

Arms Control is No Panacea, But It Helps

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Some eighty years after the bombings of Hiroshima and Nagasaki, the global community still struggles with the strategic, political, and ethical implications of nuclear arms races. The Cold War's bipolar competition once defined the global nuclear dynamics, but today's landscape is more complex, involving multiple nuclear-armed states, emerging technologies, and shifting geopolitical alliances.

From Bipolar to Multipolar Competition and Arms Racing

During the Cold War, the United States and the Soviet Union [engaged in](#) a massive arms buildup driven by deterrence theory, ideological rivalry, and fears of vulnerability. The end of the Cold War lowered tensions and decreased the number of nuclear weapons, but it did not eliminate them completely. Instead, the [global system has evolved](#) into a multipolar environment with nine nuclear-armed states, each with distinct strategic cultures and security concerns. Although most states in the United Nations have endorsed the principle of nuclear disarmament, no current nuclear weapons state has embraced the concept or taken even small steps in that direction.

New Drivers of Competition

The current nuclear environment is shaped by a mix of technological advances, growing regional rivalries, diminishing arms control agreements, and renewed great-power competition. Unlike the organized bipolar order of the Cold War, today's strategic landscape is becoming more multipolar, faster-paced, and less predictable based on emerging factors.

Technological innovation: Hypersonic weapons, cyber capabilities, artificial intelligence, and missile defense systems introduce [new uncertainties](#) about the survivability of nuclear arsenals. Another source of potential instability is the growing effectiveness of conventional weapons for long-range precision strike, with destructive capabilities that might provoke a responsive nuclear first use or first strike. In addition, modern information and manufacturing systems, compared to earlier generations, shorten the timelines between concept and prototype, and between prototype and mass production.

Regional rivalries: Regional military competition [between India and Pakistan](#), North Korea and South Korea, China and India, and among China, North Korea, Japan, and the United States, threatens to escalate conventional war into nuclear first use, and even short of crossing the nuclear threshold, exacerbate regional and global nuclear tensions.

Erosion of arms control: The termination of nuclear arms control agreements, such as the Intermediate-Range Nuclear Forces (INF) Treaty and the New START Treaty, has

created a situation of arms control anomie that invites competitive distrust among nuclear powers and increases uncertainty about their nuclear-strategic thinking.

Great-power competition: The almost [inevitable arrival of China](#) as a third nuclear superpower creates an additional axis of uncertainty compared to the two-sided Cold War rivalry between the Soviet Union and the United States. China's involvement in a tripartite format for exchanging strategic thinking on nuclear weapons and arms control is an important, albeit challenging, imperative for all three states and their military leaders.

Risks and Consequences of Renewed Arms Races

The modern nuclear landscape is increasingly defined not only by military competition but also by growing concerns over strategic stability, economic sustainability, and ethical responsibility.

Strategic Instability: As states pursue more sophisticated and diversified arsenals, the risk of miscalculation grows. Technologies that compress decision-making time—such as hypersonic glide vehicles or AI-enabled early-warning systems—[could increase the likelihood](#) of accidental or preemptive nuclear use. AI-enhanced technology for intelligence, warning, and estimation of others' options and intentions will become standardized among great powers, raising the issue of shared guardrails in military applications of AI technology for crisis management.

Economic and Opportunity Costs: Nuclear modernization programs require enormous financial investments. For many states, the pursuit of nuclear capabilities reflects a tradeoff between perceived security benefits and long-term societal needs. Even within the umbrella of defense needs per se, there are important tradeoffs among preferred weapons systems and supporting infrastructure. For example, in the case of the United States, the [costs](#) of developing and deploying the proposed Golden Dome antimissile defense system may compete with the demands of military services for new generations of offensive strategic nuclear weapons.

Normative and Ethical Concerns: The continued reliance on nuclear weapons raises profound ethical questions. The humanitarian consequences of any nuclear exchange—intentional or accidental—[would be catastrophic](#). The potential erosion of norms against nuclear testing and against cavalier threats of nuclear first use threatens decades of progress toward the avoidance and management of nuclear crises.

Future Pathways: Escalation or Restraint?

As nuclear and non-nuclear systems become increasingly entangled, states, international institutions, and civil society organizations will play an important role in developing risk-reduction measures, strengthening strategic dialogue, and preserving norms to prevent nuclear escalation and maintain global stability.

Technological Governance: Technological “black swans” have the potential to upend previously understood mechanisms for reassuring nuclear-weapon states against fears of preemptive nuclear attack. As AI, [cyber operations](#), and autonomous systems become intertwined with nuclear command and control, states may need new norms or agreements to prevent destabilizing uses. Establishing shared understandings of “red lines” in cyber-nuclear interactions could be a starting point.

Regional Security Architectures: In regions with acute nuclear tensions, tailored diplomatic frameworks may help reduce risks. Confidence-building measures in South Asia, renewed dialogue on the Korean Peninsula, and discussions on European security could all contribute to stability. The containment of growth in the numbers and lethality of non-strategic or tactical nuclear weapons, in the context of preserving regional deterrence and security, is of immediate importance.

The Role of Civil Society and International Institutions: Nongovernmental organizations, academic institutions, and international bodies continue to play a vital role in shaping public discourse, conducting research, and advocating for risk-reduction measures. Their influence may be especially crucial as formal diplomatic channels encounter political obstacles. One challenge is the relative shortage of nuclear deterrence and arms control studies in research university departments nowadays, compared to the Cold War and immediate post-Cold War periods.

Conclusion

In the twenty-first century, nuclear arms racing is no longer defined by the relatively stable bipolar logic of the Cold War, but by a far more complex and uncertain multipolar environment shaped by emerging technologies, regional rivalries, weakened arms control structures, and renewed great-power competition. The combination of emerging technology and increasingly sophisticated strike systems has [compressed decision-making timelines](#) and introduced new risks of miscalculation, escalation, and strategic instability among nuclear-armed states. At the same time, the financial costs of nuclear arsenals and the potential catastrophic humanitarian consequences of any nuclear exchange continue to raise profound ethical and political questions about unchecked nuclear capacities.

Preventing future nuclear crises will require renewed commitments to arms control, technological governance, regional confidence-building measures, and sustained dialogue among both states and nonstate actors. In an era when formal diplomatic channels are increasingly strained, international institutions, academic communities, and civil society organizations may help preserve norms of restraint and advance practical risk-reduction measures. Ultimately, the challenge facing the international community is not only how to manage nuclear competition, but how to prevent technological change, geopolitical rivalry, and strategic mistrust from producing a new era of nuclear instability with potentially irreversible consequences.

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