escalated uncontrollably. Bracken explains that:

"to make it as realistic as possible, actual top-secret US war plans were incorporated into the game. American limited nuclear strikes were used. The idea behind these was that once the Soviet leaders saw that the West would go nuclear they would come to their senses and accept a cease-fire...But that's not what happened...The Soviet Union...responded with an enormous nuclear salvo at the United States. The United States retaliated in kind...A half billion human beings were killed in the initial exchanges and at least that many more would have died from radiation and starvation."²³¹

The behaviour exhibited in this war game is in line with the argument, advanced by Edward L. Warner, an analyst of Soviet nuclear doctrine, that "the Soviet Union rejected the idea of a 'limited' nuclear war." Warner explained how Moscow's rejection of limited nuclear war "almost certainly...reflects real doubts, strongly reinforced by the basic thrust of Soviet military doctrine, that any nuclear conflict, once begun, could actually be controlled."²³²

More recently, leading physicists Richard Wolfson and Ferenc Dalnoki-Veress have explored several nuclear attack scenarios, including modern-day conflicts involving North Korea, the US and Russia. Their conclusion is that "there is every reason to believe that a limited nuclear war wouldn't remain limited." This is because the confusion of wartime often produces the unexpected, so that the leaders of a state hit by a low-yield nuclear strike may believe the nation's survival is at stake and respond with "an all-out attack using strategic nuclear weapons".²³³

To address the problems posed by the 'fog of war,' Heather Williams and Nicholas Adamopoulos have explored the idea of "off-ramps," explaining how nuclear possessors can "prevent misperception

during a crisis” by establishing “lines of communication and transparency now.” For example, they highlight the “potential for China to join the Nuclear Risk Reduction Centers (NRRCs), a critical communication channel through which the United States and Russia share notifications related to treaty compliance” as well as maintenance and test notifications and “ad hoc messages”.²³⁴

In addition to the historical record and academic studies on this topic, several political leaders have commented that it will be extremely difficult to keep nuclear war limited. For example, in 1999 Robert McNamara agreed with the idea, put to him by an interviewer, that “the concept of (a) limited nuclear weapon is an oxymoron”, adding that “I know of no one that has put down on paper a scenario for the use of nuclear weapons that ensures it will be a limited nuclear war. I know of no way to accomplish that.”²³⁵ Furthermore, former US President Joe Biden stated in 2022 that, “I don’t think there’s any such thing as an ability to easily use a tactical nuclear weapon and not end up with Armageddon.”²³⁶

Another key question this discussion raises is whether any conflict involving nuclear powers can be limited to the use of conventional weaponry and the firebreak between conventional and nuclear weapons maintained? There are examples of nuclear armed states engaging in conventional warfare with each other without resorting to nuclear weapons. The Kargil War between India and Pakistan in 1999 is a notable example. While both nations possess nuclear arsenals, they fought a limited conventional conflict, demonstrating the possibility of such warfare between nuclear powers.²³⁷

However, while nuclear weapons were not used, their presence during the conflict raised concerns about escalation and highlights the risk of conventional warfare between nuclear armed states. It is important, therefore, to reduce the possibility of nuclear weapons use to the very minimum. The Arms Control Association and other civil society groups, experts and academics have laid out several options to “lower tension, increase dialogue, and sustain pressure against those

who might break the nuclear taboo.”²³⁸ These challenges, and the policy ideas and options that have been proposed to address them, are explored further in the next three chapters.

Summary

It is reasonable to conclude that the nuclear taboo is under significant challenge. As Tannenwald observes, these challenges come from many directions, involving several of the nuclear armed states. Whilst many informed observers and experts believe that the likelihood of the taboo being broken is still low, the world is in increasing peril from potential nuclear use. Large sections of the public in the NWS are also increasingly perturbed by the potential for WW3 and / or a nuclear war to occur in the near term.

The likelihood of nuclear use would rise if a leader of a nuclear armed state (particularly China, North Korea or Russia) felt threatened by regime change and saw no alternative but to turn to nuclear escalation to try and preserve their hold on power. Wars with no apparent end in sight, ongoing militarisation, and deepening nuclear modernisation thus build up a sense of inevitable nuclear weapons use in the near term, even if nuclear use thresholds have not been lowered.

The possibility of nuclear use is intrinsically built into the nuclear postures and doctrines of the nuclear armed states. Maintaining the credibility of nuclear weapons systems means that militaries responsible for these arsenals are constantly prepared for their use. As a result of factors including: the size and alert levels of US and Russian nuclear forces, their geopolitical confrontation (which continues via NATO despite an apparent rapprochement between Presidents Trump and Putin) and unpredictable leaderships, these two states are most prone to nuclear conflict. As seen in recent months, India and Pakistan are not far behind given the potential for flashpoints over contested territory. In addition, China’s growing nuclear arsenal, regional ambitions, and the possibility that it could clash in future with one of several nuclear powers, has increased the

potential for it to become involved in an escalating conflict.

The likelihood that a conflict which escalated to nuclear use would remain limited is most probably low. This is because of the fundamental unpredictability involved in such situations, and the high difficulty in controlling nuclear conflict. It is therefore imperative that the nuclear powers maintain the firebreak between conventional and nuclear weapons. There are several other measures that possessor states can take to reinforce the norm against nuclear use, including, for example, refraining from provocative and threatening nuclear rhetoric, taking steps to lower tension, and the adoption of confidence-building measures—such as a no first use pledge.

Chapter 3: Political, humanitarian, environmental and legal impacts of nuclear weapons use

Humanitarian and Environmental Impacts

A key area of contestation amongst analysts concerns the impact of TNWs use and the gravity of the ensuing consequences. On the one hand, as noted above, there are those who dispute the separation of tactical and strategic nuclear weapons. However, other analysts point to a spectrum of possible TNW use, with scenarios ranging from a single demonstration detonation to the potential use of hundreds of TNWs in a Russia-US conflict. This chapter considers the various impacts a nuclear detonation could have, including the singular destructive power of even a relatively low-level nuclear blast. As described in the previous chapter, it is important to note that there are wide differences in the lower-yield category, ranging, in the case of the US's B61-12 bomb, from 0.3 kt up to 50 kt.²³⁹

There are also many different types of scenarios in which nuclear weapons could be used, which would affect the resulting impacts. For example, nuclear weapons could be targeted against military forces, civilian population centres, or more remote populated territory. Larger-scale nuclear use could strike an airbase or massed infantry. The timing of nuclear weapons use during a conflict would also matter. For example, China, Russia or the United States could attempt nuclear use early in a conflict to show resolve and 'de-escalate' the situation.²⁴⁰

Studies on the consequences of different levels of nuclear use

The literature on the impact of strategic nuclear weapons use at different levels of intensity is quite well developed, notwithstanding the inherent uncertainty involved in this area. For example, an important study is *The Uncertain Consequences of Nuclear Weapons Use*, published in 2015 by Johns Hopkins University. The authors of this work explain how "even when consideration is restricted to the physical consequences of nuclear weapons use, where our knowledge base on effects of primary

importance to military planners is substantial, there remain very large uncertainties."²⁴¹

Research on this topic tends to begin by referencing what we know about the use of nuclear weapons by the United States against Japan during WW2, the only time nuclear weapons have been detonated during a war.²⁴² The over 2,000 nuclear tests that were conducted between 1945 and 2017 also provide vital information. Several studies by scholars and medical professionals, including Alan Robock and Owen Toon, as well as Ira Helfand, are well known and have highlighted the potential devastating global consequences, such as disease and starvation, involved in any nuclear war.²⁴³ The governments of nuclear armed states (including the UK and US) have also conducted numerous studies and produced data concerning the impact of nuclear testing and use. Such studies (some of which have been made public and some of which remain classified) outlined the severe dangers of radioactive fallout and often massive casualty estimates that would result from nuclear war between the US and Russia / the Soviet Union.²⁴⁴

A 2019 study by the Princeton School on Science and Global Security simulated an escalating war between the US and Russia. Their modelling suggested a single 'tactical' strike by Moscow could escalate into a full nuclear exchange within the space of a few hours—with 34.1 million people dead.²⁴⁵ Another useful resource is Alex Wellerstein's Nukemap website, which shows the various types of damage caused by different types of nuclear weapons used against cities (in terms of yield and how they were detonated).²⁴⁶ More recently, Richard Wolfson and Ferenc Dalnoki-Veress, and Mark Lynas, have produced findings which show the huge numbers of people globally likely to perish in a nuclear conflict.²⁴⁷

Between 2013-14, civil society and governments convened at three international conferences to discuss for the first time the "catastrophic humanitarian consequences of the use of nuclear weapons".²⁴⁸ Since then, several groups, including the International Committee of the Red Cross, have

examined the humanitarian and environmental consequences of the use and testing of nuclear weapons, as well as the drivers of nuclear risk.²⁴⁹ These initiatives have supported the TPNW, which entered into force in 2021.²⁵⁰ A fourth conference on the humanitarian impact of nuclear weapons was held in June 2022, ahead of the First Meeting of States Parties of the TPNW. In 2024 the United Nations voted to create a panel tasked with examining “the physical effects and societal consequences of a nuclear war on a local, regional and planetary scale”.²⁵¹ Notably, France, Russia and the UK were the only countries to vote against the establishment of this panel.²⁵²

A 2025 report published by the US Academy of Sciences examining the “potential environmental, social, and economic effects that could unfold over the weeks to decades after a nuclear war” found that, amongst other impacts, nuclear war would cause “severe ecosystem disruptions”. In addition, the report highlights the need to consider the complex “interactions and interdependencies among human and natural systems.” These systems raise “vulnerabilities” that “could allow localized shocks from a nuclear event to catalyze cascading broader risks”. The authors therefore recommend that US Government agencies should assess “these interconnected societal and economic impacts” and ask experts to produce more varied models on different levels and types of nuclear use. These measures, they argue, will help address the many “uncertainties” concerning the impact of possible nuclear war scenarios.²⁵³

Given the focus of this report, it is also important to consider recent studies of the impact of relatively low-yield nuclear weapons being detonated. For example, Nina Tannenwald has explained that:

“a tactical nuclear weapon would produce a fireball, shock waves, and deadly radiation that would cause long-term health damage in survivors. Radioactive fallout would contaminate air, soil, water and the food supply.”²⁵⁴

Looking in more detail at this issue, in 2021 Eva Lisowski of the MIT Nuclear Weapons Education Project published a study of the impact of a one

kiloton bomb being detonated in a city in the Middle East. Lisowski assessed the effects of a “low-yield” uranium device detonated at ground level “in a densely populated city centre with modern construction and population density”.

She found that, in each case, the estimated deaths within twelve weeks from a 1-kiloton bomb detonated at ground level ranged from a low of 32,000 in Riyadh and 42,000 in Tel Aviv up to 137,000 in Tehran and 353,000 in Cairo. In her simulations, Lisowski accounted for deaths due to bomb blast, heat, radiation, flying debris and structural collapse. Comparing a 1-kiloton blast to the 11 September 2001 attacks in New York, she stated that, “It’s even more devastation. There’s going to be buildings coming down all over the place. If you detonate at surface level, then the radiation, even in the city, can really have an effect. There could be death tolls that are comparable to Hiroshima and Nagasaki.” Lisowski’s conclusion is that the severe consequences of even a one kiloton nuclear detonation means that we need to be deeply concerned about such use.²⁵⁵

Elsewhere, a 2014 Pax study of the impact of the detonation of a 12 kiloton nuclear bomb in Rotterdam found that “with a nuclear explosion as described in this report, Rotterdam as we know it today will cease to exist.” This is due to the multiple effects that nuclear detonation has, including: flash; heat and fire; blast; electromagnetic pulse; flooding; radioactivity; fallout; traffic; and chemical contamination.²⁵⁶ One of the key differences between the impact of conventional and nuclear munitions concerns the radioactive fallout produced by the latter. David Albright and Sarah Burkhard explain that:

“even a low yield nuclear detonation, particularly one detonated on the surface or just below it, would generate an intense amount of local radioactive fallout...Common fission products in fallout...would pose a serious radiation risk as they worked their way into groundwater and food and as the cesium 137 continued to emit gamma radiation to people in the area where the fallout was deposited.”²⁵⁷

The authors of the 2023 study *Humanitarian*

Impacts of Nuclear Weapons Use in Northeast Asia: Implications for Reducing Nuclear Risk assessed several case studies ranging from a single detonation up to a wider nuclear conflict in the region. The study explains the particular problems posed by “radioactive fallout from nuclear detonations” which can “cross borders, and sometimes fall on populations hundreds or thousands of kilometers from the original target of a detonation”. Such populations could be “in nations or even regions not involved in the conflict that spawned nuclear weapons use, and thus justifiably incensed at being put at risk”. Moreover, the study finds, “even though the doses of radioactivity received in those locations may be low, even limited nuclear exchanges have the potential to cause social, political, and health impacts far beyond the borders of the combatants.”²⁵⁸

In addition to the likely human costs, several studies have considered the environmental impact of different scales of nuclear use, and what level of conflict involving these weapons can trigger ‘nuclear winter’. This is a hypothesised severe and prolonged global climatic cooling effect resulting from nuclear explosions. The theory suggests that smoke and dust propelled into the stratosphere would block sunlight, leading to a sharp drop in global temperatures, widespread crop failure and mass starvation.²⁵⁹

Whilst such studies mainly focus on the consequences of the use of strategic nuclear weapons, others have explored more limited regional nuclear wars. Two research groups working on the impact of a regional nuclear war between India and Pakistan reached different conclusions as to its climactic consequences and whether a global nuclear winter would occur. The conclusion of the meteorologist G.D. Hess in reviewing these two studies was that “there is an obligation to assume a worst-case scenario. Such a scenario would include the possibility that a limited nuclear conflict could cause a Nuclear Winter by leading to a broader nuclear conflict.”²⁶⁰

Social and Political Impacts

In many scenarios, TNW use would likely have

more of a political and psychological significance than a military one. Experts on the effects of nuclear weapons, such as Michael Frankel, argue that the use of such weapons would provide limited military advantages, so that: “It is still hard to think of many targets that might be ‘worthy’ of use of nuclear weapons as just another battlefield explosive, albeit a big one.”²⁶¹

To have a decisive military impact on the battlefield against massed forces, many TNWs would need to be employed—though the results would still be uncertain. Where TNWs may more obviously be preferred to conventional munitions is in striking high-value military facilities and infrastructure sites.²⁶²

Returning to the Johns Hopkins University study *The Uncertain Consequences of Nuclear Weapons Use*, the authors note that “a full-spectrum, all-consequences assessment” concerning such impacts:

“would...include an assessment of economic, social, psychological, and policy impacts among other things.” However, the study recognises that the fairly well developed “knowledge base” used to understand the physical consequences of nuclear use “seems inadequate for even such limited assessment purposes as the scenario shifts to smaller yields and numbers in the sorts of terrorist, rogue state, or even regional scenarios that have become more urgent matters of concern in the twenty-first century.”²⁶³

The difficulty of predicting the various political and social consequences of nuclear use is exacerbated by the many variables that would be involved. The authors of the report *The Consequences of Tactical Nuclear Weapons Use*, published in October 2025, therefore argue, regarding the use of a single TNW, that:

“the many interactions between the weapon’s physical effects and those emergent policy choices would trigger countless risks of national-level reactions, resulting in a multilayered international crisis.”

Because of this, the political response to the first

use of TNWs “will be among the most important in history”. The authors rightly state that it is “indispensable and timely” to study and understand “the full spectrum of nuclear weapon effects” and identify “possible outcomes before any such use occurs.”²⁶⁴

Questions to consider here include: what might the stakes involved in any nuclear use be? Would the use of nuclear weapons be justified by the aggressor state as necessary for regime or national survival? For example, an authoritarian leader, backed into a corner, might argue that if they were not used, an enemy might remove them from power. Or the leadership of a state might come to see nuclear use as necessary to prevent a humiliating defeat in a war that would lead to them being toppled.²⁶⁵

The legitimisation narrative deployed around nuclear use would thus be key in terms of managing domestic and international opinion, and could significantly alter the social and political impacts of such use. The domestic political impact of nuclear use—in both the attacker and the target state—is also worth considering. For example, if a democratic state used nuclear weapons first sizable protests would be likely. In an authoritarian regime, however, whilst there may initially be demonstrations, it is unlikely the authorities would allow them to persist for long. The populace in a state which suffered a nuclear attack might also demand their leaders take more extreme measures in response if a ‘war fever’ ensued.

Regarding the cultural, economic and social impact of major disasters in human history, such as wars and catastrophes, the historical record shows that terrible events between nations can significantly change how they view one another.²⁶⁶ A state could thus move from having a cautious and wary view of a rival to treating them as an outright enemy if nuclear weapons were used against them, for example, to terrorise their population. Such use could also deepen existing demands for militarisation, nuclear acquisition, and revenge, both in the attacked state and its allies and friendly states. The use of TNWs also risks normalising such actions and causing the opponent, if

nuclear-armed, to escalate to strategic nuclear use.²⁶⁷

Given the consequences involved, states deploying TNWs and considering their use are taking huge risks. Why—and whether—the leaders of these states are willing to take these risks (both in terms of their threat perceptions and expected gains, whether political or military) is thus an important question to consider.

Legal Impacts

In terms of the legal consequences of nuclear use (tactical or otherwise), it is necessary to review pertinent international laws and treaties, including: rulings by the International Court of Justice (ICJ); the provisions of the TPNW; the United Nations Charter; and IHL. For example, Evan Richardson notes that in 1996 the ICJ ruled that the threat or use of nuclear weapons is generally illegal, and argued that “if the ICJ revisited this issue, it should distinguish tactical from strategic nuclear weapons and hold that use of tactical nuclear weapons is per se illegal because those weapons cause indiscriminate effects, are an unnecessary use of force, inflict superfluous injury, and are almost never proportional.”²⁶⁸

International law scholar Susan Breau also argues that, “on any scale, testing the use of battlefield nuclear weapons against the cardinal rule of distinction, the use of these weapons fails the test.”²⁶⁹ Whilst possessor states’ nuclear weapons may be intended as a means of in extremis self-defence, and part of a deterrence policy, it is most probable that their use would violate the principles and rules of IHL. It is significant, for example, that the UK accepts that IHL should be applied to nuclear weapons.²⁷⁰ Point 5 of the UK Cabinet Office’s ‘Chilcot Checklist’, which is intended as a guide for policy-makers in the national security community, is entitled ‘Legal Implications’ and asks ‘How do we ensure action is lawful?’²⁷¹ In the case of nuclear weapons, it is difficult to envisage circumstances in which any use at any scale could adhere to international law, given the need for parties involved in a conflict to distinguish between civilian and military targets, and avoid causing

excessive civilian harm.²⁷²

Elsewhere, Bruno Tertrais notes that the legal principle of “belligerent reprisals” has been used implicitly by France, the UK and United States to justify their opposition to the 1996 ICJ ruling.²⁷³ It therefore appears that the nuclear possessors, with the possible exception of China, collectively share Kremlin insider Sergey Karaganov’s view on the acceptability of nuclear use, namely that the “the winners are not judged. And the saviors are thanked.”²⁷⁴ Once again, it is evident that Russia’s approach to nuclear matters is not so different from that of the United States and its NATO allies, despite public pronouncements suggesting otherwise.²⁷⁵

The TPNW is an important recent initiative whose provisions also need to be considered when discussing the legal implications of nuclear use and limited nuclear war. The treaty prohibits signatory states from using or threatening to use nuclear weapons and other nuclear explosive devices. According to the treaty, which entered into force in 2021, “States Parties cannot allow the stationing, installation, or deployment of nuclear weapons and other nuclear explosive devices in their territory.” In June 2022, the 65 states-parties to the TPNW issued a political statement noting that “any use or threat of use of nuclear weapons is a violation of international law, including the Charter of the United Nations” and condemned “unequivocally any and all nuclear threats, whether they be explicit or implicit and irrespective of the circumstances.” At the NPT review conference in August 2022, 147 NNWS also declared the use of nuclear weapons unacceptable “under any circumstances.”²⁷⁶

Summary

TNWs are particularly destabilising weapons whose use could trigger a wider nuclear war unleashing catastrophic devastation globally. In any case, the consequences of even a relatively low-level (e.g. one kiloton) nuclear detonation alone will likely be very severe. Despite the substantial research conducted into the various consequences of nuclear use, many uncertainties remain regarding the impacts on complex human and environmental

systems. Moreover, it is hard to foresee nuclear use—at any scale—adhering to international law, given the need to distinguish between civilian and military targets, and avoid causing excessive civilian harm.

The nuclear armed states should therefore focus on conflict prevention, de-escalation, diplomacy, and using conventional force only when strictly legal, proportionate and necessary. In addition, the precautionary principle is a responsible approach that governments should follow. The new UN study on the effects of nuclear war is a positive development. The authors of that study should begin by reviewing the findings in the Johns Hopkins study, and similar work highlighted above, to consider the various specific impacts of different types and levels of nuclear use.

Chapter 4: Key Lessons from history on tactical nuclear weapons and limited nuclear war

What key lessons should we learn from the history of TNWs and thinking around limited nuclear war?

At the end of WW2, the United States debated how to develop and use the new power of atomic weapons. The United States had nuclear superiority over the Soviet Union, and the 'nuclear revolution' meant there was no defence against the bomb. However, US planners at the outset of the Cold War were aware that the Soviets could eventually achieve nuclear parity and a relationship of mutual vulnerability. Whilst Washington considered a pre-emptive strike against the Soviet Union (and later China) to disarm their nuclear capability, this became less and less likely as time went on.²⁷⁷ Whilst disarmament was discussed, it was not seriously pursued due to deep-seated mistrust between the superpowers. Instead, both sides engaged in an arms race, prioritising the development and deployment of nuclear weapons for deterrence and strategic advantage.

A key question was whether the bomb should be used only against population centres, or more widely against military and dual-use targets? US nuclear testing, with a view to using atomic weapons against naval vessels, began in 1946, despite the opposition of prominent figures such as J. Robert Oppenheimer, who initially argued against the tests on pragmatic grounds.²⁷⁸ The TNW concept itself was first refined by US defence analysts in 1951.²⁷⁹ The emergence of such weapons was understood in relation to the perceived needs of extended deterrence, involving US allies in NATO, which was a deeply complicating factor for the United States throughout the Cold War, and continues to pose problems for Washington today. In addition, as Nina Tannenwald explains, the period from 1953-1960, saw the "rise and strengthening" of the nuclear taboo. In response, she argues, the US Government "systematically sought to counteract" public opposition to the bomb by "creating an alternative norm that tactical nuclear weapons should be treated as ordinary weapons."²⁸⁰

As Austin Long, a former senior political scientist at RAND, explains, whilst basic or central deterrence vis a vis the Soviet Union was "non rational but credible"—given that it involved "unconditional" commitments to retaliate—extended deterrence, for the United States, had "inherently limited credibility."²⁸¹ This was because the notion that Washington would attack Moscow if Berlin was attacked, when the Soviet Union could strike Washington in response, was strongly doubted. To compensate for this perceived weakness, US planners felt they needed to strengthen their nuclear capabilities, including the potential for nuclear first use in a conflict. Proponents of TNWs in Europe saw these weapons as useful in "offsetting" the Soviet Union's conventional military advantage and responding to Soviet tactical nuclear strikes.²⁸²

The other key issue was the emergence of the far more destructive hydrogen bomb in the 1950s. Incorporating the H-Bomb into nuclear strategy would produce new credibility problems, however. The US and Soviet Union soon entered an arms race leading to thousands of these weapons being built. By the late 1960s, the Soviet Union had also developed its own collection of TNWs. Tens of millions of people were targeted under nuclear strike plans. The concept of mutually assured destruction (MAD) first appeared in 1964, after the Cuban missile crisis. MAD meant that an attack by either side would result in mutual annihilation because of the retaliatory capability of the opponent.²⁸³

The initial solution Washington came up with to address the credibility problems their nuclear strategy faced was 'Flexible Response.' As Long states, this programme began in the 1960s to expand the United States' ability "to execute a wider array of operations than the choices of no response or full-scale nuclear war."²⁸⁴ This would provide Washington with more options for waging war, both with conventional and nuclear weapons. The role of TNWs was to strengthen Flexible Response by creating another step in the "escalation ladder from local war to general war".²⁸⁵

For NATO, as Professor Paul Rogers explains, this meant “the limited use of mostly low-yield warheads early in a conflict against Warsaw Pact troops in the belief that they might be ‘stopped in their tracks’. If that failed, a more general nuclear response might ensue.”²⁸⁶

By the 1970s the Soviets had matched the United States via their nuclear build-up and MAD was in play. As William Burr explains, the incoming Nixon administration considered the “basic problem” of how:

“the nuclear war plans that were the foundations of deterrence during the Cold War would have caused the deaths of hundreds of millions of people. The catastrophic nature of the U.S. nuclear war plan, the Single Integrated Operational Plan (SIOP), made Nixon and Kissinger wonder if there was a less suicidal, more credible way to make nuclear threats meaningful and reduce the danger of all-out nuclear war in the event of a superpower confrontation.”²⁸⁷

In 1974 the Nixon administration therefore made changes to the SIOP to include limited nuclear options (LNOs), which provided more selective choices for the President, including ‘tit-for-tat’ responses to Soviet nuclear strikes.²⁸⁸ However, as Burr observed, US government officials, civilians and military personnel, questioned whether LNOs were any more plausible than ‘massive attack’ options. For example, limited options might appear more attractive to leaders and hence lower the threshold for use. In addition, the response of the Soviets to limited nuclear strikes was unknown.²⁸⁹

Furthermore, the Soviet Union rejected the concept of Flexible Response and LNOs. This was because Soviet strategic culture did not accept that it was possible to create a “firebreak” between the unlimited use of conventional force and the use of TNWs. The Soviets also did not agree with the concept of “cooperative damage limitation”.²⁹⁰ Ultimately, this was because the Soviet leadership had different stakes on the table, namely national survival, whereas the US / NATO was seeking to use deterrence to defend its allies and advance its strategic position in Europe.

Another key issue, with resonance today, is whether nuclear weapons were needed at all. Matthew Evangelista, Professor of Government at Cornell University, highlights that the “emphasis on nuclear weapons in NATO defense policy” led to more than 7,000 TNWs being deployed by NATO in Europe by the 1960s, with even more being deployed by the Soviets.²⁹¹ The deployment of US Ground Launched Cruise Missiles to the UK and US Pershing ballistic missiles to West Germany in the 1980s (and the Soviet Union’s deployment of SS20s), significantly heightened worldwide fears of nuclear conflict. The fact that the INF Treaty led to the elimination of these weapons was a major contribution to the end of the Cold War.²⁹²

Thus, for Evangelista, “rather than deter an action that Soviet leaders never intended” the widespread deployment of TNWs “heightened the risk of escalation to nuclear holocaust during crises.”²⁹³ He is referring here to the US and NATO belief that the Soviet Union was intent on conquering Western Europe. This belief has also been challenged by other scholars—such as Michael MccGwire—who highlights the opportunity costs for an alternative, more cooperative relationship between East and West, of painting the Soviet Union as purely aggressive, expansionist and malevolent. The prospects for peace and disarmament were therefore critically diminished, he argues, by the institution of nuclear deterrence.²⁹⁴

In addition, MccGwire draws attention to the ways in which US strategists misunderstood Soviet nuclear thinking. He points to the evidence that “deterrence dogma did not prevent war, but actually made it more likely.”²⁹⁵ Former head of US STRATCOM, General George Lee Butler, provides a particularly eloquent explanation to summarise what went wrong in Washington and Moscow during their confrontation during this period:

“Deterrence in the Cold War setting was fatally flawed at the most fundamental level of human psychology in its projection of western reason through the crazed lens of a paranoid foe Little wonder that intentions and motives were consistently misread. Little wonder that deterrence

was the first victim of a deepening crisis, leaving the antagonists to grope fearfully in a fog of mutual misperception. While we clung to the notion that nuclear war could be reliably deterred, Soviet leaders derived from their historical experience the conviction that such a war might be thrust upon them, and if so, must not be lost. Driven by that fear, they took Herculean measures to fight and survive no matter the odds or the cost. Deterrence was a dialogue of the blind with the deaf. In the final analysis, it was largely a bargain we in the West made with ourselves.”²⁹⁶

As a result of his realisation of the existential dangers of nuclear weapons, Butler went from being in charge of all US strategic nuclear forces and the principal advisor to the US President on nuclear weapons, to a leading advocate of nuclear abolition following his retirement in 1994.²⁹⁷

TNWs: Technical, military and political problems during the Cold War and today

In addition to the problems of deterrence and global strategy, the other challenges raised by TNWs also need to be considered. For example, Jeffrey D. McCausland, a retired colonel from the US Army and former Dean of Academics at the US Army War College, conducted an important review of the experiences of the US and Soviet deployment of such weapons during the Cold War. His essay considers “the operational complexities and risks associated with deploying tactical nuclear weapons in proximity or as part of conventional-maneuver warfare”. McCausland concluded that TNWs will likely increase pressure to escalate during any future crisis. He also finds that, the use of such weapons “to compensate for perceived conventional shortcomings are misguided.”

For McCausland therefore:

“perhaps the most important take-away from an historical analysis of the Cold War is that the challenges U.S. and Soviet planners and front-line operators were faced with grew exponentially, rather than linearly, as tactical nuclear weapons

were deployed at scale. Communication, coordination, planning, and incorporation into conventional units become manifestly more difficult as arsenals of tactical nuclear weapons grew.”

US and Russian experiences during the Cold War and immediately after, also highlights the safety, security, storage and control issues concerning TNWs.²⁹⁸ As Indian Brigadier Gurmeet Kanwal notes, these weapons “require complex command and control mechanisms, enhance the risk of unauthorized and accidental launches, are difficult to manufacture, and are costly to maintain.”²⁹⁹

Moreover, the authors of *Tactical Nuclear Weapons: Options for Control* argue that “the very existence of TNWs in national arsenals increases the risk of proliferation and reduces the nuclear threshold, making the nuclear balance less stable”. They explained why this was the case, and how the result may be less control over TNWs by political decision-makers, by noting that:

“1. The intended use of TNWs in battlefield and theatre-level operations in conjunction with conventional forces encourages their forward basing, especially in times of crisis, and in certain situations movement of TNWs might actually provoke a pre-emptive strike by the other side instead of deterring it; and

2. An orientation towards the employment of TNWs in conjunction with conventional forces and a concern about their survivability argues for the pre-delegation of launch authority to lower level commanders in the theatre, especially once hostilities commence.”³⁰⁰

As Dr Phil Webber of Scientists for Global Responsibility also notes, the process of moving NATO or Russian nuclear weapons from their storage vaults onto delivery systems today would send “a clear signal that a nuclear strike may be imminent, setting the stage for a false warning or blunder that could be a hair trigger away from nuclear disaster”.³⁰¹

Other specific issues raised in relation to NATO’s nuclear sharing arrangements in recent years

include the security of nuclear weapons in Turkey and the significant cost issues involved, for example, of procuring F-35 nuclear-capable jets and B61-12 bombs.³⁰² Furthermore, the 2016 attempted coup in Turkey raised the issue of how secure nuclear weapons were at the Incirlik airbase, which is also close to the Syrian border. Such concerns led opponents of the weapons, such as German President Frank-Walter Steinmeier, to describe them as “absolutely senseless”.³⁰³

The Cuban Missile Crisis

In October 2022, six months into the Russia-Ukraine war, US President Joe Biden commented that the world faced the prospect of “Armageddon” because “for the first time since the Cuban Missile Crisis, we have a direct threat to the use of nuclear weapons, if in fact things continue down the path they’d been going.”³⁰⁴ There are several lessons we can learn from that crisis to lessen nuclear dangers, both today and in the future.

The Cuban Missile Crisis was a 13-day confrontation in October 1962 between the United States and the Soviet Union, triggered by the discovery of Soviet missile sites in Cuba. An assessment of the crisis should include a review of how it began and ended. US President Kennedy invaded the Bay of Pigs in Cuba in April 1961. In response, the Soviet Union placed nuclear warheads in Cuba, including tactical warheads to repel any invasion by the US.³⁰⁵ The primary Soviet objective was to deploy medium-range and intermediate-range ballistic missiles capable of reaching the United States. These were strategic weapons designed to alter the balance of power. As the crisis escalated, however, there was discussion and consideration of equipping commanders in Cuba with pre-delegated authority to use TNWs if the situation deteriorated. This was a significant escalation, as it meant the potential for nuclear conflict without direct approval from Moscow.³⁰⁶

The crisis ultimately ended through a combination of diplomacy and back-channel communication, with the Soviets agreeing to remove their missiles from Cuba in exchange for the US removing its

missiles from Turkey, and a pledge not to invade Cuba.

The key lesson for leaders of nuclear armed states today from this episode is the need to exercise strategic restraint, respect international law and the UN Charter regarding the use of force, and understand the threat perceptions of other decision-makers, to avoid provocative actions.

Robert McNamara observed regarding the crisis that:

“rationality will not save us. I want to say, and this is very important: at the end we lucked out. It was luck that prevented nuclear war. We came that close to nuclear war at the end. Rational individuals: Kennedy was rational; Khrushchev was rational; Castro was rational. Rational individuals came that close to total destruction of their societies. And that danger exists today.”

The main lesson that McNamara therefore drew from the crisis is that, “the indefinite combination of human fallibility and nuclear weapons will destroy nations”.³⁰⁷ It is therefore imperative that nuclear armed states make progress on their international commitments to reduce the role of nuclear weapons in their security policies pending their elimination.

As a result of the crisis, decision-makers on both sides took measures to address nuclear dangers. These included arms control agreements, and other constructive measures, including: the Partial Test Ban Treaty; removal of missiles; non-aggression pledges; and the establishment of hotlines between top decision makers in the US and Soviet Union.³⁰⁸ Today’s leaders would do well to take inspiration from these initiatives to craft appropriate agreements to reduce international tensions and build strategic stability.

Box 2: Recent proposals to limit, control and eliminate TNWs

In the post-Cold War era, Presidents George H.W. Bush and Mikhail Gorbachev (and later Boris Yeltsin) made unilateral declarations in 1991 and 1992 resulting in substantial reductions in US and Soviet / Russian TNWs. Building on this legacy, recent proposals from experts to support and achieve the control and elimination of TNWs include:

i) Former US Ambassador Steven Pifer has recommended that Russia and the United States: enact confidence building and transparency measures (e.g. on the number, types and location of weapons), as well as “demating warheads and relocating and consolidating warhead storage sites”; take parallel unilateral steps to freeze or reduce nuclear stockpiles; begin negotiations aimed at a legally binding TNW treaty with verification measures.³⁰⁹ Similar and additional proposals were advanced by the authors of the 2000 UNIDIR report *Tactical Nuclear Weapons: Options for Control*.³¹⁰

ii) Pavel Podvig and Javier Serrat argued in 2017 that TNWs should continue not being operationally deployed during peacetime and that this should be codified into a legally binding, verifiable arrangement to reduce crisis escalation and the risks of nuclear war.³¹¹

iii) The authors of the report *Everything Counts: Building a Control Regime for Nonstrategic Nuclear Warheads in Europe* highlight the analytical, legal and technical measures needed to overcome the “operational and technical verification challenges that are made more difficult by issues of information security, definitions, and stockpile disparities” concerning the control and elimination of TNWs.³¹²

iv) The authors of the report *Ending Tactical Nuclear Weapons* state that: the P5 nations should take the lead on making progress on this issue; “the United Nations should build on the Secretary General’s call for nations to end tactical nuclear weapons”; and “civil society groups must play a strong role in supporting stabilizing policies”.³¹³

v) The Russian view is that a future arms control agreement on TNWs with the US should also include limits on missile defense, strategic-range weapons carrying conventional warheads, and space-based weaponry.³¹⁴

vi) Professor Scott Sagan argued in an article examining the responsibilities NWS and NNWS have to advance nuclear disarmament that: “those U.S. allies that remain concerned about conventional or chemical and biological threats to their national security should, as part of their Article VI disarmament commitment, help to develop the conventional forces and defensive systems that could wean themselves away from excessive reliance on U.S. nuclear weapons for extended deterrence.”³¹⁵

vii) Analysts Suzi Snyder and Wilfred van der Zeijden have argued that NATO can end nuclear deployment in Europe e.g. by “sacrificing” its TNWs first in an attempt to break the impasse and find “reciprocity” with Russia.³¹⁶

viii) Ian Davis and Paul Ingram have proposed that in exchange for Russia eliminating its TNWs and “cutting back on some of its air- and land-based strategic nuclear forces”, the five NATO host nations could return the US nuclear weapons based in Europe; the UK could consider cancelling Trident replacement; and France could eliminate its air-based nuclear weapons.³¹⁷

ix) A group of civil society organisations have recommended that Belarus “return to Russia all nuclear weapons on its territory”.³¹⁸

Summary

The emergence of the US’s Flexible Response and LNO programmes show that there have always been debates about how to deploy and use nuclear weapons, for example in a more limited or expansive fashion. In particular, the US’s global military presence has raised different questions for Washington than for other nuclear possessors given their extended deterrence commitments. In the 1950s, the birth of the TNW was seen by US leaders as particularly beneficial because these weapons could make US deterrence more credible.

In addition, the qualities of TNWs were used to counter public opposition to nuclear weapons, in an effort to normalise their use.

Debates concerning US nuclear strategy and the costs and risks of deterrence are once again taking place as the second Trump presidency ruptures the international security order. It needs to be recognised that any significant enhancements to NATO member's nuclear forces will likely further entrench Beijing and Moscow's perception that they must strengthen their own nuclear capabilities. Furthermore, the experience of the Cold War shows that TNWs are an inherently risky and destabilising type of weapon, and that diplomacy and mutual understanding—not military brinkmanship—are the only reliable paths to peace. Policy-makers should thus review the many constructive proposals that would support states moving away from a reliance on nuclear weapons and towards inclusive and cooperative regional security systems.

Chapter 5: Nuclear Deterrence and the Russia-Ukraine War

What does the Russia-Ukraine war reveal about the limitations of nuclear deterrence, both in theory and practice?

The Russia-Ukraine war has raised many questions about the efficacy of nuclear deterrence and how nuclear weapons are shaping the conflict. By 1996 Ukraine had returned the nuclear weapons it held on its territory when part of the Soviet Union to Russia and joined the NPT as a NNWS. These steps were taken under the Budapest Memorandum, whereby Ukraine received security assurances from Russia, the US and UK in exchange for relinquishing its nuclear force.³¹⁹ In the post-Cold War era Kiev was caught between the influence and agendas of Moscow and Washington.

There is no consensus on the 'root causes' of the Russia-Ukraine war. Western states largely consider the eastward expansion of NATO—including in 2008, when it was affirmed that Ukraine would eventually become a member—an internal affair which does not threaten Russia, whilst the Russians consider it the very origin of the conflict. Western states also generally believe that the crisis was caused by Russian expansionism and a desire to recreate the Soviet empire, whilst the Russians consider that they have been responding to the aggressive enlargement of the western bloc. In one sense, it does not matter whose interests one chooses to offer most weight to. The past decade or so has seen a complete absence of diplomatic effort in the space where those interests collided.³²⁰

Following Russia's annexation of Crimea in 2014 there were, as Nigel Walker observes, "eight years of conflict in eastern Ukraine between Ukrainian Government forces and Russia-backed separatists".³²¹ Then, in 2022, Russia—a nuclear-armed power—invaded Ukraine. President Putin's invasion has therefore been interpreted as both a limited attempt to restore Russian security on its periphery and as part of a much more sinister venture, with a wider imperialist vision at play. Also contested is the role that nuclear weapons and

deterrence played in the conflict. Two questions are at the heart of most analysis, and are the most pertinent for the purposes of this study:

1. Has Russia succeeded in using nuclear deterrence to constrain NATO's role in the conflict?
2. What was the US and NATO's deterrence strategy vis a vis Russia, and was it successful on its own terms in the lead up to and during the conflict?

Russia's nuclear signalling during the Ukraine war

To begin with the first question, Lord Des Browne, reflecting on what the conflict in Ukraine "has shown us about how the possession of nuclear weapons can shift the strategic calculus" has raised the question of "Why, despite the Latvian, Estonian and Lithuanian parliaments all voting in favour, were we unable to institute a no-fly zone over Ukraine immediately after Russia's invasion?" His response is that "At least a component of any truthful answer has to be a concession that Putin was able at that stage to use nuclear blackmail to prevent that occurring. Seeing that unfold was a spur to proliferation rather than the reverse."³²²

However, even though a no-fly zone was not implemented—to avoid the possibility of direct conflict between NATO and Russia—by autumn of 2022 Russian forces were on the back foot in eastern Ukraine.³²³ Russian nuclear threats during this time were primarily directed at the US and NATO, to prevent them becoming directly involved in the conflict, rather than being solely aimed at Ukraine.³²⁴

As Ukraine's armed forces pushed the Russian army back, the CIA have stated that they put the probability of Moscow using a nuclear weapon at 50%.³²⁵ According to journalist Bob Woodward's book *War*: "Putin had about 30,000 troops stationed in Kherson. The intelligence agencies assessed that if Russian troops were encircled by Ukrainian forces in Kherson, there was a 50 percent chance

Putin would order the use of tactical nuclear weapons to avoid such a catastrophic battlefield loss.”³²⁶

CIA Director William Burns thus believed there was a real risk that Russia could use TNWs on the battlefield against Ukraine. Notably, in the 1990s and 2000s, Burns warned that NATO expansion would be met with deep hostility by Russia, with Ukraine’s entry into the alliance “crossing the brightest of all redlines” and representing “a direct challenge to Russian interests.”³²⁷ Burns is one of many top US officials who warned against NATO expansion following the end of the Cold War.³²⁸

However, Putin has denied that he had seriously weighed up whether to use TNWs, stating in autumn 2023 that it would make no “political or military sense” to use nuclear weapons.³²⁹ Observers have explained that Putin’s shift, whereby he largely refrained from mentioning Russia’s nuclear arsenal, resulted from pressure from Chinese premier Xi Jinping, though this was denied by Moscow.³³⁰ According to the Financial Times, meanwhile, Kremlin insiders argued that Putin had “projected scenarios resulting from the use of ‘tactical’ nuclear weapons and independently decided they would not give Russia an advantage”.³³¹

Reports concerning Putin’s decision-making calculus on nuclear matters must be treated with scepticism, since they are largely speculative. What we do know is that Russia has chosen to use its nuclear arsenal politically, by stopping its participation in the New START treaty and deratifying the Comprehensive Nuclear Test Ban treaty.³³² In addition, Claire Mills notes that, as part of its “campaign of nuclear pressure”, Russia “placed its weapons on heightened alert, tested and deployed new nuclear capabilities.”³³³ The Russian deputy foreign minister, Sergey Ryabkov, also said in October 2024 that Russia would resume nuclear testing if the US were to do so.³³⁴

Throughout the conflict Russian media commentators and officials have made highly provocative statements concerning nuclear weapons. Yet Freedman dismisses these as

“background noise,” reminding us that we should focus on the actions of the Kremlin and President Putin. Writing in December 2023, he argued that “a clear red line was identified from the start in Russian official pronouncements: the direct intervention by NATO forces in the war. NATO acknowledged and respected it. The red line has yet to move.”³³⁵ The academic Mark Bell concurs with Freedman, stating that nuclear weapons have imposed behavioural restraints so that “both sides *could* be doing a lot more in the conflict”.³³⁶

In November 2024, the United States allowed Ukraine to use the advanced weaponry they (and other allies such as France and the UK) had provided to Kiev, including long-range missiles, to strike deep into Russian territory.³³⁷ Changes to Russia’s nuclear doctrine swiftly followed. These were routinely presented by Western media and analysts as a dramatic lowering of the nuclear threshold. Yet experts, such as Harvard University Professor Matthew Bunn, provided a useful alternative take on matters, noting that: “the actual short-term probability of Russian nuclear use hasn’t increased. The long-term probability of nuclear war has probably increased slightly — because U.S. willingness to support strikes deep into Russia is reinforcing Putin’s hatred and fear of the West.”³³⁸

Kristensen also noted that the constant nuclear threats—with no use—risked a loss of credibility for Moscow, noting that Putin:

“has issued so many red lines that the latest change almost sounds like a desperate cry for attention. Escalating to nuclear use in response to anything happening in the Ukraine war does not seem credible because it wouldn’t help Russia’s war aims and could trigger a direct military clash with NATO that would be much more costly to Russia.”³³⁹

In other words, nuclear use threats, especially when repeated with no follow through, are likely to have a diminishing impact. As a corollary however, if such a threat is given in earnest in the future, an adversary may mistakenly ignore it, potentially leading to a nuclear conflict.

Similarly, for several Western analysts, such as Paul van Hooft, NATO had succeeded in calling Putin's bluff, whilst for Hamish de Bretton-Gordon, Russia's TNWs were a "paper tiger".³⁴⁰ Anatol Lieven of the Quincy Institute put a different emphasis on matters, arguing in February 2024 that "in terms of its own actions against NATO, however, the Russian government to date has been very cautious, despite the massive assistance NATO has given to Ukraine." For Lieven, Russia's caution stemmed from the fact that its poor performance in Ukraine showed up its military weakness. For this reason he argued, "Russia simply doesn't pose a serious threat of conventional attack on the EU and NATO."³⁴¹ Notably, Lieven has provided detailed analysis of both the prospects for a ceasefire to the war and a long-term peace agreement, outlining what each side needs to agree and compromise on to ensure that there is not a return to fighting.³⁴²

Looking more widely, it is important to consider how other states have viewed the war and how it may have influenced their nuclear thinking. In particular, Chinese analysts have closely followed Russia's nuclear behaviour. Tong Zhao argues that "many" such experts:

"seem to have concluded that Putin's nuclear signaling—issuing implicit nuclear threats by conducting nuclear exercises, testing nuclear-capable delivery systems, making references to nuclear weapons, and showing off the presidential nuclear suitcase—skillfully and effectively limited the North Atlantic Treaty Organization's military support for Ukraine and moderated the imposition of economic and political pressure on Russia."³⁴³

It remains unclear, however, as to what lessons Beijing will draw from the Russia-Ukraine war, which has heightened geopolitical competition between the US and China. The United States is concerned about China's growing military power and its' potential to challenge US dominance in the Indo-Pacific region. The conflict in Ukraine has also raised concerns about the potential for a wider conflict, including confrontation between the United States and China over Taiwan.³⁴⁴ Certain observers believe that Russia's experience in Ukraine could provide lessons for China as it considers its own

plans for Taiwan.

US and NATO nuclear strategy before and during the Russia-Ukraine war

Whilst some observers believe Russia's nuclear posturing during the Ukraine conflict was a success, there is much more anxiety concerning NATO's approach to deterrence before and during the war. Mainstream voices argued that the alliance's deterrence policy failed because it wasn't strong enough. For example, the House of Lords International Relations and Defence Committee concluded that, "the UK and NATO must thoroughly evaluate why their deterrence policy in the run-up to Russia's illegal and unprovoked invasion failed, and work to better understand Putin's strategy and intentions—including what influence others (like China) may have on his decision-making."³⁴⁵

However, the question of whether deterrence failed regarding the Ukraine conflict is complex and depends on an assessment of NATO's strategic interests. Arguments for failure include that Russia's actions in Ukraine (the annexation of Crimea, instability in eastern Ukraine and the 2022 invasion) fundamentally challenged NATO's vision of a peaceful Europe. NATO, meanwhile, despite attempts to signal resolve and a commitment to deterring Russia, was ultimately unable to prevent the invasion. On the other hand, arguments against the outright failure of NATO's deterrence include the fact that Ukraine is not a NATO member and the alliance's primary deterrence policy focuses on preventing attacks against its member states.

In the case of Ukraine, NATO leaders have employed a deterrence strategy by consistently delivering arms to Ukraine to deny Russia success in the war and enhance Ukraine's ability to defend itself. This strategy, it is argued, has enhanced Ukraine's capabilities and serves as a message that Russia's escalation beyond Ukraine would be futile.³⁴⁶ It is important to note that whether or not Russia's actions represent an ultimate failure of NATO's deterrence policy remains a subject of ongoing discussion and analysis. However, Russia's actions have persuaded NATO members

that the alliance must significantly bolster its deterrence and defence position, particularly on its eastern flank.

As a result, some within NATO—particularly Poland—argued that the alliance needs to strengthen its nuclear posture to prevent a Russian attack. This could include expanding NATO's 'nuclear sharing' programme by deploying US B61-12 bombs to more countries, and / or certifying allied air forces and F-35 aircraft operated by European NATO countries as capable of using nuclear weapons.³⁴⁷ Personnel, procedures, and bases would also need to meet US standards before Washington would agree to expand the sharing of its nuclear weapons.³⁴⁸

Calls for NATO to strengthen its deterrence posture have now gone into overdrive. In December 2024 NATO's Secretary General claimed that its members must shift to a "wartime mindset" due to the threat from Russia, and that significant spending on rearmament is necessary.³⁴⁹ Allegations that Russian unmanned aerial vehicles violated several NATO member's airspace in September 2025 were denied by Moscow, but described by Ukrainian President Volodymyr Zelenskyy as "an obvious expansion of the war by Russia."³⁵⁰ The question of whether Russia poses a threat to European nations, and, if so, precisely what this threat may entail, has thus become a key political question.

In recent years, Russia has been regularly demonised by Western politicians and commentators, being variously characterised as an "untrustworthy", "expansionist", "revisionist", "neo-imperialist" behemoth.³⁵¹ President Putin has also been described, including by the German defence minister and the head of Ukraine's national security council, as a 'new Hitler,' who is hellbent on territorial conquest across Europe.³⁵² For the Polish Prime Minister meanwhile, the Russian President is "more dangerous than Hitler or Stalin".³⁵³

More sober voices have claimed that Russia's aims are far more limited, and that the nation's leaders are attempting to protect Russia's influence over its near abroad and the regime's core security

interests.³⁵⁴ For example, the UK Parliament's Intelligence and Security Committee concluded in a report of 2020 (thus written prior to the 2022 invasion of Ukraine, but significant nonetheless) that:

"Russia's substantive aims, however, are relatively limited: it wishes to be seen as a resurgent 'great power' – in particular, dominating the countries of the former USSR – and to ensure that the privileged position of its leadership clique is not damaged."³⁵⁵

Whichever view of Russia's behaviour and goals we take, it must be accepted that some of those in Western nations claiming Russia is a clear and present danger to European security do so to advance their agenda of weakening Russia, advancing regime change in Moscow, and preventing a Russia-Chinese alliance against the West.³⁵⁶ For example, on 26th March 2022, President Biden, speaking in Warsaw, made the unscripted comment that: "For God's sake, this man [Putin] cannot remain in power." A month later, US Ambassador to Russia John Sullivan, stated that Washington would "do all" it could to ensure that the Russian decision to invade was "a strategic defeat for [Putin] and his government, and not a victory for him in Ukraine." US Ambassador to NATO Julianne Smith then stated in May 2022 that the US government wanted to see "a strategic defeat for Russia."³⁵⁷

Analysts, such as Professor Robert H. Wade, have also argued that the United States used the Ukraine conflict to trap Russia in a quagmire.³⁵⁸ Indeed, a 2019 study by the influential RAND group entitled *Extending Russia* examined "a range of nonviolent measures" that the US could take to "exploit Russia's actual vulnerabilities and anxieties as a way of stressing Russia's military and economy and the regime's political standing at home and abroad."³⁵⁹

Whilst consideration of how Russia should be responded to has significantly varied amongst analysts and commentators, numerous civil society groups have pushed back against calls for US nuclear expansion. For example, Daryl Kimball

countered the call from “NATO leaders” that the “alliance must double down on its dangerous nuclear deterrence posture”, arguing that “in reality, U.S. and NATO nuclear weapons have proven useless in preventing Russia’s brutal war against Ukraine.”³⁶⁰

For Tytti Erästö, a Senior Researcher in the SIPRI Weapons of Mass Destruction Programme, “the most significant source of NATO’s deterrent power is the combination of political unity and the advanced conventional forces that the allies can mobilize for collective defence during a crisis.” Furthermore, she claims, Russia is deterred by the US’s strategic nuclear arsenal. Thus, whilst NATO did not issue direct nuclear threats during the Ukraine war, it did engage in what Erästö describes as “intensified nuclear signalling”, including through “increased overflights and landings of strategic bombers in allied territory, sometimes very close to the Russian border.”³⁶¹

Erästö distinguishes the deterrent effect of the US’ strategic nuclear forces from TNWs, which, she argues “do not constitute a credible means of deterrence.”³⁶² Analysts such as Professor Tom Sauer have also pointed out the inability of NATO’s nuclear weapons to provide reassurance to the alliance’s Eastern European members during the 2014 Ukraine crisis.³⁶³ Despite this, Russia’s aggression against Ukraine since 2014, and growing tensions between Moscow and NATO, have been used to justify the continued deployment of US nuclear bombs in Europe. For example, former Supreme Allied Commander at NATO, Admiral James Stavridis, stated in 2014 that “withdrawing our relatively few weapons would be the absolute wrong signal.”³⁶⁴ Thus, the opportunity of removing US nuclear weapons from Europe, which, according to Hans Kristensen, had been “very likely” before 2014, was not taken.³⁶⁵ Instead, pressure is growing for NATO’s nuclear forces to be expanded.

Erästö’s main point is that NATO did not fail to deter Russia. “On the contrary,” Moscow feared ‘losing’ Ukraine to the alliance, and thus the alliance does not need more nuclear weapons. For others, such as Sauer, the Ukraine war highlights the

significant uncertainty concerning the effectiveness of deterrence. Sauer argues that “the most honest intellectual conclusion is that we simply do not know to what extent nuclear deterrence works or has worked.”³⁶⁶ Whilst Sauer is correct, Erästö’s valid point is that we need to consider the impact of US power on Russian strategic thought.

As previously noted, critics of Washington’s international policy have consistently argued that the US and NATO have pushed Moscow into a corner as the alliance expanded up to its borders, surrounded it with advanced military capabilities, and did not recognise its core security interests.

The current debate over the future of European and US defence policy was upended by the election in December 2024 of Donald Trump as US President. Trump demonstrated clearly what his approach to international relations would be when in February 2025 he twice voted with Russia at the UN on resolutions concerning the Ukraine conflict.³⁶⁷ Despite the questionable record of nuclear deterrence during the conflict, Trump’s recent statements on the US retreating from Europe, and his decision to cut support to Ukraine, has led to debates over other European states acquiring the bomb or ‘Europeanising’ the British or French nuclear arsenal.³⁶⁸ For example, the question has been raised as to whether Germany and Poland may need to develop their own nuclear weapons (or host NATO bombs in the latter case).³⁶⁹

Similar debates are occurring in Japan, South Korea and Saudi Arabia in response to deteriorating regional security conditions.³⁷⁰ Furthermore, the Heritage Foundation’s 2023 document *Project 2025* outlined several nuclear policy proposals and was widely considered to be the basis for Trump’s incoming administration. Cirincione outlines how the document, if implemented, would mean “the most dramatic build up of nuclear weapons since the start of the Reagan administration, some four decades ago.”³⁷¹

Summary

Those who claim nuclear deterrence worked, whether during the Ukraine-Russia conflict, or any other time, must accept the risks involved in the

continuation of nuclear confrontation, including the potential for miscalculation, misjudgement and escalation. Whilst it is not possible to rule out the possibility that deterrence may have had an effect on relations between states in the short-term, it is clear that it can all too easily fail and end in catastrophe. In addition, as Michael MccGwire notes, nuclear deterrence prevents sustained diplomacy between the major powers and markedly reduces the prospects for detente, arms control and disarmament.

Whilst nuclear deterrence is characterised by uncertainty, it is unquestionable that relations between the major powers are at a dangerous low point and that the risks of nuclear conflict is real. Escalation to nuclear use involving the US / NATO and Russia is all too possible without an end to the Ukraine conflict and a sustainable political agreement addressing the core security concerns of all parties. Given the limitations of nuclear deterrence identified, it is now in everyone's interest that the major powers convene top-level summits to consider what alternative options can provide for the legitimate (and often common) security needs of their citizens, including against real threats such as climate breakdown, cyber warfare, hunger, poverty, crime and terrorism.

Conclusion

This paper has critically examined the concepts of tactical nuclear weapons and limited nuclear war and found them both to be largely based on myths. This is firstly because any use of nuclear weapons would have strategic consequences. The humanitarian and environmental impacts of any nuclear use scenario cannot be reliably predicted, but even at relatively low levels, the outcomes are likely to be indiscriminate and very severe, and should thus be avoided at all costs.

Moreover, it is difficult to envisage any use of nuclear weapons that would comply with international law given the need to distinguish between civilian and military targets, and avoid causing excessive civilian harm. Furthermore, as senior political figures and military experts have argued, the notion that nuclear conflict can be controlled and limited is highly questionable given the potential for escalation—whether intended or not—caused by misunderstandings, miscalculations, accidents or irrational decision-making.

It is therefore now imperative that action on nuclear threat reduction, arms control, non-proliferation and disarmament is revived. This should include finding ways to remove TNWs from deployment and eliminate them from possessor state's stockpiles, in addition to firmly rejecting the notion that nuclear warfighting can be reliably controlled and restricted. Whether such progressive moves are possible in the near term will (for the P5 at least) largely be determined by the future of the Russia-Ukraine war. The possibility for peace between the belligerents, whether this involves a frozen conflict, or a more sustainable political resolution, will depend on the parties involved adopting new approaches.

For Washington and its allies, particularly those in Europe, such a shift will need to include them not trying to inflict a strategic defeat on Russia, nor seeking regime change in Moscow, but, instead, respecting Russia's core strategic needs, where legitimate. Equally, the Kremlin will need to be ready to accept compromises, for example, concerning Ukraine's future security requirements and, in the longer term, find an alternative purpose

beyond achieving 'great-power status'. The priority concerning the war must be to avoid a situation where escalation up to nuclear use becomes an acceptable risk for Russia to ensure regime survival. As the outcome of the war appears to have shifted in Russia's favour this outcome seems less likely. Nonetheless, the longer the war goes on, especially if it grows in intensity with greater US / NATO involvement, this could once again become a possibility.

An alternative, albeit difficult path, based on diplomacy and reconciliation between East and West, could lay the basis for a new era of stability and disarmament. Which of these pathways prevails in Washington and Moscow will decide much about the future of international peace and security. At present, such long-term strategic thinking, and an interest in, and ability to, reach diplomatic settlements with other powers, is sadly seemingly absent in US corridors of power and the Kremlin. This means that the world's citizenry and influential nations, must pressure and persuade the US and Russia to act responsibly.

2026 is set to be a key year for the future of nuclear arms control and disarmament. February will see the expiry of the New START nuclear arms reduction treaty between Russia and the United States, whilst in May the NPT Review Conference (RevCon) is due to be held. Over the next twelve months there will also be growing pressure—particularly from Israel, and hawks in Washington, amongst others—to ensure that Iran's nuclear programme cannot recover from the attacks carried out in June 2025.

The extension of New START, a successful RevCon, and a new agreement on Iran's nuclear programme would help build stable and more peaceful relations between the major powers. In addition, progress on negotiations between Moscow, Kiev and Washington to end the Russia-Ukraine war, and the restoration of cordial relations between the US and China would be extremely positive. Diplomatic momentum could then be used to address other key issues, such as TNWs, including by revisiting proposals for a No First Use

agreement between the nuclear possessors. Clearly, if the United States and its allies are to reach agreements to control and limit the development and use of nuclear weapons with China and Russia, then they will have to respect these states' core security interests.

The major powers will need to reach an understanding, at the highest level, over what their red lines are and how conflict can be avoided. If this is not possible, then there must be a strong agreement that nuclear weapons must never be resorted to and that states must act to reduce any incentive to use these weapons. For example, TNWs are warfighting weapons which should be removed from service. Their use, even at a low level, would risk escalation to a full-scale nuclear war by miscalculation or accident, which is unacceptable.

The UK has an important role to play in reducing nuclear risks, both as a depository state of the NPT, an NWS, and a member of the UN Security Council. Moreover, the UK is chairing the P5 process over 2025–2026. The UK's focus should therefore be on showing what responsible leadership means concerning the advancement of nuclear non-proliferation and disarmament. Regrettably, the UK's current commitment to nuclear weapons modernisation, and the expansion of its nuclear posture, are not compatible with taking a lead in these areas. Rather, they speak of a state which has jettisoned non-proliferation and disarmament in favour of maintaining tight relations with the White House, wherever possible, and a leading role in Europe via militarisation and a stronger commitment to NATO.

Democracy, transparency and accountability are now key battlegrounds in a period where several trends point to increasing misinformation, military spending, pro-war propaganda, authoritarianism and conflict. If European citizens are to succeed in preserving the values which differentiate their countries from Putin's Russia, they will need to push back against those championing militarism as a means to achieving their domestic and international political goals.

Above all, British citizens have a responsibility to restrain their government, hold decision-makers to account, and pressure ministers to act in accordance with international law at all times. Whilst the present moment can seem bleak, the UK's political institutions can be influenced in progressive directions. In a period where political change can occur at great speed, progressive groups must seize opportunities to harness supportive public opinion to influence debates on war and peace and find common cause with sympathetic parliamentarians wherever possible. This is needed both to prevent the UK repeating the mistakes of the past, and to prioritise diplomacy, détente and disarmament.

Box 3: International nuclear risk reduction: measures to address the dangers posed by TNWs and limited nuclear war

The major powers bear the main responsibility for preventing nuclear use and conflict, and reinforcing the nuclear taboo / tradition of non-use, including by: making joint statements renouncing nuclear warfighting, abiding by international law, prioritising diplomacy, and practising strategic restraint regarding the development and deployment of nuclear weapons. Whilst the current political climate may present few apparent opportunities to make significant progress on more ambitious goals in the near term it is important to keep them on the agenda. Specific proposals to restrain the potential for conflict to escalate up to nuclear use which have been explored by analysts include:³⁷²

i) Pursuing de-escalation strategies

Nuclear armed states should develop conflict management and prevention strategies focused on de-escalation, such as communicating clear intentions and limitations during a crisis or demilitarising the borders of adversarial or conflict prone states, for example, involving India-Pakistan. Dedicated nuclear dialogues and crisis management mechanisms could focus on areas like missile launch notification agreements and

“rules of the road” in various domains (nuclear, cyber, space).

ii) Adopting No First Use policies

A commitment by nuclear armed states to not be the first to use nuclear weapons, regardless of the circumstances, could significantly reduce the risk of escalation from conventional conflicts. All nuclear armed states could be encouraged to join China (and India) in adopting policies pledging not to use nuclear weapons first. This could be done unilaterally or through joint declarations. The P5 process could also be used to discuss a No First Use treaty. At present, nuclear armed states do not sufficiently trust each other to allow no first use declarations to be credible, but this need not stop discussion on what would be required to build workable and credible no first use declarations.

iii) De-alerting nuclear forces

Taking nuclear forces off high alert can immediately reduce the risk of accidental, mistaken or unauthorised launches.

iv) Ensuring reliable nuclear command and control

Ensuring the reliability and security of nuclear command, control and communication systems is crucial to prevent accidental or unauthorised use of nuclear weapons. This includes measures to improve resilience against cyberattacks and other disruptions.

v) Transparency and confidence-building measures

Increasing transparency about nuclear arsenals and doctrines, as well as nuclear armed states engaging in regular dialogue, can help reduce misperceptions and mistrust, which are key drivers of escalation. The UK and other NATO nuclear possessors should prioritise maintaining direct, top-level communications with Moscow and Beijing. This should be focused on ensuring that regional and international crises can be managed, and misunderstandings avoided, if and when they arise, via established diplomatic channels.

vi) Limiting missile defences

Whilst missile defences can be seen as a way to protect against nuclear attack, they can also be perceived as a threat by other nuclear armed states, potentially leading to an arms race or a pre-emptive strike. Limiting missile defences to the degree necessary to avoid such consequences is an important step.

vii) Moving to minimum deterrence

The US should rethink its extended deterrence arrangements. This could include consulting on options with allies in order to reduce the salience of nuclear weapons in defence policies.

viii) Reducing reliance on nuclear weapons

States should focus on only using conventional rather than nuclear arms (and only then when strictly legal and necessary) to pursue limited and defensive aims. In-depth research is needed concerning how major states can meet their security needs through non-nuclear means.

ix) Addressing the underlying causes of conflict

Ultimately, addressing the root causes of conflict, such as political tensions, territorial disputes and economic disparities, is essential to prevent escalation to nuclear war. To this end, Russia should take part in good faith negotiations to end the war in Ukraine, alongside all key participants in the conflict.

There are several other actions which should be taken to reduce nuclear risks and “nudge” the world back towards nuclear disarmament. A multi-faceted approach involving both state and non-state actors to reduce nuclear risks and promote disarmament, should include:

i) Preventing nuclear proliferation

The major powers should exercise strategic restraint to avoid increasing incentives for nuclear threshold states to acquire nuclear weapons. It is also vital that nuclear threshold states, such as

Germany, Poland, Saudi Arabia, Japan and South Korea are not assisted by nuclear possessors if they decide to acquire nuclear weapons, but are instead actively discouraged from doing so. States that have yet to sign or ratify the CTBT should be encouraged to do so, allowing it to enter into force. Overall, the focus should be on strengthening the NPT via multilateralism and diplomacy.

ii) Rethinking regional security

Regional security could be rethought to develop systems based on inclusive, non-hierarchical and minimally or non-militarised principles. The UK and / or other European states, for example, could convene a summit to explore options for regional security systems that are compatible with a European nuclear-weapon-free zone, or support track two diplomatic meetings with Chinese and Russian representatives to explore how to construct inclusive European and Asian security architectures. Discussion on this topic with Moscow should have agreeing a ceasefire and ending the Russia-Ukraine war as a central goal. A revised Helsinki process (which fostered dialogue between East and West, leading to the creation of the Organisation for Security and Cooperation in Europe) could serve as a model.

iii) Strengthening international agreements and regimes

The US and Russia should renew New START, negotiate a replacement, or ensure both parties abide by its limits even if it expires. The TPNW should be promoted by, for example, encouraging nuclear possessors to engage constructively with its goals, including by increasing transparency about how nuclear war plans meet humanitarian criteria. WMD and nuclear-weapon-free zones should be established, for example, in the Middle East.

iv) Implementing risk reduction measures

The locking down and tracking of nuclear materials that could be used to build bombs should continue to be prioritised. In addition, the risks posed by emerging technologies—especially advancements

in AI, autonomous weapon systems, and cyber capabilities and their potential impact on nuclear command, control and communication systems—should be studied and better understood. Greater transparency should also be encouraged regarding nuclear stockpiles, deployments, force postures and doctrines by all nuclear armed states.

v) Fostering dialogue and cooperation

The important role of international organisations, NGOs, researchers, civil society, and other stakeholders in influencing nuclear diplomacy and policy should be recognised and encouraged by governments.

Recommendations

International

- The US and Russia should not deploy TNWs, and begin negotiations aimed at agreeing a legally binding treaty for eliminating TNWs with verification measures.
- The major powers should reinforce the nuclear taboo, including by: making joint statements renouncing nuclear warfighting; abiding by international law regarding the threat or use of force; prioritising diplomacy; and practising restraint regarding the development and deployment of nuclear weapons.
- The US and Russia should act to revive nuclear non-proliferation and disarmament, for example, by renewing New START, negotiating a replacement, or ensuring both parties abide by its limits even if it expires. In addition, the nuclear powers should work cooperatively to support the NPT and ensure that the 2026 Review Conference has a positive outcome.
- Addressing the root causes of conflict, such as political tensions, territorial disputes and economic disparities, is essential to prevent escalation to nuclear war. To this end, Russia should agree to a ceasefire and take part in good faith negotiations to end the war in Ukraine, alongside all key participants in the conflict. In order to accomplish this, the framework of a longer-term ceasefire, which involves a sustainable peace settlement, should be agreed.

UK-focused

- The minimum the UK should do is commit to transparency over its defence nuclear enterprise (including spending, acquisition, maintenance, deployment and nuclear weapons use policy) as a contribution to the renewal of the NPT and a more democratic security policy.
- As chair of the P5 process, the UK should ensure that crisis stability between the major powers and

the avoidance of arms races are prioritised. Such efforts need to be backed up by actions, including for example, on transparency, concerning the UK's nuclear use doctrine and its red lines on force escalation and deterrence options.

- The UK should support the UN panel examining “the physical effects and societal consequences of a nuclear war on a local, regional and planetary scale.” The UK should also attend TPNW meetings as an observer in order to keep up to date with developments, provide briefings on negotiations to parliament and the public, and demonstrate support for UN processes aimed at advancing nuclear disarmament.
- The UK should not join NATO's nuclear sharing arrangement, and thus not acquire F-35A aircraft or host US B61-12 bombs. The UK should also rule out developing a sovereign TNW capability (for example, given the assessment of this system outlined in the 2013 Trident Alternatives Review).

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