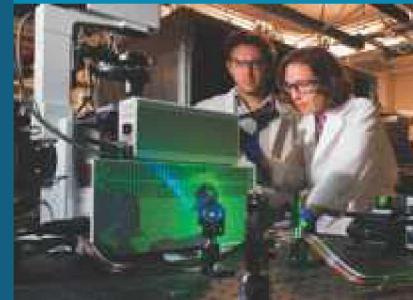




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“Defense by Other Means”: Future Evolution(s) of Cooperative Threat Reduction



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Bottom Line Up Front...

Challenge

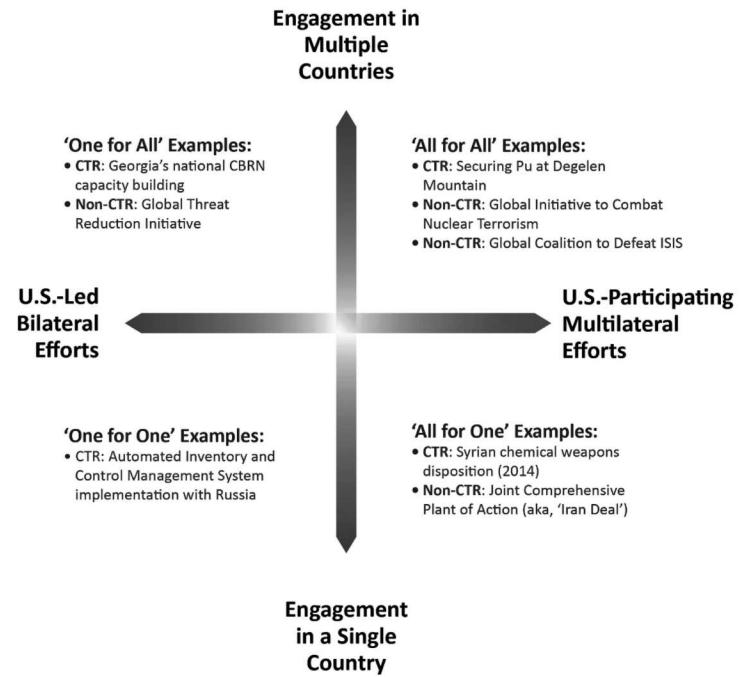
- Identify how to maintain success of CTR efforts
- Align future CTR-like success with geopolitical changes

CTR Possible Futures Framework

- Mechanism to describe evolution(s) of CTR efforts
- Help determine policy direction & related technical needs

Insights & Conclusions

- Acting/DASS: need “third generation CTR programs that are more flexible and responsive”
- CTR needs to be tailored, no “one-size-fits-all” formula
- Possible Futures Framework helps describe options in terms of
 - Desired levels of U.S. influence
 - Appetite for collaboration of sitting U.S. Administrations
 - Common threat definitions with partnering countries



What is “Cooperative Threat Reduction”?

With the fall of the Berlin Wall, Senator Sam Nunn stated that the world was

- ...”on the verge of either ***having the greatest destruction of nuclear weapons*** in the history of the world or ***the greatest proliferation of nuclear weapons, nuclear materials, and scientific know-how*** on how to make these weapons, as well as chemical weapons, ballistic missiles, even biological weapons the world has ever seen”

2017 National Academy of Sciences Symposium:

- “***CTR remains the foundation*** of the U.S.’s ability to reduce the threat from WMD abroad by maintaining and provide technical capabilities to eliminate WMD programs.”

CTR Variation	Description
USG CTR	The broader, whole-of-government set of threat reduction programs
DOD CTR	Programs exclusive to the Department of Defense
CTR 1.0	The entire set of programs to this point
CTR 2.0	The [2009 NAS] concept of a future engagement programs

Thus, several experts argue that:

“lessons from CTR’s history can be used to ***improve both performance and implementation***”

Past Evolution of Cooperative Threat Reduction

Timeline Overview:

- Early 1990's were almost exclusively associated with DOD-led destruction of nuclear weapons and facilities
- Late 1990s, CTR funds were transferred to DOS and DOE
- Early 2000s, both DOE and DOS activities began having significant impact in parallel with DOD CTR efforts
- Emphasis during the late 2000s/early 2010s was on nuclear security
- Since 2010, however, many activities covered under CTR have been reduced
- “Umbrella agreement” governing CTR activities with Russia expired in 2013

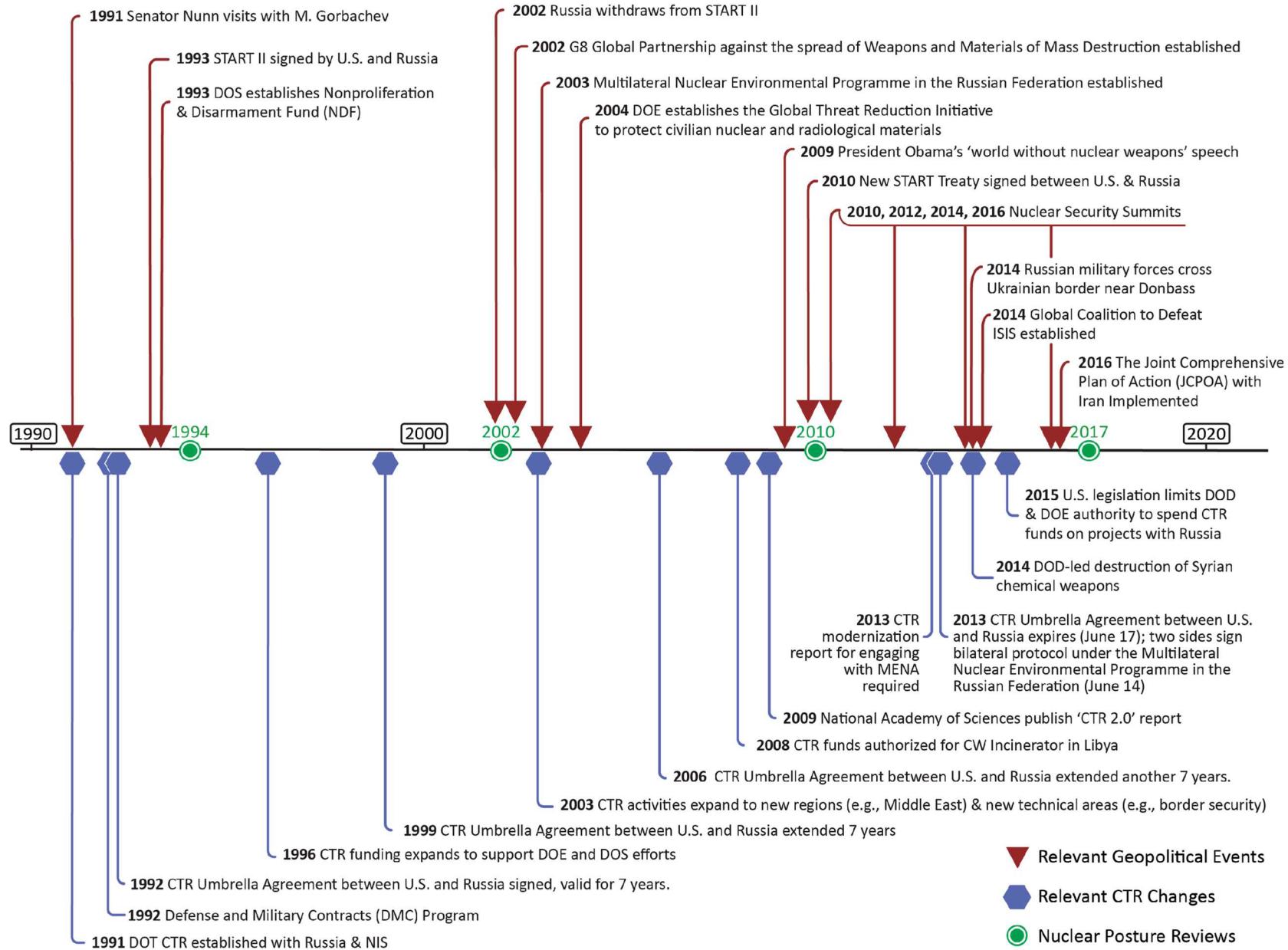
Changing dynamics:

- Definitions of potential threats
- Types of engagement options
- Geographical scope

Evolved from a ***specific program*** into a ***policy tool***

FISCAL YEAR	PUBLIC LAW NO.	NOTABLE PROVISIONS
1991	102-228	The “Soviet Nuclear Threat Reduction Act of 1991” passed, establishing CTR to <ul style="list-style-type: none"> • Destroy chemical, biological, radioactive or nuclear (CBRN) weapons • Assist in transporting, storing, disabling and safeguarding weapons to be destroyed • Establish verifiable nonproliferation of such weapons
1993	102-484	Threat reduction programs should seek to: <ul style="list-style-type: none"> • Prevent diversion of scientific expertise from the former Soviet Union (FSU) • Establish science and technology centers in FSU • Expand military-to-military contacts between U.S. and FSU
1994	103-160	• Authority to facilitate transportation, storage, safeguarding and elimination of nuclear and other weapons from the newly independent states (NIS), and prevent diversion of scientific expertise
1996	104-106	• Annual reporting requirements for project(s) scope, funding and performance outlined
1998	105-85	• CTR funds NOT authorized to assist in START II Treaty weapons elimination until Russia agreement on cost-sharing
2001	106-398	• Annual reporting requirements updated (repealing previous restrictions) and expanded to include audit information, budgets and estimates of CTR objectives completed
2003	107-248	• Temporary authority to waive certification requirement to continue Shechuch'ye Chemical Weapons Destruction (CWD) facility construction
2004	108-136	• Limited authority to use CTR funds (< \$50M) outside the FSU for emerging threats <ul style="list-style-type: none"> • Limitation on BW Defense joint research until facilities certified and secure • Temporary authority to waive CWD funding limitation
2005	108-375	Extension of CWD funding waiver authority
2006	109-163	Permanent Waiver of restrictions on use of funds in the FSU <ul style="list-style-type: none"> Report on obstacles and challenges to CTR implementation required
2007	109-364	• Extension of CWD funding waiver authority <ul style="list-style-type: none"> • NAS study on Prevention of Proliferation of BW commissioned
2008	110-181	• Sense of Congress to set “new initiatives for CTR” <ul style="list-style-type: none"> • NAS on future of CTR study commissioned • Removal of funding limit authorization & specifying use of funds outside the FSU • Repeal of restrictions on assistance to FSU states • NAS Study on Prevention of Proliferation of BW commissioned
2010	111-84	• Specifications for accepting CTR contributions from foreign governments or international (e.g., NGO) organizations <ul style="list-style-type: none"> • Studies on CTR Metrics by Secretary of Defense and NAS commissioned
2011	111-383	• Limitation on use of FY11 CTR funds for Centers of Excellence in non-FSU countries <ul style="list-style-type: none"> • Specification for joint Defense/Energy plan on nonproliferation and CTR activities with China (FY11-16)
2012	112-81	• Limitation on funding for Cooperative Biological Engagement Program <ul style="list-style-type: none"> • Limitation on use of FY12 CTR funds for Centers of Excellence in non-FSU countries
2013	112-239	Report on CTR programs in Russia by Secretary of Defense with State, Energy, DNI
2014	113-66	Required a strategy to modernize CTR and prevent WMD proliferation in MENA <ul style="list-style-type: none"> • Quarterly briefings and complete assessment of Syria CW stockpile/destruction status • FY10 authority for urgent threat reduction activities extended to December 31, 2018
2015	113-291	• Neither DOD nor DOE can spend authorized CTR funds until the Secretaries of Defense and Energy certify that Russian forces are out of Ukraine and Russia is in compliance with INF and CFE Treaty obligations
2016	114-92	• Authorizes CTR funds to be available for obligation from FY2016-FY2018

Past Evolution of Cooperative Threat Reduction



Drivers of Future Evolution(s) of CTR

Traditional CTR success based on two principal factors

- They were based on (varying levels of) cooperation
- They employed appropriate technical solutions to reduce emerging threats

2009 NAS report provided recommendations germane to future CTR evolutions:

- *Recommendation 3-1a* call to include of a range of participants across government, academia, industry and nongovernmental organizations (e.g., expanded set of tools and engagement mechanisms)
- *Recommendation 3-1b* call to include multilateral partnerships that address both country- and region-specific security challenges (e.g., support G8 Global Partnership, United Nations Security Council Resolution 1540)

Must remain consistent with “legacy commitments”

- The original Nunn-Lugar program
- Proliferation Security Initiative (PSI)
- UNSCR 1540
- Chemical Weapons Convention (CWC)/Biological Weapons Convention (BWC)
- Nonproliferation Treaty (NPT)

Need to support contemporary commitments:

- Security Summit (NSS) Process
- International Partnership for Nuclear Disarmament and Verification (IPNDV)
- Deterrence Dialogue with Japan
- Joint Comprehensive Plan of Action (JCPOA) with Iran
- Middle East WMD Free Zone (ME/WMDFZ)

Drivers of Future Evolution(s) of CTR

Considering the history of CTR, it is difficult to limit possible evolutionary trajectories

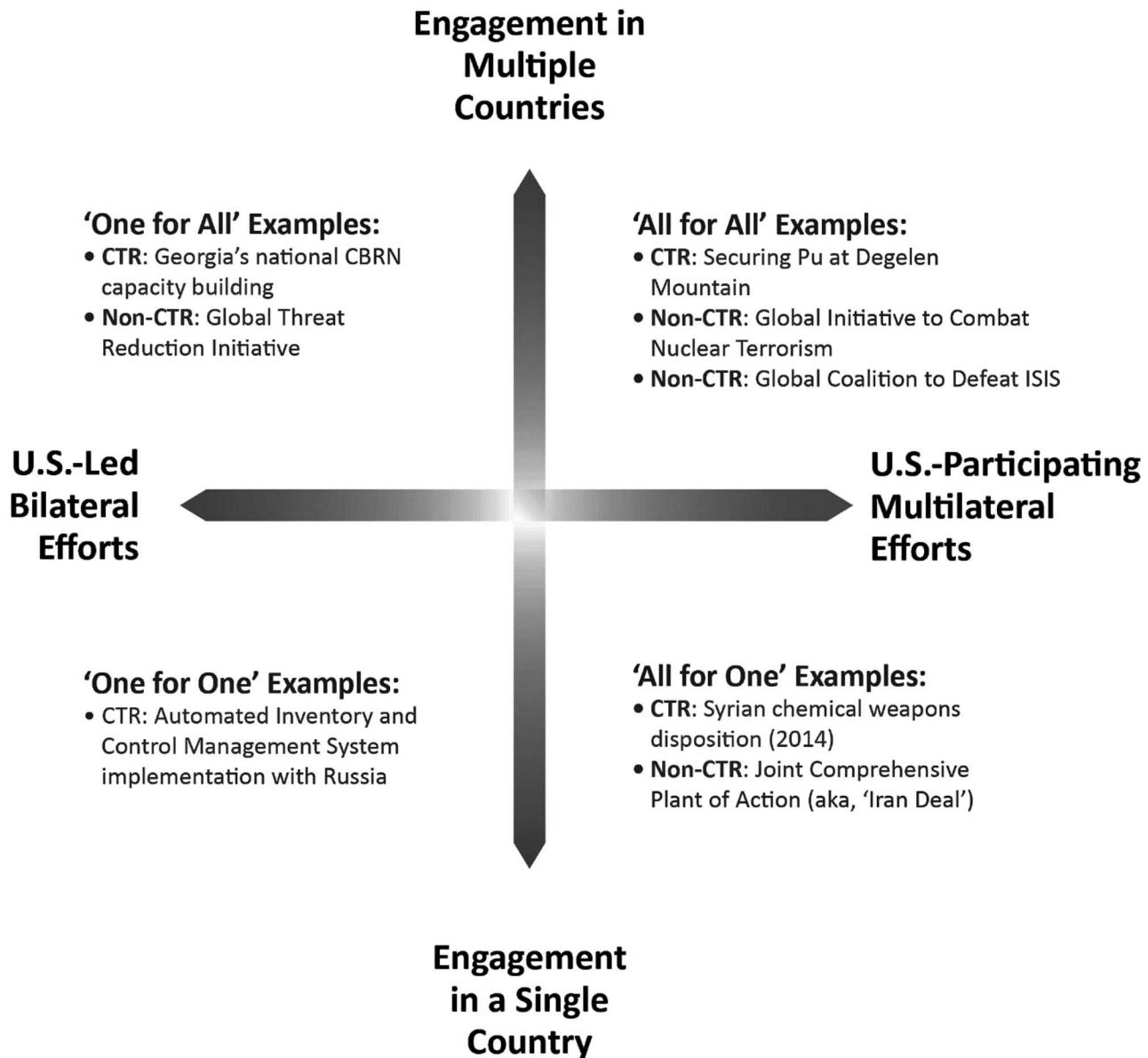
Drivers & commitments can be described in terms of ***two axes***

- (1) Whether the effort is a direct bilateral engagement by the U.S. or multilateral coalition in which the U.S. participates
- (2) The number of countries the effort is designed to engage

Useful to categorize various possible CTR futures in terms of key variables or balancing points that capture the role of the U.S. in CTR-related efforts

- CTR Possible Futures Framework uses these two variables as orthogonal axes to describe possible options for CTR-related efforts over the next five- to ten-year timeframe

CTR Possible Futures Framework



9 CTR Possible Futures Framework

	Possible Future #1: One for One	Possible Future #2: One for All	Possible Future #3: All for All	Possible Future #4: All for One
Desired Influence	Maintain the role of primary influencer on threat reduction	Maintain the role of primary influencer on threat reduction	Serve as part (and not necessarily the leader) of a coalition for threat reduction	Serve as part (and not necessarily the leader) of a coalition for threat reduction
Primary Determinant of Threat Reduction	Enhancing individual country security	Mitigating regional* security issues	Mitigating regional* security issues	Enhancing individual country security
Appetite for Collaboration	Low value on cost/reputation sharing or unwilling potential partners	Low value on cost/reputation sharing or unwilling potential partners	High value on cost (and reputation) sharing with willing partners	High value on cost (and reputation) sharing with willing partners
Common Threat Definition	U.S.-biased definition of threat(s) in individual country to be reduced	U.S.-biased definition of regional threat(s) to be reduced	Collective agreement on regional threat(s) to be reduced by coalition of partnering countries	Collective agreement on threat(s) in individual country to be reduced by coalition of partnering countries
Implementation Environment	U.S. unilateral engagements supported within a single country	U.S. unilateral engagements supported within a set of regional countries	Multilateral** engagements supported within a set of regional countries	Multilateral engagements supported within a single country

*Regional means “shared concerns among geographically co-located countries”

**Multilateral means “coalition of partnering countries”

Technical Capabilities to Support the CTR Possible Future(s)

CTR implementation changes → changes in related “scorecard” of metrics

- 1990s (numbers of warheads removed) → Late 2000s (four generic categories across CBRN)

Evolutionary expansion of scorecard metrics → technical needs for future CTR evolution(s)

Future evolution(s) of CTR will likely necessitate the development of new ***technical capabilities*** and ***effectiveness metrics***

- Emphasis on human capacity building → “soft metrics” like changes in nuclear security culture, joint research projects
- Emphasis on confidence-building measures → common databases, secured communications networks
- Emphasis on emergency preparedness and response → planning/response trainings, portable/accurate detectors
- Emphasis on CBRN weapons/materials security → technologies that are low power and sustainable

Each of the categories in the CTR Possible Futures Framework present additional requirements on possible future technical capabilities

- “One for One” technologies may/may not be proprietary and maintenance was covered by the U.S.
- “One for All” technologies should be non-proprietary, implementable in different infrastructures
- “All for One” technologies need to be non-proprietary (ideally) commonly available/maintainable by coalition partners
- “All for All” technologies need to be non-proprietary, (ideally) commonly available/maintainable by coalition partners, and implementable in different infrastructures

Options Across Future Evolution(s) of CTR

Option 1:
Maintain strong, wide-ranging threat reduction activities

No dramatic shift

“One for One” or “One for All”

Option 2(a):
Leverage past CTR successes to reduce threats in more narrow sets of specific cases

More selective

“One for One” or “All for One”

Option 2(b):
Leverage past CTR successes to focus on ONE possible future to reduce threats in specific cases

Concentrate fewer resources

“All for All”

Option 3: Expand strong, wide-ranging threat reduction activities

Flexibility & more opportunities

All options except “One for All”

Option 4:
Eliminate CTR-related activities

Competitive, zero-sum game

None

Insights & Conclusions

CTR engagements have a proven track record → a fundamental mechanism for global security

CTR Possible Futures Framework describes this evolution in terms of:

- Desired levels of U.S. influence
- Appetite for collaboration of sitting U.S. Administrations
- Common threat definitions with partnering countries

2017 NAS Symposium echo the policy options related to the CTR Possible Futures Framework

- Acting/DASS Nonproliferation = “***third generation CTR programs that are more flexible and responsive***”

U.S. is ***likely to pursue*** either

- “Leveraging past CTR successes and current engagement opportunities to best match varying levels of cooperative activities to reduce threats in more narrow sets of specific cases” (***Policy Option 2(a)***)
- “Expanding strong, wide-ranging threat reduction activities” (***Policy Option 3***)

CTR-type engagements will need to be tailored and not based on a “one-size-fits-all” formula.

Maintaining core capabilities and supporting functions that led to CTR’s legacy of success across possible future evolutions is necessary for reducing tomorrow’s global threats