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Project on Managing the Atom

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A Vision for Nuclear Security

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A Vision for Nuclear Security

The goal of global nuclear security efforts should be a world in which all countries with nuclear weapons, highly enriched uranium (HEU), separated plutonium, and nuclear facilities whose sabotage could cause a major radiation release have reduced the risk of nuclear theft and sabotage to the lowest possible level. This will require policymakers, regulators, and operators to commit to a continuous process of striving for excellence in nuclear security performance.

There are five key elements we see as critical to sustainably effective nuclear security. Strong programs in these areas could lead to more effective nuclear security for nuclear weapons, HEU, separated plutonium, and nuclear facilities worldwide.

- **Broad protection.** All of these items should be effectively and sustainably protected against the full range of plausible adversary threats, including evolving threats such as cyber attacks and drones.
- **Comprehensive insider protection.** All of these items should have comprehensive, multilayered protections against insider threats in particular.
- **Strong security cultures.** All of these items should be managed by organizations whose leaders and staff are committed to achieving excellence in nuclear security, are effectively trained, and remain constantly on the lookout for potential threats or vulnerabilities to be addressed.
- **Realistic assessment and testing.** All operations handling these items should be regularly subjected to in-depth, creative assessments of their vulnerabilities and realistic, challenging tests of their ability to defend against intelligent adversaries looking for their weak points.
- **Consolidation.** The use, bulk processing, transport, and number of locations with nuclear weapons, HEU, and separated plutonium should be reduced to the absolute minimum whose continued civilian and military benefits outweigh their costs and risks—as confirmed by regular high-level review.



A drone carrying a black box flies near reactor 3 at the Ikata nuclear power plant in Ehime Prefecture, Japan in the nation's first counterterrorism drill to simulate a drone attack on a nuclear facility. (Kyodo)

All countries with weapons-usable nuclear materials or nuclear facilities whose sabotage could cause a major radioactive release should have strong programs in place in each of these five areas.

There has been some progress in achieving this goal: more countries are requiring operators to protect against new and evolving threats and, in particular, there has been greater focus on insiders; nuclear organizations in several countries are adopting security culture programs; new countries have begun engaging in force-on-force exercises; and consolidation of weapons-usable nuclear materials continues.

These are positive signs, but urgent action is needed. Not all nuclear facilities are protected against all plausible threats; many do not have comprehensive, multilayered defenses against insiders; some nuclear security systems are not exposed regularly to rigorous vulnerability assessments and testing; the culture within many nuclear organizations is still not focused sufficiently on security; and nuclear materials remain in far too many locations.

The risk that terrorists could get and use a nuclear bomb remains very real. As past experience makes clear, the future is highly uncertain; the world has likely not seen the last of powerful terrorist groups bent on mass destruction. As adversaries make increasingly sophisticated use of technologies such as cyber and drones in the future, the threat to nuclear weapons, materials, and facilities could increase.

World leaders must redouble their commitment to national policies and international cooperation focused on preventing nuclear terrorism. This should include:

- Developing a comprehensive U.S. government plan for achieving effective and sustainable security for nuclear stocks worldwide, and assigning a senior U.S. official to take full-time charge of the effort.
- Revitalizing nuclear security cooperation programs sponsored by the U.S. government and other interested governments, with a comprehensive approach to working with as many of the relevant countries as possible on improving each of the five key areas of nuclear security just described. In particular, renewed nuclear security cooperation between the world’s largest nuclear complexes, in the United States and Russia, must be a priority.
- Expanding funding for U.S. nuclear security programs to support this broadened scope of work. The Trump administration and Congress should work together to ensure that both the funding and the personnel available for nuclear security programs are sufficient so that efforts that could genuinely reduce the risk of nuclear terrorism are never slowed by lack of funding or lack of people to seize available opportunities or explore possibilities for new ones.

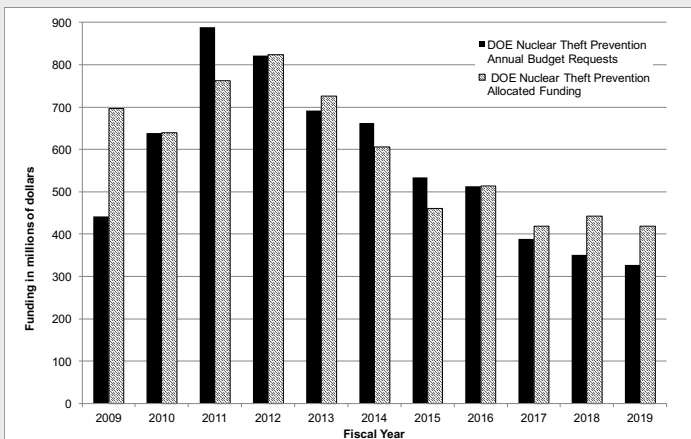
- Seeking new political commitments from countries and international institutions to stringent nuclear security measures designed to minimize the risk of nuclear theft or sabotage.
- Engaging effectively to bolster frameworks for international cooperation, including effective implementation of, and broadened participation in, key nuclear security agreements, initiatives, and institutions, such as the amended Convention on Physical Protection and the Strengthening Nuclear Security Implementation Initiative (INFCIRC/869).
- Taking steps to strengthen International Atomic Energy Agency (IAEA) nuclear security programs, including expanded and strengthened international nuclear security peer reviews.

There is an urgent need for both high-level officials and those who run nuclear organizations around the world to renew their support for strengthening nuclear security. Countries should designate officials who are responsible for further nuclear security progress. Countries should develop national plans for strengthening nuclear security, with adequate funding for carrying out those plans. These plans will require:

- Effective nuclear security regulation and other measures to structure incentives to motivate action to strengthen nuclear security.
- Training and certification programs to ensure that all managers and staff related to security, management, and operations of these stocks and facilities are demonstrably competent;
- Programs to seize synergies and manage conflicts between nuclear safety, security, and safeguards; and
- Measures or indicators to assess progress, coupled with approaches to learning from experience and improving nuclear security efforts over time.

Nuclear security around the world has improved dramatically over the last three decades—which demonstrates that with focused leadership, major progress is possible. The United States and countries around the world need to join together and provide the leadership and resources needed to put global nuclear security on a sustained path to reducing the risk of nuclear theft and sabotage to the lowest possible level.

Requested and Allocated Funding for U.S. Department of Energy Nuclear Theft Prevention Programs



Funding for U.S. programs to prevent nuclear theft around the world has been declining for nearly a decade.

- Establishing a new forum for discussing next steps in nuclear security at a senior level, and working to take maximum advantage of existing forums.
- Taking steps to combat complacency at all levels of nuclear security decision-making and implementation, and to increase awareness of nuclear terrorism threats, real security incidents, and potential nuclear vulnerabilities.

READ THE FULL REPORT:

“Revitalizing Nuclear Security in an Era of Uncertainty”

[belfercenter.org/NuclearSecurity2019](https://www.belfercenter.org/NuclearSecurity2019)



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Cover photo: A member of the Czech Army takes part in an anti-terrorism drill at the Temelin nuclear power plant near the town of Tyn nad Vltavou, Czech Republic, April 11, 2017.

(REUTERS/David W Cerny)

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