



POST-WORKSHOP REPORT

A New Age of Nuclearity? Great Powers and Greater Consequences

SARAH GERSTEIN
THOMAS J. SHATTUCK
COLLEEN CRONNELLY

SEPTEMBER 2023



ABOUT THE AUTHORS

Sarah Gerstein

Ph.D. Student, Political Science,
University of Pennsylvania

Thomas J. Shattuck

Senior Program Manager, Perry World House

Colleen Cronnelly

Programs Fellow, Perry World House

Cover photo: U.S. Navy photo/Released

ABOUT PERRY WORLD HOUSE

Perry World House is a center for scholarly inquiry, teaching, research, international exchange, policy engagement, and public outreach on pressing global issues. Perry World House's mission is to bring the academic knowledge of the University of Pennsylvania to bear on the world's most pressing global policy challenges and to foster international policy engagement within and beyond the Penn community.

Located in the heart of campus at 38th Street and Locust Walk, Perry World House draws on the expertise of Penn's 12 schools and numerous globally oriented research centers to educate the Penn community and prepare students to be well-informed, contributing global citizens. At the same time, Perry World House connects Penn with leading policy experts from around the world to develop and advance innovative policy proposals.

Through its rich programming, Perry World House facilitates critical conversations about global policy challenges and fosters interdisciplinary research on these topics. It presents workshops and colloquia, welcomes distinguished visitors, and produces content for global audiences and policy leaders, so that the knowledge developed at Penn can make an immediate impact around the world.

Convened with the support of the Carnegie Corporation of New York.

Introduction

<< The conference brought together policymakers, practical experts, and academics with the goal of identifying and addressing long-standing, current, and emerging issues in the nuclear policy space. >>

A confluence of developments—such as the war in Ukraine and related threats by Russian President Vladimir Putin to breach the so-called “nuclear taboo,” as well as the People’s Republic of China’s nuclear arsenal modernization and expansion efforts—have called into question the future of the nuclear global order. Just as geopolitical events have pushed nuclear issues to the forefront of policy conversations, in popular culture, the release of *Oppenheimer* has the public once again talking about nuclear cataclysm. Against this backdrop, Perry World House at the University of Pennsylvania convened its 2023 Global Order Colloquium, “A New Age of Nuclearity? Great Powers and Greater Consequences,” from September 25 to 28, 2023. The conference brought together policymakers, practical experts, and academics with the goal of identifying and addressing long-standing, current, and emerging issues in the nuclear policy space.

Perry World House, Penn’s center for global affairs and policy engagement, develops policy recommendations that advance solutions to urgent global challenges. The institute focuses on an array of topics through its three research programs: Global Order, investigating challenges to emerging technologies and security; Global Shifts, operating at

the nexus of climate change, urbanization, and human vulnerability; and Global Justice and Human Rights, advancing work on freedom, democracy, and justice. This colloquium, part of the Global Order program, leveraged Perry World House’s unique ability to draw on expertise from the University of Pennsylvania’s numerous schools and institutes as well as its diverse network of experts.¹ In doing so, it advanced Perry World House’s mission to bridge the gap between academia and the policy community and to engender innovative and stronger policy recommendations.

Through strategic convenings, among other programming, the Global Order theme broadly explores the drivers of change in the international system. For instance, the April 2023 workshop, “The Future of Nuclear Weapons, Statecraft, and Deterrence after Ukraine,” focused on various facets of the nuclear dimension of the Ukraine conflict and its ramifications beyond Europe, particularly within the United Nations (UN). Building on outcomes of this earlier conversation, the fall 2023 colloquium delved deeper into policy options and opportunities for the United States, its allies, and the United Nations. It consisted of two parts: a private workshop conducted under the Chatham

1 A list of all conference participants is included as an annex to this report.

House Rule, the proceedings of which form the basis of this report; and public keynote programs that featured world-renowned experts in the field, such as Rachel Bronson of *Bulletin of the Atomic Scientists*, Izumi Nakamitsu of the UN Office of Disarmament Affairs, Joan Rohlfing of the Nuclear Threat Initiative, and Elayne G. Whyte, who played a critical role in the negotiations that led to the creation of the Treaty on the Prohibition of Nuclear Weapons (TPNW).

The private workshop specifically focused on four main issue areas. They included: (1) the increasing risk of climate change and conflict to nuclear safety; (2) arms control communication and negotiations; (3) the roles of non-nuclear states as norm creators and influencers; and (4) developments in the Indo-Pacific in the aftermath of the Washington Declaration between the United States and South Korea and the trilateral Camp David Summit with President Yoon Suk Yeol of South Korea, President Joe Biden of the United States, and Prime Minister Kishida Fumio of Japan.

To address these issues, the workshop hosted four panels guided by specific questions:

Nuclear Safety and Proliferation: Consequences During Peace, War, and Climate Crises

How do climate change and nuclear energy intersect in a less secure global order? What changes should be made to ensure greater security of nuclear power plants amidst a changing climate and increased prospects for conflict?

Hotlines and the Road to Renewed Negotiations

Given great power tensions and the isolation of Russia due to its invasion of Ukraine, what are the prospects the United States, Russia, and China will (re)convene and rejuvenate arms control negotiations? Russia and the United States have traditionally led in this space, but given the collapse of those bilateral arms control mechanisms, is there space for the United States to bring China to the table to shape the future of arms control?

Indo-Pacific Nuclear Developments after the Washington Declaration

Does the Washington Declaration, signed by the United States and South Korea, end the conversation regarding US allied proliferation in the Indo-Pacific region? How will the discourse and policy debates evolve in the aftermath of the Washington Declaration?

Non-Nuclear States as Norm Creators/Influencers

How do non-nuclear states develop norms to create behavior change in nuclear powers? What role do international institutions like the United Nations play in empowering non-nuclear states?

Key Takeaways

<< Participants offered proposals on the continued utilization of international institutions, including ways that non-nuclear states could remain “norm entrepreneurs” for worldwide action. >>

Participants deliberated concrete actions and recommendations for policymakers to consider across a variety of nuclear-related issues. Their discussions focused on risks at the intersection of nuclear power and climate change, particularly in light of weakening global norms against threats of nuclear use. Additionally, participants offered proposals on the continued utilization of international institutions, including ways that non-nuclear states could remain “norm entrepreneurs” for worldwide action. Their discussion also highlighted the urgent need to consider how to best educate the next generation of arms control negotiators and strategists.

The Continued Importance of International Institutions

This section discusses the role of international institutions and arms control regimes, as considered by experts at the workshop.

International institutions helped shape the arms control regime that stabilized the competition

over growing nuclear arsenals, while also scaling back on testing.² However, the current geopolitical situation threatens the continued viability and efficacy of both international institutions and arms control agreements. While these institutions have lost power and influence, they continue to offer an important space where great and small powers can find opportunities for communication and cooperation. Strong institutions will remain vital to nuclear safety, despite challenges to their value, as they allow actors to find common ground, no matter how minute. This is particularly important, especially in the bilateral space, as countries now are less likely to engage constructively with those that they consider opponents.

Nuclear disarmament, that is a world free of nuclear weapons, remains a strongly held joint objective of the United Nations.³ While the United Nations Security Council (UNSC) holds much power in the United Nations, the UN General Assembly (UNGA)

2 Paolo Cotta-Ramusino, “Next Steps to Universal Nuclear Disarmament,” *The United Nations Chronicle*, accessed on November 17, 2023, <https://www.un.org/en/chronicle/article/next-steps-universal-nuclear-disarmament>; Robert Floyd, “Ending Nuclear Testing to Advance Global Peace and Security,” *The United Nations Chronicle*, August 26, 2023, <https://www.un.org/en/un-chronicle/ending-nuclear-testing-advance-global-peace-and-security>; “Global Issues: Disarmament,” *The United Nations*, accessed on November 17, 2023, <https://www.un.org/en/global-issues/disarmament#:~:text=The%20UN%20has%20given%20highest,the%20direst%20threats%20to%20humankind>; “Treaties and Regimes: United Nations Office of Disarmament Affairs,” *Nuclear Threat Initiative*, accessed on November 17, 2023, <https://www.nti.org/education-center/treaties-and-regimes/un-office-of-disarmament-affairs/>.

3 “International Day for the Total Elimination of Nuclear Weapons: 26 September,” *The United Nations*, accessed on November 17, 2023, <https://www.un.org/en/observances/nuclear-weapons-elimination-day#:~:text=The%20General%20Assembly%20included%20nuclear,membership%20of%20the%20United%20Nations>; “Global Issues: Disarmament,” *The United Nations*.

offers opportunities for smaller powers, including non-nuclear states, to actively engage.⁴ The UNGA also provides a substantive community that engenders options for advancing nuclear disarmament.

Recent history underscores the importance of the constructive engagement of the United States and other great powers, particularly China and Russia, in these multilateral institutions. During the Cold War, a series of arms control agreements helped to control the build-up and proliferation of nuclear weapons, limiting the risk of nuclear war.⁵ The collapse of much of the strategic arms control regime that existed during the Cold War has been exacerbated by China's nuclear buildup.⁶ The United States must, therefore, remain a norm entrepreneur for safeguards, enforcement, and nonproliferation, in spite of its often-fraught relationship with nuclear and non-nuclear states. Washington must also continue to invest in international institutions.

While current geopolitical instability may threaten nuclear norms and institutions, it also offers opportunities to create new coalitions, among both nuclear and non-nuclear states. China has often declined to participate in trilateral negotiations, though it has remained open to the possibility of multilateral negotiations. Beijing recently engaged in bilateral conversations with Washington after

years of reluctance.⁷ One of the key concerns cited is a lack of trust among countries with the most nuclear weapons: the United States, Russia, and China. By bringing in countries from around the world to help strengthen existing arms control regimes, including the Nuclear Non-Proliferation Treaty (NPT) and TPNW, common ground can be found. Additionally, countries should continue to take unilateral measures in parallel with other countries, helping to rebuild some of the trust in the process. In order to raise nuclear safety, these actions must be nested in broader discussion of government-sponsored and -supported regulation. Governments are the only entities that can enforce key safety standards.

Due to its binding nature, the NPT remains a cornerstone of the arms control regime.⁸ Where bilateral agreements have faltered, many other arms control treaties, including the TPNW,⁹ have been ratified by many states in the world. Arms control regimes must include opportunities for inspection and verification, not simply of weapons but also of power-generation facilities. These facilities must be secured in order to maintain safe working conditions and proper safety of sensitive equipment and materials.

4 Andrea Ó Súilleabháin, "Small States at the United Nations: Diverse Perspectives, Shared Opportunities," International Peace Institute, May 2014, https://www.ipinst.org/wp-content/uploads/publications/ipi_e_pub_small_states_at_un.pdf.

5 This includes the 1963 Limited Test Ban Treaty, the 1967 Outer Space Treaty, the 1968 Nuclear Nonproliferation Treaty, the 1971 Seabed Arms Control Treaty, the 1972 Anti-Ballistic Missile Treaty, the 1974 Threshold Test Ban Treaty, the 1976 Peaceful Nuclear Explosions Treaty, the 1987 Intermediate-Range Nuclear Forces Treaty, the 1987 Missile Technology Control Regime, and the Strategic Arms Limitation Talks (1972 and 1979) and Treaty (1991).

6 Emily Feng, "New Pentagon Report Claims China Now Has Over 500 Operational Nuclear Warheads," *NPR*, October 19, 2023, <https://www.npr.org/2023/10/19/1207156597/new-pentagon-report-claims-china-now-has-over-500-operational-nuclear-warheads>.

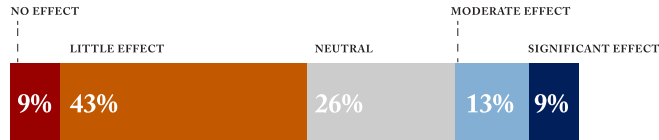
7 Patricia Lewis and Marion Messmer, "China-US Talks Offer Optimism at Bleak Time for Arms Control," *Chatham House*, November 9, 2023, <https://www.chathamhouse.org/2023/11/china-us-talks-offer-optimism-bleak-time-arms-control>; Michael R. Gordon, "China, the U.S. to Meet for Rare Nuclear Arms-Control Talks," *The Wall Street Journal*, November 1, 2023, <https://www.wsj.com/politics/national-security/china-agrees-to-arms-control-talks-with-u-s-87a44b38>.

8 "The Treaty on the Non-Proliferation of Nuclear Weapons," opened for signature on July 1, 1968, *The United Nations Office for Disarmament Affairs*, accessed on November 17, 2023, <https://disarmament.unoda.org/wmd/nuclear/npt/#:-:text=The%20Treaty%20represents%20the%20only,the%20Treaty%20was%20extended%20indefinitely>.

9 "Treaty of the Prohibition of Nuclear Weapons," *The United Nations Office for Disarmament Affairs*, accessed on November 17, 2023, <https://disarmament.unoda.org/wmd/nuclear/tpnw/>.

Q:

What effect has the Treaty on the Prohibition of Nuclear Weapons had in strengthening non-proliferation norms since its inception in 2021?



In addition, arms control and other international negotiations do not necessarily have to be built on trust in the other country but can focus on the process of managing nuclear competition. These negotiations can center on transparency around development and testing, rather than simply on achieving a numerical goal. Monitoring and verification are both important parts of arms control regimes. Policymakers must highlight the key roles of arms control. These agreements are designed to put together a package of requirements that both sides agree create risks while also serving to mitigate issues. In this way, arms control is not simply a trade-off but creates opportunities. Additionally, any arms control agreements now must prioritize asymmetric arms control, where all sides do not have the same weapons or priorities for those weapons.

Given this backdrop of global power dynamics, countries are confronted with the climate crisis. While nuclear power has often been considered a panacea for meeting the global energy demand, it has not proved to be one yet; many of the original promises of nuclear power have been unrealized, particularly for states in the Global South.¹⁰ While nuclear power offers a clean energy alternative to fossil fuels, it must be used in conjunction with other options. Even partial transitions to nucle-

ar power might not be possible if international institutions will not help to oversee and safeguard nuclear power plants. Further, education is needed to dispel myths and rumors about the risks of nuclear power and to elaborate the role it could play in underwriting a global energy transition.

As the world decides the future of nuclear power in the face of a changing climate, the International Atomic Energy Agency (IAEA) may be unable to oversee all aspects of this challenge. Instead, other institutions may need to watch over nuclear power plants and the safety concerns inherent in using nuclear power to meet energy demands. International institutions may also be able to provide ways for governments to understand the systemic risks inherent in nuclear power and provide support to countries seeking to develop this energy source with limited expertise. These institutions must try to integrate all countries into arms control agreements that regulate not just nuclear weapons but also nuclear power development. While nuclear power may appear to be a remedy for limiting the emissions that cause climate change while meeting global energy demand, past efforts to transition to this energy source remain incomplete.

Policymakers considering the benefits and costs of nuclear power face a difficult landscape and must

10 Mark Cooper, "A Dozen Reasons for the Economic Failure of Nuclear Power," *Bulletin of the Atomic Scientists*, October 17, 2017, <https://thebulletin.org/2017/10/a-dozen-reasons-for-the-economic-failure-of-nuclear-power/>; William Deo, "Can Nuclear Hit Its Stride in Africa," *Kleinman Center for Energy Policy*, July 29, 2020, <https://kleinmanenergy.upenn.edu/research/publications/can-nuclear-hit-its-stride-in-africa-power-to-the-people-evaluating-nuclear-as-a-bridge-to-sustainable-energy-in-africa/>; Daria Iurshina, Nikita Karpov, Marie Kirkegaard, and Evgeny Semenov, "Why Nuclear Power Plants Cost So Much – and What Can Be Done About It," *Bulletin of the Atomic Scientist*, June 20, 2019, <https://thebulletin.org/2019/06/why-nuclear-power-plants-cost-so-much-and-what-can-be-done-about-it/>; David L. Chandler, "Study Identifies Reason for Soaring Nuclear Plant Cost Overruns in the U.S.," *MIT News*, November 18, 2020, <https://news.mit.edu/2020/reasons-nuclear-overruns-1118>.

remain flexible and innovative. National expertise is often severely lacking, and decisionmakers are required to think creatively about how to protect and manage plants, especially for worst-case scenarios. Cost and safety associated with nuclear power plants remain the largest deterrent to increased investment. Just behind those two factors is public perception.

Overall, a focus on strong institutions remains vital to nuclear safety, especially in the face of climate change, rising challenges against nuclear nonproliferation, and new technologies. Further, the current geopolitical situation has made it increasingly difficult for the great powers to communicate effectively, which has eroded the strong norms that had been in place. Countries therefore should maintain their connections through already-existing institutions, strengthen those connections, and aim for international cooperation in any way possible.

Policy Recommendations:

Shore up existing institutions and architecture.

While it is tempting for great powers to walk away from institutions, they cannot abandon these agreements. Instead, great powers, including the United States, should remain committed to institutions that allow for open communications and to set normative examples. Countries should find opportunities to create common spaces that can serve as springboards for additional negotiations.

Include new voices at the table: bring together policymakers and experts to build better solutions.

Policymakers must consider who is at the table when discussing the future of institutions, particularly those dealing with emerging technologies. New technologies will bring new risks. Bringing the right people to fora to discuss possibilities and challenges can only help to strengthen solutions. Great powers should include voices from his-

torically underrepresented parts of the world. Additionally, policymakers must include technology experts and academics in their discussions, particularly when innovative solutions are needed. Bringing together new voices can help to provide pioneering solutions and opportunities.

Recommit to lesser-known agreements.

Many agreements did not overly constrain countries but offered opportunities for states to cooperate on minor issues. For example, the United States and Soviet Union signed the Agreement on the Prevention of Nuclear War in 1973. It outlines the general conduct of both countries toward each other, as well as toward third parties regarding the avoidance of nuclear war. Additionally, the 2002 Strategic Offensive Reductions Treaty (SORT) committed the United States and Russia to reducing their deployed strategic nuclear forces to 1,700–2,200 warheads apiece. Unlike past arms control agreements, SORT did not specify which warheads had to be reduced or how reductions were to be made. This vague agreement allowed both sides to interpret it as they deemed necessary, giving them immense flexibility. Countries should find opportunities to recommit to these agreements and draw up others in this same vein to show mutual commitment to international cooperation. These small steps will open opportunities for greater cooperation later.

The Role of Non-Nuclear Powers in International Institutions

This section reflects discussions on the role of the Global South and the non-nuclear powers in international institutions, including arms control agreements. These states have often banded together to make nuclear powers better account for their actions.

A key corollary to the continued importance of international institutions is the importance of non-nuclear powers in those institutions. The role of the Global South is one that is often overlooked when considering arms control agreements, but Global South countries have managed to come to

many agreements that have helped keep nuclear weapons out of their regions. Non-nuclear states banded together to stop the use of nuclear weapons, with over ninety states signing the TPNW and over sixty ratifying it. A fifty-point action plan proposed in Vienna in 2022 set out an ambitious plan for implementation of the treaty.¹¹

There are a number of historical periods in which non-nuclear states have been particularly important in norm-setting. The first was when the ban on nuclear testing was being debated early in the Cold War. At that point, the morality of nuclear testing was under attack, and many countries, fearful over the consequences of unrestrained testing, joined forces.¹² The creation of regional nuclear weapon-free zones marks another notable period. These regional security architectures served to protect non-nuclear states against the threat of nuclear weapons “in their backyard.” The first nuclear weapon-free zone, created in 1969, banned nuclear weapons in Latin America and the Caribbean as far north as Mexico and the Bahamas. The Treaty of Rarotonga established a second nuclear weapon-free zone in 1986 in the South Pacific.¹³ Both treaties were established in reaction to regional events, including the Cuban Missile Crisis and nuclear weapon testing that those countries perceived

as threatening their safety. The Treaty of Bangkok covers the Association of Southeast Asian Nations (ASEAN) countries, and the Semipalatinsk Treaty covers parts of Central Asia. Finally, the Treaty of Pelindaba created the African Nuclear Weapon Free Zone in 2009.¹⁴ Often, these regional treaties have been successfully developed in the wake of global events. Additionally, the passage of the TPNW centered on recent humanitarian campaigns highlighting the threats associated with nuclear winter.

Any country can become a norm entrepreneur, and non-nuclear countries will continue to shape norms. Countries without nuclear weapons remain far more populous than those with nuclear weapons, offering opportunities for collective bargaining and issue linkages that can draw nuclear states into the conversation.¹⁵ For instance, African countries can increase their leverage in international negotiations by linking their supplies of rare earth elements to negative nuclear security guarantees.

Non-nuclear states should continue the work already enshrined in treaties that create nuclear weapon-free zones. They can build on those successes by networking with other states and fostering unity among this community. While the

11 “First Meeting of States Parties to the Treaty on the Prohibition of Nuclear Weapons Draft Action Plan,” *United Nations Office for Disarmament Affairs*, June 22, 2022, https://documents.unoda.org/wp-content/uploads/2022/06/TPNW.MSP_2022.CRP_7-Draft-Action-Plan-new.pdf.

12 “Nuclear Test Ban Treaty,” *John F. Kennedy Presidential Library and Museum*, accessed on November 17, 2023, <https://www.jfklibrary.org/learn/about-jfk/jfk-in-history/nuclear-test-ban-treaty>; “Test Ban Treaty (1963),” opened for signature on August 5, 1963, *National Archives*, <https://www.archives.gov/milestone-documents/test-ban-treaty>.

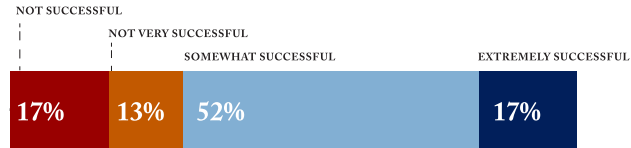
13 “Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean,” opened for signature on February 14, 1967, *The United Nations Office for Disarmament Affairs Treaties Database*, <https://treaties.unoda.org/t/tlatelolco>; “South Pacific Nuclear-Free Zone (Treaty of Rarotonga),” signed on August 6, 1985, *Inventory of International Nonproliferation Organization and Regimes*, https://www.nti.org/wp-content/uploads/2021/09/treaty_of_rarotonga.pdf.

14 “Treaty on the Southeast Asia Nuclear Weapon-Free Zone,” opened for signature on December 15, 1995, *United Nations Office for Disarmament Affairs Treaties Database*, <https://treaties.unoda.org/t/bangkok>; “African Nuclear Weapon Free Zone Treaty (Treaty of Pelindaba),” open for signature on April 11, 1996, *United Nations Office for Disarmament Affairs Treaties Database*, <https://treaties.unoda.org/t/pelindaba>; “Central Asian Nuclear-Weapon-Free Zone Treaty,” *United Nations Platform for Nuclear-Weapon-Free Zones*, accessed on November 17, 2023, <https://www.un.org/hw/zfz/content/treaty-nuclear-weapon-free-zone-central-asia>.

15 Jeffrey W. Knopf, “Nuclear Disarmament and Nonproliferation: Examining the Linkage Argument,” *International Security* 37, no. 3 (Winter 2012/13): 92-132, <https://www.jstor.org/stable/41804175>; Paul Poast, “Issues Linkage and International Cooperation: An Empirical Investigation,” *Conflict Management and Peace Science* 30, no. 3 (2013): 286-303, <https://doi.org/10.1177/0738894213484030>.

Q:

How successful are nuclear weapon-free zones in shaping international nuclear norms?



UNSC holds a great deal of power, other states at the UNGA also hold the power to set up working committees to continue the wide-ranging discussions around disarmament. Much of the strength in this situation is based on the sheer number of countries that have agreed to nuclear weapon-free zones. Regional nuclear weapon-free zones cover the majority of the Southern Hemisphere and most of Central Asia.

Further, non-nuclear countries do not need to rely entirely on the United Nations and affiliated bodies to negotiate other treaties; there are plenty of other multilateral bodies through which countries can cooperate on these issues. These may include regional institutions, such as ASEAN or the African Union. These may also include organizations like BRICS (Brazil, Russia, India, China, and South Africa) that can support and encourage dialogue.

The success of the Global South and other non-nuclear states to shape global norms will depend on several factors. First, there must be strong leadership. These leaders should hold positions of power within their countries, rather than simply be ambassadors to an international body. By placing leaders at the forefront of these efforts, countries demonstrate their resolve and commitment to the cause. Leaders and other negotiators should also build linkages between nuclear and non-nuclear issues. This will help bring more countries to the table, including nuclear weapon states. Finally, by banding together, non-nuclear states can help to establish norms that will influence nuclear states.

Policy makers around the world should continue to use the resources already in place to leverage the existing ties and trust inherent among peer networks. The Global South has built a network of

non-nuclear states as a source of global advocacy around the prevention of the spread of nuclear weapons. In many cases, these countries have developed new solutions that may provide a way forward for other countries to emulate.

Policy Recommendations:

Promote cooperation among nuclear weapon-free zones.

Each treaty enshrining nuclear weapon-free zones is different. Countries should set up stronger networks to understand common challenges, lessons learned, best practices, and how to engage with nuclear weapon states. The UN Disarmament Commission recommends that zones be formed on a voluntary basis and be pursued by all states in that region. Additionally, nuclear weapon states should be consulted to facilitate their signatures and ratifications on relevant treaty protocols. Finally, zones should not prevent the use of nuclear science and technology for peaceful purposes, and states might develop memoranda of understanding for the peaceful use of nuclear energy within the zone.

Clarify the role and utility of nuclear weapons.

Many countries operate under the assumption that nuclear weapons will be the ultimate guarantor of safety. Countries that wish to see the spread of nuclear weapon-free zones should dissuade that belief and bring other states into their zones.

Share lessons.

While many of the nuclear powers appear reluctant to enter into new international institutions, there are opportunities for leaders in non-nuclear states to encourage nuclear powers to join such institu-

tions by using issue linkages. These leaders have been successful in negotiating nuclear weapon-free zones. They should share lessons among non-nuclear states to encourage additional collaboration. For instance, the Marshall Islands stalled Compact of Free Association negotiations with the United States in exchange for compensation for nuclear testing. By linking issues together and by sharing those successes, non-nuclear states can strengthen their bargaining power.

Develop strategies for conventional deterrence.

Countries can create pathways to nuclear disarmament through legitimizing and strengthening national defense policies that are not reliant on nuclear weapons.

Implications of Public Opinion, Domestic Politics, and the Role of Misinformation

This section, as discussed by experts, explicitly focuses on the difficulties policymakers face balancing public concerns about nuclear weapons with international commitments.

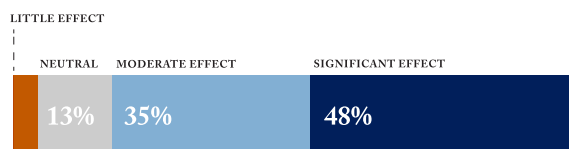
Policymakers must balance international commitments to manage nuclear weapons and power plants with the fleeting, and sometimes misinformed, concerns of their citizenry. In much the same way that wily politicians can bring episodic voters to the table, policymakers should look for creative ways to engage the public in nuclear discussions. *Oppenheimer* recently demonstrated how pop culture might be used to bring nuclear issues to the forefront of national attention. No matter how policymakers engage, the challenge is assuring

that public discourse is driven by the best-available knowledge. Both mis- and disinformation bombards a public that struggles to understand current national security issues. The complexity of nuclear issues leaves people particularly vulnerable in this regard. The secrecy that surrounds nuclear weapons and testing presents additional opportunities for misinformation to spread. Given this landscape, policymakers must engage the public with fact-based campaigns that speak to the inherent risks of nuclear power, while still championing its possibilities.

Many communities fear the fallout of dealing with nuclear waste, particularly in light of historical testing norms. Policymakers must engage with constituents to help them understand the difference between risks coming from perceptions and risks stemming from facts. There are real technical risks associated with nuclear energy, but there are also significant perceived, but unrealized, risks and fears. Leaders and international institutions must assuage these concerns by providing truthful discourse that is available to the public. Discussions around a shift to nuclear power must involve how to safely store and maintain nuclear waste, while helping to destigmatize nuclear power as part of a wholistic shift to clean energy. There is great difficulty in dispelling myths and personal anecdotes related to nuclear power. Such an issue recently materialized in the leadup to Japan’s decision to dispel wastewater from the Fukushima Daichi Nuclear Power Plant into the Pacific Ocean. Even though the contaminants in the water met IAEA safety standards, there was great misinformation, mainly coming from China,¹⁶



What effect did the Fukushima nuclear disaster have on the future of nuclear power?



¹⁶ Doug Irving, "Truth Decay Is putting U.S. National Security at Risk" *The Rand Blog*, June 28, 2023, <https://www.rand.org/pubs/articles/2023/truth-decay-is-putting-us-national-security-at-risk.html>.

regarding the safety of the practice. The misinformation campaign led to boycotts and discrimination against Japanese food throughout China. The eroding norms around nuclear weapon use, on the other hand, must be buffeted with an understanding of the consequences of their use.

Leaders and policymakers must provide relevant, timely, and truthful information to counter disinformation campaigns. This outreach should include efforts to speak to people and their needs, as well as to their perceptions of risk.

Policy Recommendations:

Increase education on nuclear power.

Public opinion is often limited by lack of knowledge about nonproliferation and nuclear risks. Policymakers should support public education efforts to increase awareness of nuclear risks. Universities, research centers, and advocacy groups should coordinate and produce materials that educate the public on the risks of nuclear weapons and nuclear power.

Provide truthful, fact-based discussions regarding nuclear weapons.

Policymakers should use every opportunity to provide fact-based discussions regarding nuclear weapons. These should include public briefings that discuss opportunities and challenges. While this will not assuage all concerns, it can open a dialogue so that policymakers can understand public opinion better.

The Importance of Trained Negotiators

This section discusses two critical challenges highlighted by workshop participants that could be addressed through education and knowledge exchange: (1) few successful arms control agreements have been developed in recent years; and (2) experts who are well versed in negotiations and the complexity of arms control agreements are increasingly scarce.

The United States and the Soviet Union made room for cooperation between scholarly communities and experts even during the tensest periods of the Cold War. This often led to better understandings of risk on both sides and allowed parties to find common ground as well as space for informal information exchange. However, the core architecture of arms control that existed during the Cold War has withered, and the landscape for productive exchange has shifted. A long-term trend that now stymies the development of productive arms control agreements is the diminishing role of the nuclear policy expert communities.¹⁷ There is also an increasingly wide information and perception gap between experts and policymakers in different countries with disagreements over basic facts. In addition, new technologies that were not part of many of these negotiations do not fall under any of the existing agreements and may require innovative approaches to monitoring as well as restraint.

Expert and academic exchange can help address these challenges. While policymakers might disagree over basic facts, nuclear experts will be more likely to come to agreements concerning these basic facts. Nuclear expert dialogues can also assist countries in developing better agreements. There is a strong need for systematic sharing and contact between counterparts in other countries, but mutual sanctions on members of these communities may make this difficult. Academic engagement could help fill this gap by enhancing understanding and developing ways that collaboration might be possible. Additionally, by engaging at the academic

¹⁷ Bryan Bender, "The Dangerous and Frightening Disappearance of the Nuclear Expert," *Politico Magazine*, July 28, 2023, <https://www.politico.com/news/magazine/2023/07/28/nuclear-experts-russia-war-00108438>.

Q:

How similar is the current U.S.-China nuclear competition to the U.S.-Soviet competition during the Cold War?



level, scholars and experts can discuss and consider parallel threat assessments so that all sides can see themselves more realistically.

Experienced arms control negotiators are increasingly scarce.¹⁸ The last major arms control treaty was signed in 2010, and many of the chief negotiators have retired or left the field. As a result, there is a dearth of negotiators with experience who understand the creativity and commitment required to find the common ground that translates into acceptable agreements. Countries must find ways to pass on knowledge from more experienced negotiators to those seeking to develop their expertise. Both formal and informal networks should be employed, such as alumni networks at educational institutions. Governments might also develop oral history projects, allowing for aspiring arms control negotiators to interview seasoned negotiators. Projects like these could preserve valuable and fleeting knowledge, helping to develop a core body of canon. Additionally, bringing in early career researchers might allow for innovative solutions to challenges, especially those deriving from new technologies.

Though much of the most innovative thought occurs outside of government, often in academic spaces, it is not well supported. A collapse of funding for nuclear policy programs and research is eroding academic discussion and the development of junior scholars. With less money to fund nuclear policy research and education, the pool of experts is dwindling, further weakening the network of trained negotiators and policy experts.

Policy Recommendations:

Encourage lower-level, expert-to-expert dialogues.

By lowering the stakes, countries can find ways to communicate about the most important and pressing issues of the day. Additionally, scholarly communities can engage in ways that policymakers can't, such as through the convening of strategic dialogues hosted at universities.

Invest resources in the next generation of practitioners.

This should include funding for educational initiatives and research programs as well as efforts to harness data and knowledge from retiring negotiators and experts.

18 Ibid.

Conclusion

<< Participants identified gaps in research (and funding) as well as steps to take for enhanced cooperation and negotiations by nuclear weapon states.>>

A New Age of Nuclearity? Great Powers and Greater Consequences at Perry World House identified a number of critical points that should be taken forward at the domestic and international levels. Participants identified gaps in research (and funding) as well as steps to take for enhanced cooperation and negotiations by nuclear weapon states. It also set the stage for future conversations addressing related nuclear policy issues:

- Are there lessons that nuclear weapon states should learn from the negotiations and agreements by non-nuclear states?
- What opportunities exist for trilateral or multilateral arms control between Washington, Moscow, and Beijing? How can the United States work with Russia and China to develop or extend arms control agreements?
- How do emerging dual-use technologies challenge traditional nuclear deterrence dynamics?
- How can Global South countries continue to work to create additional opportunities for disarmament?

Colloquium Participants

Isabella Alcañiz

Professor of Government and Politics, University of Maryland

Sarah Bidgood

Stanton Nuclear Security Fellow, MIT Security Studies Program

Rachel Bronson

CEO, Bulletin of the Atomic Scientists

Sharyl Cross

Distinguished Professor of International Politics and Security Studies, St. Edward's University; Co-Chair, Geopolitics Research Committee, International Political Science Association

Jacques deLisle

Stephen A. Cozen Professor of Law and Professor of Political Science; Director, Center for the Study of Contemporary China, University of Pennsylvania

Juan L. Ferrer

Institutional Relations Manager, National Atomic Energy Commission, Argentine Republic

Sarah Gerstein

PhD Student in Political Science, University of Pennsylvania

Francesca Giovannini

Executive Director, Managing the Atom, Belfer Center, Harvard Kennedy School

Kylie Jones

Nuclear Policy Research Assistant, Carnegie Endowment for International Peace

Robert E. Kelly

Professor, Pusan National University

Eunjung Lim

Associate Professor, Division of International Studies, Kongju National University

M. Susan Lindee

Janice and Julian Bers Chair, History and Sociology of Science, University of Pennsylvania

Scott Moore

Director, China Programs and Strategic Initiatives, and Professor of Practice in Political Science, University of Pennsylvania

Adam Mount

Nonresident Senior Fellow, Federation of American Scientists

Ryan A. Musto

Director of Forums and Research Initiatives, William & Mary Global Research Institute

Izumi Nakamitsu

Under-Secretary-General and High Representative for Disarmament Affairs, United Nations

Nomsa Ndongwe

Research Fellow, James Martin Center for Non-proliferation Studies

Alain Ponce Blancas

Research and Communication Officer, OPANAL

J. Luis Rodriguez

Assistant Professor of International Security and Law, George Mason University's Schar School for Policy and Government

Joan Rohlfing

President and COO, Nuclear Threat Initiative

Erin Sikorsky

Director, Center for Climate and Security

Aaron Stein

Chief Content Officer, War on the Rocks

Tomohisa Takei

Admiral (ret.), Japan Maritime Self Defense Force; Visiting Fellow, Perry World House

Alex Weisiger

Associate Professor of Political Science, University of Pennsylvania

Elayne G. Whyte

Professor of Practice, Johns Hopkins SAIS; former Permanent Representative of Costa Rica to the United Nations Office in Geneva

Amy F. Woolf

Consultant, Nuclear Weapons and Arms Control Policy; Visiting Fellow, Perry World House

Tong Zhao

Senior Fellow, Carnegie Endowment for International Peace

Survey Questions

Perry World House asked participants to fill out a short survey on key issues related to the theme of the workshop. The following figures are based on participants' responses. Not all participants answered all questions, and these charts should not be interpreted to represent any individual panelist's view.

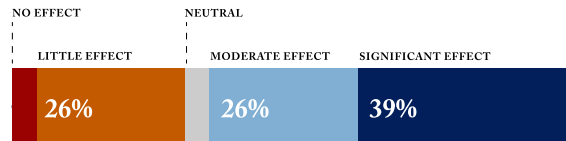
Q:

How likely is it that Vladimir Putin will use/launch a tactical nuclear weapon inside of Ukraine?



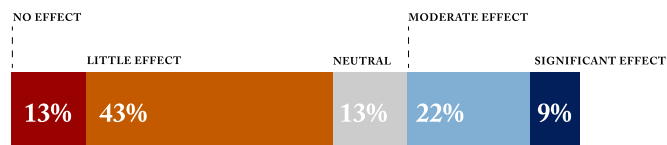
Q:

What effect has Vladimir Putin's threats to use a tactical nuclear weapon inside of Ukraine changed the dynamic of the conflict?



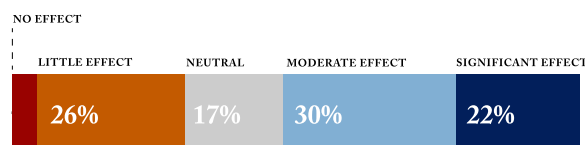
Q:

What effect will the Prigozhin mutiny have on Vladimir Putin's nuclear posturing in the war in Ukraine?



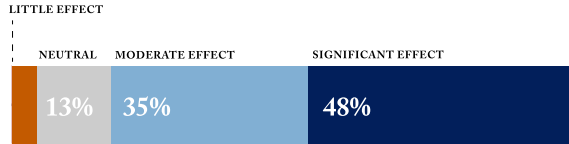
Q:

What effect has the fighting around Zaporizhzhia Nuclear Power Plant and the associated dangers/threats had on the future of nuclear power?



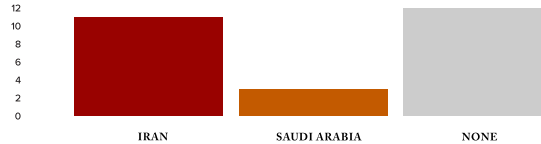
Q:

What effect did the Fukushima nuclear disaster have on the future of nuclear power?



Q:

Which countries, if any, will develop their own nuclear weapons in the next five years?



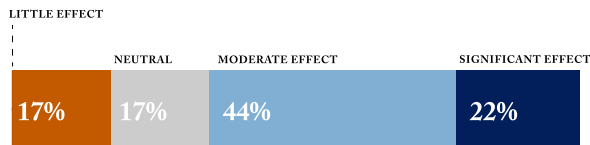
Q:

What effect has North Korea's nuclear weapons development program had on regional countries' desire to go nuclear or to arrange for a nuclear-sharing agreement?



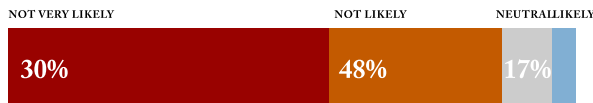
Q:

What effect will the April 2023 "Washington Declaration" have on regional nuclear policy in the Indo-Pacific?



Q:

How likely is Russia to "unsuspend" its New START participation before the end of 2023?



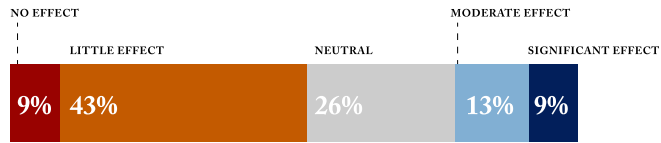
Q:

How likely is China to participate in nuclear arms reduction negotiations with the United States in the next five years?



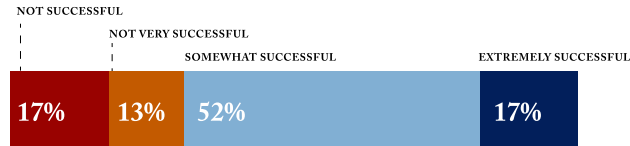
Q:

What effect has the Treaty on the Prohibition of Nuclear Weapons had in strengthening non-proliferation norms since its inception in 2021?



Q:

How successful are nuclear weapon-free zones in shaping international nuclear norms?



Q:

How likely is a nuclear-armed country to use a nuclear weapon in an armed conflict in the next 10 years?



Q:

How similar is the current U.S.-China nuclear competition to the U.S.-Soviet competition during the Cold War?





UNIVERSITY OF PENNSYLVANIA | PERRY WORLD HOUSE
3803 LOCUST WALK, PHILADELPHIA, PA 19104
215.573.5730

@PERRYWORLDHOUSE
FACEBOOK.COM/PERRYWORLDHOUSE

GLOBAL.UPENN.EDU/PERRYWORLDHOUSE