Nuclear risk

*What is your evaluation of the current level of risk that nuclear weapons, of any type, could be used?*

Risk has two components: impact and likelihood.

**Impact:** We have shown in SGR briefings and other publications, based on the latest scientific modelling, that the launch of the nuclear missiles from a single British Trident submarine would directly cause 10 million civilian casualties and also lead to a decade of climatic cooling and drought severely affecting global food supplies.¹ Use of Trident would be completely disproportionate: both genocidal and suicidal despite the fact that Trident represents only approximately 1% of the total global stockpile of nuclear weapons. Global stockpiles of nuclear weapons are more than sufficient to destroy civilisation many times over.

The UK government, including the Ministry of Defence, currently refuses to acknowledge or engage with the latest peer-reviewed scientific evidence on the destructiveness of nuclear weapons, especially their likely effect on the climate.²

**Likelihood of use:** The evidence from more than seven decades since the Hiroshima bombing is that, despite not having had a nuclear war, we have come perilously close to nuclear destruction on many occasions. This has arisen due to a range of causes: false alarms; military exercises that became too realistic; faulty equipment; human error; and political brinksmanship.³

The current risk of nuclear use is unfortunately higher because of the ongoing and growing risk of cyber-attack or hacking. A former commander of US strategic nuclear forces recently urged that the 1,800 Russian and US weapons currently deployed on high alert and kept ready-to-fire should immediately be de-alerted, and physical measures be taken to lengthen the time needed to launch a weapon. This is to avoid the risk of hacking leading to an unintended launch due to the very short decision times of as little as 10 minutes if an incoming attack is suspected to be in progress.⁴ Hacking is also a risk for UK

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² Hansard (2015). Exchange between J Corbyn MP and The Minister for the Armed Forces, Mr Mark Francois (and others). 12 January, c584. [http://www.publications.parliament.uk/pa/cm201415/cmhansrd/cm150112/debtext/150112-0001.htm#15011222000023](http://www.publications.parliament.uk/pa/cm201415/cmhansrd/cm150112/debtext/150112-0001.htm#15011222000023)


nuclear forces. The UK government asserts that there is no hacking risk on the basis that systems are ‘air-gapped’, i.e. not connected to the internet. However, sophisticated methods can bypass the air-gap via the use of smart-phones, memory sticks, routine software updates or apparently innocent industrial components.\(^5\) ‘Rogue’ industrial components are the most likely explanation for the Stuxnet virus infection of air-gapped Iranian nuclear facilities in 2010.\(^6\)

SGR thus agrees with the assessment of the Bulletin of the Atomic Scientists that the risk of nuclear annihilation is grave.\(^7\) The latest assessments acknowledge the increased risks posed by irresponsible and erratic behaviour by leaders of the nuclear-armed states (for example, in the North Korea-US nuclear crisis) and through the US pull-out from the Iran nuclear deal and threats to withdraw from the INF treaty.

The fact that states such as China choose to store nuclear warheads separately from launch vehicles is because of the risk they perceive of accidental or unintended use.

**The Nuclear Non-Proliferation Treaty**

**Ahead of the 2020 Review Conference of the Nuclear Non-Proliferation Treaty (NPT), what are the biggest challenges facing global nuclear diplomacy?**

There is a marked complacency among the Nuclear Weapons States (NWS) about the existential threat that these weapons have to human civilisation and natural ecosystems. Greater recognition of this threat would help to encourage the NWSs to urgently take the actions that are necessary to make the world safer – such as deep cuts to nuclear arsenals and the de-alerting of all nuclear weapons.

No significant progress towards nuclear disarmament has been made by the NWSs for many years.\(^8\) Small reductions in the total numbers of nuclear weapons have been largely offset by modernisation of the deployed technologies. Calls for de-alerting and other threat reduction measures have gone unheeded. The challenge is for NWSs to recognise that nuclear deterrence is a deeply flawed strategy\(^9\) that threatens all humanity – including their own populations – and to therefore take seriously their commitments made under Article VI of the NPT to move towards disarmament.

NWSs could demonstrate their commitment to Article VI – and in doing so acknowledging the concerns that the non-nuclear weapons states have expressed at the UN – by taking a constructive approach towards the Treaty for

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the Prohibition of Nuclear Weapons (TPNW), and acknowledge it as part of the rules-based international system.

The negotiation of the TPNW has demonstrated that a clear majority of countries now understand that nuclear weapons threaten all nations and that, far from guaranteeing security, they create the conditions for global disaster. Nuclear deterrence is not a valid justification. Sooner or later the nuclear weapons standoff will fail, causing catastrophic destruction.

**To what extent do states still view the NPT as relevant?**

In general, NWSs view the NPT as vital for helping to prevent the proliferation of nuclear weapons to other states, but do not sufficiently value the disarmament elements. This latter aspect is critical to most other states, especially those not party to ‘extended nuclear deterrence’ arrangements. They increasing see the TPNW as the vehicle for reducing the nuclear weapons threat.

Our view is that the NPT is now at a critical juncture. The modernisation programmes being pursued by the NWSs, together with the disdain showed for other existing agreements such as the INF treaty and Iran nuclear deal, demonstrate a lack of commitment to implementing Article VI. Hence, we believe the NPT itself – and the non-proliferation regime it has helped to establish – is endangered.

**What are the prospects for other components of the nuclear non-proliferation regime, such as the Comprehensive Nuclear-Test-Ban-Treaty (CTBT)?**

We believe that other elements of the nuclear non-proliferation regime, such as the CTBT, are under threat if NWSs do not take their disarmament commitments much more seriously.

**How important are these agreements to the wider rules-based international order?**

We view these agreements – notwithstanding the flaws we have outlined – as central to the rules-based international order. The development of such agreements, even if they are only partially implemented, can be strong signs of the essential willingness to work towards security based on international law.

**To what extent does the existence of three nuclear armed states outside the NPT (India, Israel and Pakistan) destabilise the overall regime?**

Although it would clearly be very beneficial if these states acceded to the NPT, the main issue which is currently undermining the NPT is the failure of the NWSs which are parties to the treaty to make meaningful moves towards disarmament as obliged by Article VI. Their continued policy of indefinite nuclear deterrence provides greater justification for NWSs outside the treaty to follow suit.

**What prospects are there for a Middle East WMD free zone?**
Two major obstacles to negotiations on a Middle East WMD-free zone are the US withdrawal from the Iran nuclear deal and the lack of official recognition of Israeli nuclear weapons.

**The United States**

*To what extent will the United States' withdrawal from the Iran nuclear deal, as well as US efforts to achieve the de-nuclearization of the Korean Peninsula, affect the wider nuclear non-proliferation regime?*

Our view is that the US withdrawal from the Iran nuclear deal considerably undermines the non-proliferation regime. It shows the USA to be an unreliable partner in negotiations, and acts as a disincentive to other nations to engage in this way.

Regarding US efforts to achieve de-nuclearization of the Korean Peninsula, the lack of detail in the Trump-Kim summit agreement has led to confusion and acrimony in the months since. While negotiations during the first half of 2018 helped to reduce the high tensions of the previous year, there seems little prospect of meaningful de-nuclearization without a more conventional approach to negotiations by the USA.

In any case, the key issue remains the urgent need for the USA and other NWSs to make substantial reductions in alert status and numbers of nuclear weapons.

**Nuclear arms control**

*To what extent and why are existing nuclear arms control agreements being challenged, particularly the Intermediate-Range Nuclear Forces Treaty (INF) and the New Strategic Arms Reduction Treaty (New START), and what prospect is there for further such agreements? What prospects are there of progress in negotiating a Fissile Material Cut-Off Treaty (FMCT)?*

Clearly the INF is in real danger, given Trump's support of a US withdrawal. It is plausible that the fundamental reason for Trump's stance on the INF (under the strong influence of National Security Advisor, John Bolton) is a belief that having larger numbers of nuclear weapons or more 'useable' nuclear weapons than one's adversary makes deterrence more reliable. This is a deeply flawed assumption. Increasing the threat often leads to an adversary feeling less secure and either increasing the numbers or the usability of its own arsenal. This leads to arms races. As such, both sides become less secure – as do all the countries that might be affected by the devastation wrought by their weapons.

The prospects for New START and other new treaties look very uncertain if the USA continues to pursue such policies.

**Nuclear modernisation programmes**

*What effect will nuclear renewal programmes have on the nuclear non-proliferation and disarmament regime? To what extent could technological developments— including in missile capabilities, warhead...*
Any and all renewal or nuclear ‘modernisation’ programmes fundamentally undermine nuclear disarmament and non-proliferation regimes.\(^\text{10}\) As mentioned above, these generally lead to arms races. Even something as apparently minor as the modification of a nuclear warhead fuse can be regarded as provocative, as analysis by the Federation of American Scientists shows.\(^\text{11}\) So-called ‘Missile Defence’ systems, such as those being installed in Eastern Europe, are also destabilising. For non-nuclear weapons states (excluding those with ‘extended nuclear deterrence’ agreements with the NWSs), nuclear modernisation programmes are seen as a clear sign of the lack of any real intention to act on Article VI of the NPT.

The only viable solution is for NWSs to adhere to existing nuclear arms control agreements, and engage seriously in negotiations on new ones, while taking confidence-building measures unilaterally – along the lines of those which we have discussed above.

**New technologies**

To what extent will technological developments, both directly relating to nuclear weapons and in the wider defence and security sphere, affect nuclear diplomacy?

The technological developments with the most immediate implications for nuclear diplomacy and nuclear security are those in cyber-security, and the increasing use of algorithms and artificial intelligence. The increased use of ‘Control Network Operations’ by militaries to gain an advantage in cyber-warfare is especially disturbing.\(^\text{12}\) Hacking by non-state actors is also a real threat, as mentioned earlier.

Other developments such as anti-satellite systems and remotely-piloted drones – which include both armed and surveillance options, as well as aerial and underwater options – will increasingly complicate the considerations of nuclear-armed militaries and nuclear negotiators.\(^\text{13}\) The more rapidly nuclear disarmament is pursued, the less impact such developments can have.

**The Treaty on the Prohibition of Nuclear Weapons**

*If it were to enter into force, how would the Treaty on the Prohibition of Nuclear Weapons (commonly referred to as the Ban Treaty) affect...*

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\(^{10}\) For examples of how nuclear modernization programmes undermine the NPT, see: Kristensen H, Norris R (2014). https://journals.sagepub.com/doi/pdf/10.1177/0096340214540062


efforts to prevent the proliferation of nuclear weapons and bring about disarmament?

The TPNW is already having an impact on limiting investment into corporations involved in construction of nuclear weapons and many governments are already considering the implications of the new treaty. It is to be expected and welcomed that the treaty will gradually change the accepted norms and ways of thinking about nuclear weapons. Most states see nuclear weapons as a dangerous threat to security – both their own and globally. Only the NWSs and their ‘extended nuclear deterrence’ allies see nuclear weapons as conferring greater security. SGR’s view is that this is a dangerous and erroneous belief.

Our assessment is that nuclear weapons do not confer any military or practical advantage in security terms. Increasingly, due to the TPNW, the possession of nuclear weapons will confer a sense of acting outside the accepted global legal norms in the same way that possession of chemical and other weapons of mass destruction are currently viewed.

It is time for humanity to take its next step towards greater civilisation and a rules-based international order, and away from the threat of global destruction posed by the few, and thus embrace greater global security based on a more peaceful world order.

For these reasons the government should adopt a constructive approach towards the TPNW, and acknowledge it as part of the rules-based international system.

Within such approach UK government should take the following concrete steps:

- Attend future meetings of the TPNW as an observer state, to follow developments and avoid misconceptions
- Provide technical expertise and other input within the TPNW framework where relevant, for example on: discussions of verification issues that will take place and on which the UK continues to do substantial work; and on activities to address ongoing human and environmental harm from past nuclear testing
- Foster a dialogue with countries and organisations working on the TPNW on how the treaty can make an effective contribution to disarmament, including through making a positive, reinforcing impact on the disarmament pillar of the NPT
- In the medium to long term, the government should work towards signing and ratifying the TPNW, and acknowledge that it provides a framework for multilateral disarmament
- Parliament, including its committees, should provide support and scrutiny for the development of government policy in this area, and work to make the UK public more aware of the UK’s commitments, these international developments, and the government position on them.

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14 See for example:
Perhaps most importantly, government needs to change its thinking on nuclear weapons, to acknowledge that they have no practical use and to work to influence and inform wider public opinion in this regard. For too long the public have been given very questionable justifications for the UK possession of nuclear weapons, their targeting as part of a US dominated NATO and the role of the US in supplying them to the UK.

The P5

What are the policies of other P5 countries (China, France, Russia and the United States), and the UK’s other partners, on the Non-Proliferation Treaty (NPT) and on nuclear weapons more generally? Have these policies changed, and if so, why? How effective has the P5 process been, and what role will it have in the future?

NPT conferences are based on a consensus process which gives undue power and influence to the P5 and therefore helps to maintain the nuclear status quo.

The US, with the UK as a compliant partner, has applied pressure on non-nuclear weapons states not to sign and ratify the TPNW. In its leaked communication to NATO states in advance of the adoption of the TPNW, the US urged a vote against adoption on the grounds of the potential effectiveness of the treaty to critically hamper ‘extended nuclear deterrence’.

Ironically, the UK with the USA, Russia, and France issued a joint communiqué against the TPNW. We see this is a clear sign of the impact that the TPNW could have for nuclear disarmament. While presenting Russia as an ever-present and real threat, the UK chose to cooperate with this supposedly hostile state to maintain a regime of global nuclear threat.

The role of the UK

How effective a role has the UK played in global nuclear diplomacy in recent years? How could the UK more effectively engage on nuclear non-proliferation and disarmament? What should the UK Government’s priorities be ahead of the 2020 NPT Review Conference?

With the exception of its alignment with the EU over Iran, the UK follows US nuclear policy, a position recently confirmed by approval for the US decision to withdraw from the INF. The UK is also engaged in its own nuclear weapon modernization programme. The UK could, however, choose to take a leadership role in global disarmament by abandoning this programme, and engaging positively with the TPNW as specified above.

Written by Dr Philip Webber and Dr Stuart Parkinson, 17/11/19

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