

UC San Diego

Policy Briefs

Title

Beyond New Start: The Future of Arms Control

Permalink

<https://escholarship.org/uc/item/63r2v6hm>

Author

Reddie, Andrew W

Publication Date

2021-04-24

Data Availability

The data associated with this publication are within the manuscript.

Peer reviewed

BEYOND NEW START: THE FUTURE OF ARMS CONTROL

Andrew W. Reddie

Summary

In February 2021, the Biden administration announced that it would exercise Article XIV of the New START Treaty—extending the last remaining bilateral arms control agreement between the United States and Russia for five years. The announcement came against the backdrop of a rapidly evolving arms control landscape. The collapse of the INF (Intermediate-Range Nuclear Forces) Treaty and the U.S. withdrawal from the Open Skies Treaty have led many to suggest that the existing arms control regime might be close to its end.¹ Complicating matters are growing calls for emerging military technologies like cyber and artificial intelligence to be regulated by arms control agreements.²

These developments beg several questions for both policymakers and academics: Why does arms control matter today? What are the near-term challenges to the existing arms control regime? And what are the possible paths forward for arms control?

1 Brooks, Linton F. “The End of Arms Control?.” *Dædalus* 149, no. 2 (2020): 84-100; Neuneck, Götz. “The Deep Crisis of Nuclear Arms Control and Disarmament: The State of Play and the Challenges.” *Journal for Peace and Nuclear Disarmament* 2, no. 2 (2019): 431-452.

2 Williams, Heather. “Asymmetric arms control and strategic stability: Scenarios for limiting hypersonic glide vehicles.” *Journal of Strategic Studies* 42, no. 6 (2019): 789-813; Hansel, Mischa, Max Mutschler, and Marcel Dickow. “Taming cyber warfare: lessons from preventive arms control.” *Journal of Cyber Policy* 3, no. 1 (2018): 44-60; Maas, Matthijs M. “How viable is international arms control for military artificial intelligence? Three lessons from nuclear weapons.” *Contemporary Security Policy* 40, no. 3 (2019): 285-311.

This work is made available under the terms of the Creative Commons Attribution-NonCommercial 4.0 license.

In this IGCC policy brief, Andrew Reddie, a postdoctoral research fellow at the University of California, Berkeley, explores the continued relevance of arms control in addressing strategic challenges—even in an era of great power competition³; unpacks the recent extension of the New START agreement; and outlines three sets of near-term challenges to the existing arms control regime. The bottom line: arms control remains a key tool of statecraft, with future negotiations likely to include a number of technologies and represent a wider array of parties at the negotiating table.

The Continuing Relevance of Arms Control

With tensions rising among nuclear-armed powers, arms control is gaining renewed relevance in policy and academic circles. Though too often associated with nonproliferation and disarmament of military technologies, arms control—placing limits on the deployment of military capabilities—serves fundamentally strategic ends.⁴ Arms control agreements offer participating countries at least three strategic benefits.

- ◆ First, nuclear arms control regimes offer a means for ensuring that the deterrence relationship between the states party remains stable.⁵ Put another way, arms control avoids one side in a conflict having a preponderance of forces that might make it more likely to attack its adversary. Indeed, arms control serves both as a means of credibly signaling capability and of solving potential information problems that might make conflict more likely.
- ◆ Second, the practice of arms control allows for sustained engagement between erstwhile adversaries.
- ◆ Third, arms control limits spending on defense capabilities—arresting arms racing behavior.⁶

While arms control agreements have systemic consequences, they are negotiated, signed, extended, and abandoned by individual countries. This offers the relevant prism with which to consider the future of arms control and to explain both the extension of New START and the collapse of the INF Treaty.

3 This return to great power competition has underpinned numerous policy documents including the most recent U.S. National Security Strategy: Trump, Donald J. *National security strategy of the United States of America*. Executive Office of The President Washington DC Washington United States, 2017.

4 Schelling, Thomas C. and Morton H. Halperin, *Strategy and Arms Control* (New York: The Twentieth Century Fund 1961)

5 This is often described as “strategic stability.” For an in-depth discussion of the term, see: Colby, Elbridge A. *Strategic stability: Contending interpretations*. Strategic Studies Institute and US Army War College Press, 2013.

6 This is occasionally described as arms race stability: Colby, Elbridge A. *Strategic stability: Contending interpretations*. Strategic Studies Institute and US Army War College Press, 2013.



Barack Obama and Dmitry Medvedev after signing the “New START” treaty in Prague on April 8, 2010.
Credit: [Kremlin.ru](https://www.kremlin.ru), [CC BY 3.0](https://creativecommons.org/licenses/by/3.0/), via Wikimedia Commons.

The Continued Relevance of New START

New START, the last remaining arms control agreement limiting the number of nuclear arms in the United States and Russia, was slated to expire on February 5, 2021. The agreement set aggregate limits on all intercontinental-range nuclear weapons, and limited the United States and the Russian Federation to 700 deployed ICBMs, SLBMs, and heavy bombers and 1,550 nuclear warheads deployed across delivery systems.⁷

Despite uncertainty as to its eventual extension amid concerns that the treaty framework did not address capabilities central to the nuclear balance, both Moscow and Washington decided on the five-year extension to February 4, 2026. While some had discussed the potential for a shorter extension of one or two years to negotiate

⁷ Intercontinental Ballistic Missile (ICBM); submarine-launched ballistic missile (SLBM). The treaty does not establish the force structure of the two parties as long as they maintain these limits. The Treaty treats each heavy bomber as one warhead toward the overall count.

an alternative agreement, it is worth noting that it would have required a departure from the existing treaty language and may not have provided the requisite time to negotiate a new agreement designed to limit the number of strategic arms.⁸ Moreover, there is no guarantee that the pursuit of a new agreement over any length of time will be successful.

But the extension of New START sends a strong signal that arms control still matters, particularly at the upper bounds of strategic competition—where both sides view a ceiling on the number of deployed nuclear weapons as mutually desirable. (The INF Treaty was different in this regard: Russia claimed that intermediate-range nuclear capabilities banned by the Treaty were necessary to defend itself.) It is also worth noting that the verification requirements associated with New START are not terribly onerous—which is part of the framework’s appeal.

It remains an open question whether a mechanism similar to New START will exist beyond 2026, and whether a similar framework can be usefully applied to other contexts.⁹

The Future of Arms Control

The future of arms control depends on addressing three sets of challenges to consider. The first deals with the challenges facing the future of the nuclear arms control regime. The second involves the question of membership in nuclear arms control agreements. And the final set of challenges concern whether and how arms control regimes represent an appropriate mechanism to address emerging technologies.

1. CHALLENGES FACING THE FUTURE OF THE NUCLEAR ARMS CONTROL REGIME

The first set of challenges facing nuclear arms control involve whether additional nuclear capabilities need to be included in future agreements, in addition to the “ICBMs and ICBM launchers, SLBMs and SLBM launchers, heavy bombers, ICBM warheads, SLBM warheads, and heavy bomber nuclear armaments” accounted for in Article II of New START. While these capabilities remain integral to a future arms control arrangement, there are questions as to whether follow-on agreements need

8 Indeed, the New START negotiation over a year is something of an aberration rather than the rule for arms control negotiations as Amb. Rose Gottemoeller makes clear in her forthcoming book, *Negotiating the New START Treaty*.

9 Reddie, Andrew W. “Design Matters: The Past, Present and Future of the INF Treaty,” *Trust & Verify* 162: 1-5 (2018). “Nonstrategic Nuclear Weapons,” Congressional Research Service. March 16, 2021.

to address nuclear weapons with shorter ranges and lower yields (nonstrategic nuclear weapons) and missile defense capabilities. These calls are driven in part by “the disparity in numbers between U.S. and Russian nonstrategic nuclear weapons” and fear that this disparity is of increasing strategic consequence—particularly to U.S. allies in Europe.¹⁰ Russian officials, on the other hand, have long made clear that any future arms control negotiations must address missile defense technologies.¹¹ The unwillingness of Washington and Moscow to engage on these issues may hinder a follow-on agreement to limit nuclear arms—even bilaterally. Moreover, adding these capabilities contributes to existing challenges with verifying the data provided by state parties to arms control agreements—though new verification technologies may help to address some of these challenges.¹²

2. THE QUESTION OF MEMBERSHIP IN NUCLEAR ARMS CONTROL AGREEMENTS

This brings us to the second major challenge facing future arms control agreements—who should be at the negotiating table? Since World War II, the majority of arms control agreements have involved Washington and Moscow—and a large number of those have been bilateral.¹³ Even with only two delegations, negotiating arms control is no simple task. Yet, calls to include additional countries are increasing, with many arguing that the distribution of capabilities across the globe requires broader engagement.¹⁴ That said, efforts to bring China into discussions to replace New START prior to its February 2021 extension failed to get off of the ground.

The number of states party to an agreement has implications for both negotiation and implementation of arms control agreements. It also remains unclear how to integrate additional states into the existing arms control regimes, though track 2 and track 1.5 dialogues are likely to be central to bringing additional states to the negotiating table.

10 “Nonstrategic Nuclear Weapons,” Congressional Research Service. March 16, 2021.

11 Russian Foreign Minister Sergei Lavrov. “State Duma Passes New START Ratification Bill in Second Reading,” *Itar-Tass*, January 14, 2010 cited in “Nonstrategic Nuclear Weapons,” Congressional Research Service. March 16, 2021.

12 Engel, Ezra M., and Areg Danagoulian. “A physically cryptographic warhead verification system using neutron induced nuclear resonances.” *Nature communications* 10, no. 1 (2019): 1-10; Hecla, Jake J., and Areg Danagoulian. “Nuclear disarmament verification via resonant phenomena.” *Nature communications* 9, no. 1 (2018): 1-7; Kemp, R. Scott, Areg Danagoulian, Ruaridh R. Macdonald, and Jayson R. Vavrek. “Physical cryptographic verification of nuclear warheads.” *Proceedings of the National Academy of Sciences* 113, no. 31 (2016): 8618-8623.

13 A small number of arms control agreements became multilateral following the end of the Cold War.

14 Zhao, Tong. “Opportunities for Nuclear Arms Control Engagement with China.” *Arms Control Today* 50, no. 1 (2020): 9-12.



Credit: [Andrew West](#)

3. WHETHER AND HOW ARMS CONTROL REGIMES REPRESENT AN APPROPRIATE MECHANISM TO ADDRESS EMERGING TECHNOLOGIES

Interestingly, this uncertainty has not dampened calls for the use of arms control to address emerging technologies—from cyber capabilities to hypersonic missiles and autonomous systems.¹⁵ But efforts to use arms control to regulate emerging technologies face three challenges. The first is the multilateral nature of the problem. Whereas only a handful of countries possess nuclear weapons technologies, emerging technologies involve many countries, each engaged to varying degrees in research, development, and deployment. Some emerging technologies—most notably cyber capabilities—have particularly low barriers to entry, allowing a large numbers of states to engage in the domain. In theory, the larger the number of actors, the more difficulty negotiators will face when coming to terms on the form and function of an arms control arrangement. One need look no further than the difficulty in establishing norms for the conduct of states in both the cyber and space domains as examples of this difficulty.

¹⁵ Incidentally, many calling for regulation of these emerging technologies using arms control struggle to define these capabilities or to consider how militaries deploy them. This is particularly problematic as it relates to artificial intelligence/machine learning technologies—some of which have been in use since in the 1960s. For a discussion on the deployment of autonomous weapon systems, see: Boulanin, Vincent, and Maaïke Verbruggen. “Mapping the development of autonomy in weapon systems.” *Stockholm International Peace Research Institute* (2017): 120.

The second challenge of using arms control to regulate emerging technology concerns the political will associated with regulating the military technology in the first place. As discussed above, arms control reflects a strategic determination that eschewing the development and deployment of a particular capability provides benefits—both to countries that agree to be regulated, and to the world. It is unclear whether this is the case for any of the technologies noted above. This is perhaps most clear in the case of hypersonic missile technologies. If a country's leadership believes that maneuverability—the most important characteristic of a hypersonic missile system—is necessary to address a strategic weakness (even if existing evidence suggests otherwise), then getting to the negotiating table is going to be difficult at best.¹⁶ This is also a challenge faced by dual-use technologies that have clear non-military applications—as is the case for technologies that enable autonomous systems.

Finally, verification has been an increasingly important aspect of arms control regimes and it is unclear how many of these emerging technologies can be subject to rigorous verification—whether in the form of continuous monitoring, on-site inspections, or data exchanges. How should we think about “numbers and types” of cyber capabilities, for example? Given this reality, confidence-building measures or joint declarations of norms may be more appropriate than the arms control designs of old.¹⁷

For now, policymakers appear satisfied with the extension of New START. But arms control ought not to be placed on the proverbial shelf and forgotten about until 2025. Hard work needs to be done to establish the framework for a nuclear arms control regime that can appropriately lock in the benefits of New START for Washington and Moscow, and to consider what tools, if any, might be relevant to address emerging technologies—in the event that there is a strategic imperative to limit their deployment. Overall, arms control in its variety of forms remains an important tool of statecraft—but it may look quite different in 2030 than it did in 2010.

16 Reddie, Andrew. “Hypersonic Missiles: Why the New ‘Arms Race’ is Going Nowhere Fast.” *Bulletin of the Atomic Scientists* 13 (2020); Tracy, Cameron L., and David Wright. “Modeling the Performance of Hypersonic Boost-Glide Missiles.” *Science & Global Security* (2020): 1-27; For a discussion of the debate concerning the efforts of hypersonic weapons, see: Wilson, Sam. “The Hypersonic Missile Debate,” Center for Space Policy and Strategy, Aerospace Corporation (2021).

17 Maurer, Tim. “A Dose of Realism: The Contestation and Politics of Cyber Norms.” *Hague Journal on the Rule of Law* (2019): 1-23.

Authors

ANDREW W. REDDIE is a Postdoctoral Research Fellow at the University of California, Berkeley where he is funded by the UC Lab Fees Grant, and an alumnus of IGCC's Public Policy and Nuclear Threats training program.

About IGCC

The UC Institute on Global Conflict and Cooperation (IGCC) addresses global challenges to peace and prosperity through rigorous, policy-relevant research, training and engagement on international security, economic development and the environment. Established in 1982, IGCC convenes expert researchers across UC campuses and the Lawrence Livermore and Los Alamos National Laboratories, along with U.S. and international policy leaders, to develop solutions and provide insights on the most profound global security challenges.