

# Can We Have Nuclear Energy without Nuclear Weapons?



All major countries worry about the development of “strategic weapons” in the non-nuclear realm...hypersonic weapons, cyberweapons, artificial intelligence and weapons using other emerging technologies. Could those weapons gradually make nuclear weapons obsolete?

—Sharon Squassoni



**SHARON SQUASSONI**  
Research Professor of Practice, Institute for International Science and Technology Policy

Can we have nuclear energy without nuclear weapons? Can we have security without nuclear weapons? These two simple questions form the basis of my research at the Institute for International Science and Technology Policy.

Nuclear energy and nuclear weapons are 20th century discoveries that may need a major overhaul to survive beyond the 21st century. In 70 years, nuclear energy has not yet found lasting solutions to four basic challenges: cost, safety, waste and the risk that peaceful nuclear energy can be converted into nuclear weapons. The need for low-carbon electricity generation has renewed interest in fission—and even fusion. Still, without solutions to those four stumbling blocks, nuclear power is unlikely to bring a major reduction in greenhouse gas emissions in the time the world needs it to.

Nuclear weapons, meanwhile, may be on a trajectory for revitalization as traditional holders of such weapons modernize their arsenals. Even though the coalition that helped negotiate a nuclear weapons ban treaty received the Nobel Peace Prize last year, China, Russia, the United States, the United Kingdom and France are proceeding as planned with their modernization programs. Russian President Vladimir Putin has

boasted publicly about new nuclear capabilities, whether real or imagined. Quietly, the arms race between India and Pakistan also continues. And it is too soon to tell which direction North Korean nuclear weapons will take—reduction and possible elimination or continued rampant development?

At the same time, all major countries worry about the development of “strategic weapons” in the non-nuclear realm. These are weapons that have the potential to threaten countries’ vital interests. For the moment, they are defined as hypersonic weapons, cyberweapons, artificial intelligence and weapons using other emerging technologies. Could those weapons gradually make nuclear weapons obsolete?

While addressing those longer-term challenges, my research responds to more immediate policy questions related to keeping Iran within the framework of the Joint Comprehensive Plan of Action and how to achieve long-lasting nuclear risk reductions with North Korea.

As a former negotiator in the Arms Control and Disarmament Agency and the U.S. State Department, as well as a weapons of mass destruction specialist in the Congressional Research

Service, advising members of Congress, I focused my research on how to shore up consensus about the value of global regimes, enhance U.S. leadership in nuclear nonproliferation and develop creative regional solutions to compensate for gaps in the global regimes.

