For Security’s Sake:
Saving U.S.-Russian Nuclear Arms Control

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Nuclear weapons: some good news

- Global nuclear weapons stockpiles down ~80%
- Only 9 states with nuclear weapons – same as 30 years ago
- Almost all other states have pledged not to acquire nuclear weapons, and to accept verification
- More states have started nuclear weapons programs and given them up than have nuclear weapons – efforts to dissuade countries succeed more often than they fail
- Nonproliferation regime has proved resilient in the face of multiple challenges over 5 decades
- >50% of the states that once had potential nuclear bomb material on their soil have eliminated it
- Nuclear material around the world is far more secure than it was 25 years ago
The whole structure of U.S.-Russian nuclear arms control is in danger

- New START is working — but expires soon
  - Both sides have met key limits
  - Inspections are almost the only remaining nuclear cooperation
  - Expires early 2021; 1-time extension possible to early 2026 (U.S. has not agreed to extend)

- Intense U.S.-Russian hostility
  - No talks on any replacement agreement underway

- Hostility plus mutual charges of INF Treaty violations will make it very difficult to reach a new treaty:
  - That Russia will accept, and
  - That 2/3 of the U.S. Senate will accept

Within 3-8 years, there may be no agreed limits on U.S. and Russian nuclear forces, for the first time in half a century

Why should we care?
Benefits of U.S.-Russian arms control

- Benefits of the agreements themselves:
  - Reduced mutual perceptions of threat
  - Force structure stability
  - Predictability (important for planning)
  - Transparency
  - Reduced cost of maintaining forces

- Benefits of the arms control process:
  - Discussions allow greater mutual understanding of nuclear policies, plans, perceived dangers
  - Build relationships, habits of cooperation that spill over to other areas
  - Offers arena in which Russia is treated as an equal — helps assuage prestige, humiliation concerns
Crisis stability: most arms control agreements have had little effect

- Arms control theory always focused on crisis stability – ensuring neither side felt it could get a first-strike advantage
- But militaries on both sides energetically pursued counterforce, counter-C3I capabilities
  - Creates "use them or lose them" pressures
  - Most arms control agreements had little effect on this dynamic
  - Exceptions: Defunct ABM Treaty near-ban on defenses, START II ban on MIRVed ICBMS (never happened)

U.S.-Russian nuclear dangers are increasing

- Intense hostility creates greater potential for conflict, miscalculation
  - Many flashpoints, e.g., in Baltics
  - Growing perceptions that nuclear use if plausible
- Both sides modernizing their forces
  - Russia building whole new types, nuclear saber-rattling, exercises
- BMD, cyber, counter-space, precision conventional create new complexities, concerns
  - May increase early escalation incentives
U.S.-Russian nuclear dangers are increasing (II): crisis stability at risk

- Russian forces and command and control vulnerable; limited space-based early warning; potential for launch on false alarm
- U.S. ICBMs, SLBMs in port, C3 also vulnerable
- Both sides appear to be pursuing forces, doctrines of tactical use of nuclear weapons
  - Russian (disputed) “escalate to desescalate” doctrine
  - New NPR calls for low-yield SLBMs, SLCMs to counter

U.S.-Russian hostility is poisoning the atmosphere for progress

- United States and Russia, each see the other as aggressive, hostile powers, threats to their national security
- In the U.S. view, Russia:
  - Violated longstanding norms by seizing Crimea (after Georgian war earlier), effectively invading eastern Ukraine
  - Interfered in U.S. elections, and is doing so again
  - Is protecting Assad from consequences of brutality, chemical use, thereby undermining chemical weapons regime — constant lies
  - Is murdering opponents (including with banned chemical weapons)
  - Is building new classes of nuclear weapons, planning nuclear use early in nuclear conflicts, rattling the nuclear saber in a way not seen since Khrushchev, violating arms control treaties
  - Democrats, most Republicans (except for Trump) united in anti-Russian hatred in a way not seen for decades
U.S.-Russian hostility is poisoning the atmosphere for progress (II)

- In the Russian view, the United States and NATO:
  - Violated promises by extending NATO toward Russia’s borders
  - Violated international law by bombing Serbia, invading Iraq, overthrowing Qaddafi without UN authorization
  - Organized the “color revolutions” and had one planned to overthrow Putin – routinely interferes in other countries’ elections
  - Organized the ouster of the Ukrainian government and planned to draw Ukraine (and Georgia) into the EU and NATO
  - Threw out the ABM Treaty and is now building missile defenses to threaten Russia’s deterrent
  - In essence, conducts more aggressive behavior than Russia – but more cynically, claiming to support a rules-based order
  - Remarkably widespread anti-American hostility

U.S.-Russian hostility is poisoning the atmosphere for progress (III)

- Even when locked in a global Cold War, the United States and the Soviet Union cooperated on mutual interests:
  - Built the arms control structure
  - Built the global nonproliferation regime
  - In-depth military-to-military, scientist-to-scientist contacts
  - Cooperated on security in Europe – from Austrian State Treaty to OSCE

- Today, even this Cold War cooperation is largely blocked
  - Except for JCPOA, little nonproliferation cooperation
  - No arms control talks
  - Military-to-military, scientist-to-scientist contacts mostly cut off
  - No effective cooperation on security in Europe
  - Mostly looking for ways to undermine each other
Confronting Russia where needed, but cooperating where it serves U.S. interests

- No doubt the United States needs to respond to Russian aggressive behavior — to deter Russia, assure allies
  - Elections, Ukraine, murder, nuclear threats, treaty violations...
- But Russia and the United States also have mutual interests
  - Most basic: survival – avoidance of nuclear war
  - Nonproliferation (though here, too, Russia has opposed U.S. approaches in recent years)
  - S&T, trade, some international issues
- President Reagan called the Soviet Union an “evil empire,” funded anti-communist insurgents in many countries — and negotiated new arms control agreements with them
  - Russian hostility, nuclear force buildups make arms control more urgent and important, not less.

Extending New START would serve U.S. national security interests

- Limits Russian strategic forces
- Provides predictability, habits of nuclear cooperation, monitoring
  - Cheaper, higher confidence than providing information with intelligence alone
- JCS have concluded U.S. does not need larger nuclear forces
- Provides foundation for future accords, and for addressing new Russian weapons
- Significant benefit for political support for nonproliferation regime

Source: Sputnik
The Russian INF violation

- SS-C-8 ground-launched cruise missile (9M729) has a range above the 500 km INF Treaty lower limit
  - Now deployed, in very limited numbers
  - Reportedly similar to Kalibr SLCM
- Russia initially claimed it did not know what missile was at issue
- Now common understanding of which missile – Russia denies it has prohibited range


Resolving the issue serves U.S. interests better than abandoning the treaty

- An INF Treaty that collapsed over unsolved Russian violations would poison prospects for future arms agreements
- A Russia freed from the INF Treaty would pose greater perceived nuclear risks to U.S. European allies
  - Could create new alliance fears, as SS-20s did long ago
  - Coming at time of increasing doubts over U.S. reliability
  - Would likely create alliance crisis, political requirement for parallel U.S. response, despite its lack of military utility
- United States has no need for INF-prohibited missiles
  - Conventional targets can be addressed by more survivable SLCMs and ALCMs
  - Nuclear targets can be addressed by more survivable forces elsewhere
  - If U.S. military determined there was a military requirement, could redeploy nuclear SLCMs, as suggested in NPR
Resolving Russian INF noncompliance

Recent discussions suggest Russian experts have concluded:
- INF issue could bring down whole structure of arms control – which would be bad for Russia
- INF Treaty is important for Russia – despite neighbors having INF-range missiles – to avoid short-time-of-flight decapitation threat from Europe

Russia may be willing to dismantle the small number of prohibited missiles and launchers, without any confession
- But only in the context of a larger deal seen as serving Russia’s interests
- U.S. demand that Russia confess, dismantle, before any further steps are discussed offers little incentive for Russian agreement
- For face-saving might be possible to modify missiles with engines only capable of flying to shorter, compliant ranges
- Some Kalibr variants have ranges permitted by INF
- Russian experts’ suggestion of inspections to confirm the missile is compliant won’t be enough – because it’s not

Russian charges of U.S. INF violations

1. Stages of ICBMs used as BMD targets are effectively INF-range missiles
2. Large armed drones are effectively cruise missiles with prohibited range capability
3. Since the Mk. 41 launchers for sea-based Aegis routinely fire cruise missiles of prohibited range, the ground-based “Aegis Ashore” launchers are prohibited ground-based launchers for cruise missiles of prohibited range
   - Lockheed: “Aegis Ashore is the same proven, low-risk weapon system as ‘Aegis Afloat’”
Resolving Russian charges of U.S. INF noncompliance

- BMD test targets
  - Treaty permits using ICBM stages for BMD testing — resolve specific ambiguities in Special Verification Commission
- Large armed drones
  - Both sides field such drones — work out definition of distinction between them and cruise missiles in Special Verification Commission
- Aegis Ashore
  - U.S. says system is compliant — lacks software, fire-control hardware for cruise missiles — but if shoe was on the other foot, we’d complain
  - As in Russia’s case, permitting inspections not likely to be enough
  - Should install “functionally related observable differences” making clear launcher is different from sea-based system
  - If necessary — and if the future of arms control plausibly hinges on it — U.S. should be willing to develop and deploy different launcher, never tested with cruise missiles

Laying the groundwork for follow-on accords

- In-depth talks on strategic stability needed
  - Explore both sides’ biggest concerns
  - How defenses, cyber, counter-space, precision-conventional may affect strategic balance, incentives to escalate in early stages of conflict…
  - Possible approaches to address concerns
- Ultimately, other countries’ forces have to be limited too
- Future accords may not be treaties
  - With political polarization, 2/3 in Senate likely to be difficult to achieve — even if INF resolved, U.S.-Russian relations improved
  - Could be reciprocal initiatives — like 1991-1992 Presidential Nuclear Initiatives
  - Could be detailed accords, with verification, agreed as political commitments (JCPOA, Nuclear Suppliers Group…)
  - Congress likely to fight to maintain its prerogatives
Laying the groundwork for follow-on accords (II)

- Some compromise on missile defenses likely essential
  - Central Russian concern – driver of Russian numbers, new types
  - Also central Chinese concern – driver of modernization, potentially future increases in numbers
  - Offense and defense inherently linked
  - Many options for including defenses – but complex, difficult

- Progress toward deeper reductions likely important for sustaining international political support for NPT regime
  - Should be designed to strengthen, not undermine, crisis stability

- Deep reductions likely to require limiting warheads themselves, stocks of fissile materials
  - Would help address "breakout" concerns at low levels
  - But will pose complex verification challenges

Limiting new types of nuclear weapons

- Hypersonic weapons should be treated as countable reentry vehicles
  - High speed may pose a short-warning decapitation threat

- Intercontinental torpedos should be limited as strategic launchers

- Similarly, nuclear-powered cruise missiles should be limited as other cruise missiles are

- New START extension could include covering these systems, with specifics worked out in Bilateral Consultative Commission
Other technologies affect nuclear dangers

- **Missile defenses**
  - Russia, China see as threats to their deterrent – spurring buildups
  - Likely to be more effective against ragged retaliation than coordinated first strike – hence could undermine crisis stability

- **Cyber**
  - Attacks on C3 may be important in conventional war, if successful could provoke losing side to escalate to nuclear level – and could exacerbate worries over vulnerability of nuclear C3
  - Incentives to strike hard, early?

- **Counterspace**
  - More incentives to strike hard, early?

- **Precision conventional**
  - Could pose a threat to nuclear forces, C3 – “entanglement”

Other steps to reduce U.S.-Russian nuclear dangers

- **Rebuilding the broader relationship**
  - Need to respond to provocations while reducing tensions – difficult, but necessary
  - Need mutual agreement not to interfere in domestic affairs, cyber rules of the road, understandings on key political issues
  - Should restart mil-to-mil cooperation – so officers on each side in crisis may know each other, know where to call to talk
  - Should restart nuclear energy, security, safety cooperation – danger to all for world’s largest nuclear complexes to be proceeding in isolation from each other

- **Resolving regional disputes**
  - Resolving crisis in Ukraine
  - Confidence-building to assure stability in Baltics, elsewhere in Europe
  - Coordinating, tamping down conflict in the Middle East
Coping with a multipolar, multi-technology nuclear world

- U.S. nuclear forces also have to deter China, N. Korea...
- Chinese nuclear forces to deter U.S., Russia, India...
- Indian nuclear forces to deter Pakistan, China...
- Missile defenses, cyber, space, precision conventional all affect balances, risks
- Will future accords be multi-party? Or coordinated accords and unilateral initiatives? Or...?

Roles for the U.S. nuclear laboratories

- Maintaining the U.S. deterrent
- Developing tools
- Providing foresight and insight
  - About technical risks and opportunities, foreign programs...
  - Combining technical and policy insights
- Implementing cooperation
- Generating ideas, and making the case for action
- Educating both Congress and the Executive Branch
  - Increasingly critical, with limited nuclear knowledge on the Hill and elsewhere
Summing up…

- U.S.-Russian arms control is in danger
- U.S.-Russian arms control is worth saving — for U.S. security interests
- Should confront Russia where needed, cooperate where that’s in U.S. interests — understand Russian concerns
- Resolving INF concerns is likely to require an overall deal that Russia sees as serving its interests
- Follow-on accords may not be treaties, and face complex issues
- Some compromise on missile defense likely needed

Switching themes…
Other Managing the Atom/Belfer Center
research that may be of interest

- Broad analyses of nuclear security worldwide
  - Progress and gaps since the last summit
  - Recommendations to fill gaps, sustain momentum
  - Suggestions for restarting cooperation with Russia (recent analysis of
    how nuclear security in Russia is evolving post-2014)
- Study on deterrence and the DPRK
  - Risks of living with a nuclear-armed North Korea, versus risks of
    military action
- Mitigating long-term risks of Iran’s nuclear program
  - Revised research effort after Trump’s withdrawal
- Variety of work on history, future of nonproliferation
  - Initiatives that worked, ones that didn’t, and why

Other Managing the Atom/Belfer Center
research that may be of interest (II)

- U.S.-Russia, U.S.-China, U.S.-Europe relations
  - E.g., ”Russia Matters” website, mil-mil and intel-intel dialogue (”Elbe
    Group”)
  - Strategic dialogues, energy cooperation with China
  - New initiative on U.S.-European relations
- Cybersecurity – norms, conflict, deterrence
  - Active research program – many publications
  - ”Defending Digital Democracy” project
- Nuclear dialogue with Pakistan
  - Group led by Gen. Kidwai
Other Managing the Atom/Belfer Center research that may be of interest (III)

- Chinese nuclear forces, policies
  - Recent report reassessing Chinese HEU, Pu stocks
  - Forthcoming study reassessing Chinese weapons design, testing
  - Studies on reprocessing, enrichment, uranium supplies

- Future of nuclear energy, and implications
  - Constraints on, risks of scale of growth needed to contribute significantly to climate mitigation – how they might be addressed
  - Analyses of proliferation resistance, terrorism resistance, of nuclear energy systems

- Intelligence project, and Recanati-Kaplan fellows program

Illicit trade in nuclear and dual-use technology remains a critical issue

- North Korea still shopping; surprisingly, India and Pakistan still shopping; Iran may return

- New book explores steps to strengthen global efforts to stop this trade
  - Intelligence
  - Law enforcement
  - Export, financial controls
  - Internal corporate compliance
  - Sanctions and interdiction
  - Nonproliferation culture in organizations
  - International organizations

https://tinyurl.com/yakbop8h

Preventing Black-Market Trade in Nuclear Technology
Edited by Matthew Bunn, Martin B. Malin, William C. Potter, and Leonard S. Spector
Insider threats are the most dangerous nuclear security problem

- The known HEU and Pu thefts, and most sabotages, involved insiders
- People don’t want to believe their friends and colleagues could betray the organization
  - Leads to serious lapses in protection against insider threats
- Getting people to report suspicious behavior is very difficult
- Often even obvious “red flags” go unreported, unaddressed
  - http://www.belfercenter.org/publication/insider-threats

For further reading...

- Full text of Managing the Atom publications
  - http://belfercenter.org/mta
- Belfer Center’s “Iran Matters” website
  - http://iranmatters.belfercenter.org/
- Belfer Center’s “Russia Matters” website
  - https://www.russiamatters.org/
- Belfer Center’s “The Iran Nuclear Deal: A Definitive Guide”
- My own key publications and other materials:
Potential nuclear flashpoints

- **U.S.-North Korea**
  - Collapse of current process could lead to return to “maximum pressure,” threats of “fire and fury” (more later)
  - Miscalculation, inadvertent escalation could lead to conflict – which could escalate rapidly to nuclear use
  - Other nuclear dangers from North Korea: nuclear transfers; pressures on others to match DPRK capability; “loose nukes” in the event of regime collapse; also chemical and biological weapons

- **India-Pakistan**
  - Ongoing nuclear arms race, with shift toward tactical nuclear weapons that increase risks of seizure, early use in conflict
  - Nuclear doctrines which, if deterrence fails, could lead to rapid escalation to nuclear war
Potential nuclear flashpoints (II)

- U.S.-Russia
  - Intense hostility, mistrust, “grey area” actions could lead to conflict
  - Some conflicts – e.g., in Baltics – could lead to fears of rapid defeat, pressures to use nuclear weapons to prevent
  - Russian nuclear forces and command and control highly vulnerable, likely pressures to “use them or lose them” – launch on warning

- U.S.-China
  - Long-term tensions between rising, declining powers could lead to conflict – Taiwan, S. China Sea, E. China sea...

- U.S. or Israel – Iran
  - U.S. pullout from JCPOA, threats of military strikes could strengthen Iran’s nuclear bomb advocates
  - Many scenarios could lead to conflict – a few to nuclear use

Dangers to existing nonproliferation, arms reduction efforts

- U.S. pullout from the JCPOA, Iran’s ongoing programs
  - Little chance unilateral U.S. sanctions will lead to better agreement
  - Increases risk of proliferation, conflict in the Middle East
  - Decreases credibility of U.S. promises, int’l diplomacy

- North Korea’s ongoing nuclear and missile programs
  - Current process could collapse (more later)

- Intense U.S.-Russian hostility
  - Breakdown of cooperation on many fronts, potential risk of conflict (more later)

- Ongoing India-Pakistan arms race
  - In addition to direct dangers, risks of theft of nuclear material, leakage of technology, blockage of fissile cutoff, likely blockage of CTBT entry into force, near-term restraint unlikely…
Dangers to existing nonproliferation, arms reduction efforts (II)

- Nuclear powers modernizing their forces, no negotiations toward further arms reductions or disarmament under way
  - Russia introducing whole new classes of strategic nuclear weapons
  - U.S. planning $1.2 trillion modernization with little serious debate
  - China also modernizing its much smaller forces
  - No talks on follow-on to New START, or limits on others’ forces

- Nuclear powers utterly rejecting the ban treaty
  - Could further inflame NPT politics between the nuclear “haves” and “have nots”
  - Ban treaty will enter into force for many developing countries, be a feature of the international system for decades to come

Dangers to existing nonproliferation, arms reduction efforts (III)

- No progress on key items on the NPT agenda
  - No disarmament progress (ban treaty will highlight)
  - FMCT blocked; little near-term prospect for CTBT entry into force
  - No progress on Middle East WMDFZ
  - No new initiatives on peaceful uses, security assurances

- Nuclear security efforts losing momentum after the summits
  - Five “action plans” led to little action
  - Political constraints limit IAEA as forum for decisions, actions
  - U.S.-Russian cooperation at a standstill, other bilateral cooperation slow

- Long term growth, spread of nuclear energy could create additional risks if not appropriately managed
North Korea talks: will lack of the best be the enemy of the good?

- Highly unlikely any achievable set of incentives and pressures would lead to near-term N. Korean total nuclear disarmament
  - Nuclear weapons seen as central to regime survival, prestige
- Churchill: “Jaw, jaw” better than “war, war”
  - Recent process has offered months of reduced risk of war
- Many types of intermediate steps would serve U.S., world security interests
  - Freezes on further testing, production; reductions in some aspects of capabilities; military confidence-building measures
- Danger: disappointment over lack of total disarmament could lead to return to “maximum pressure,” “fire and fury”
  - Volatile situation could lead to military conflict
  - Intermediate opportunities may be missed

Understanding Russia’s narrative

- Putin’s Russia perceives an array of U.S. threats, “misbehavior”
  - U.S. has >10x Russia’s GDP, ~10x Russia’s defense budget
  - Expansion of NATO brings hostile forces to Russia’s borders
  - Putin believes U.S. behind the “color revolutions” — bringing Russia’s neighbors into Western orbit — had one planned to overthrow Putin — now providing military help to hostile forces in Ukraine, Georgia
  - U.S. a “rogue superpower” — bombing of Serbia, 2003 invasion of Iraq, military action to topple Qaddafi all illegal
  - U.S. withdrawal from the ABM Treaty, refusal to limit missile defenses, increased counterforce capability, threaten Russian deterrent forces, require new Russian weapons
- Seeing the world through the adversary’s eyes can help in reaching deals that serve both sides’ interests
Implications for long-term disarmament

- Getting to zero nuclear weapons likely to be a long and winding path
- The final step of zero will require building many foundations:
  - Robust verification (including the difficult problem of confirming a few hundred are not hidden away)
  - System to provide international security without nuclear deterrence
  - In particular, resolution of conflicts that drive some states’ perceived need for nuclear weapons
  - Mutual confidence among former nuclear weapon states
- Need to maintain, build from existing regimes, resolve current dangers, to make progress

Dateline: North Korea

- Unpredictable dictator armed with ~15-60 nuclear weapons, ballistic missiles
  - Regularly threatens to rain “nuclear fire” on ROK, United States
- HEU, plutonium production unabated
- History of provocations against ROK — could lead to conflict
- Agreements, sanctions, threats have all failed
- Singapore Summit payoff uncertain
- ROK-DPRK Summit upcoming

Source: KCNA
Dateline: North Korea (II)

- **Key dangers**
  - Nuclear use – e.g., DPRK might use in conflict, under “use them or lose them” pressure or to scare off its enemies
  - Nuclear transfer -- to other states (e.g., al Kibar reactor in Syria), or, less likely, to terrorist groups
  - Pressures on others in region to match DPRK capability
  - “Loose nukes” if regime collapses
  - “Impatience” leading to military action

- **Options**
  - Squeeze until DPRK collapses or capitulates (How feasible?)
  - Seek to negotiate at least an interim freeze and no-transfer pact (What price? What risk reduction?)
  - Military action (What risks? What could realistically be struck?)
  - Do nothing (What risks?)

Dateline: Iran

- Nuclear agreement reduced risk (if all sides complied)
- But key restraints end 8, 10, and 15 years after 2016
- Iran continues to support terrorist groups, undermine countries in the region, threaten Israel, test longer-range ballistic missiles – and has never given an honest declaration of its past nuclear weapons efforts
- U.S. withdrawal creates significant uncertainty
Dateline: Iran (II)

- **Key dangers**
  - Nuclear proliferation – especially as key restraints expire, and Iran is permitted to build up enrichment capacity, develop more advanced (and easier to hide) centrifuges…
  - Pressures on others in region to try to match Iran’s capabilities
  - Secondary sanctions a significant source of friction with allies

- **Options**
  - Use secondary sanctions to drive Iran back to the table
  - Use secondary sanctions to effect regime change
  - Military action (How plausible? What risks?)
  - Do nothing (What risks?)

Coercive diplomacy: Promises have to be credible too

- Thomas Schelling:
  - “Stop or I’ll shoot” only works if the adversary:
  - Believes you’ll shoot if he doesn’t stop
  - ALSO believe you WON’T shoot if he DOES stop

- This crucial credibility of promises does not get enough attention
  - Trump’s withdrawal from the JCPOA undermines the credibility of U.S. promises
  - May effect N. Korea talks, broad range of other diplomacy

Source: Boston Globe

Thanks to Reid Pauly for emphasizing these points
Dateline: Unknown
Nuclear and Radiological Terrorism

- Numerous gov’t studies: terrorist group *could* plausibly make a crude bomb if it got material
- ~20 cases of seizure of stolen HEU or plutonium
- Aum Shinrikyo, al Qaeda both pursued nuclear weapons
- ISIS intent unclear, but had more money, people, territory under control, ability to recruit globally than al Qaeda ever had

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Dateline: Unknown
Nuclear and Radiological Terrorism (II)

- Terrorists could also sabotage nuclear facilities (potentially cause Fukushima-scale accident), use radioactive material in “dirty bomb”
- Options
  - Improve security for nuclear and radiological materials, facilities (How to sustain momentum after the summit process is over?)
  - Block nuclear smuggling (How to find the needles in the haystacks?)
  - Counter high-capability terrorist groups (How can we do better?)
  - Prepare to respond (How much can this mitigate the harm?)
Dateline: South Asia

- Ongoing nuclear arms race between Pakistan and India — who have fought 4 wars
- Military doctrines with unclear redlines; terrorists might provoke conflict; could lead to blundering into war
- Pakistan has world’s fastest-growing nuclear arsenal, and some of the world’s most capable terrorists
- Some modeling suggests even Indo-Pakistani nuclear war could cause “nuclear fall”

Dateline: Russia

- Aggressive nuclear modernization, exercises, rhetoric; cyberattacks; disinformation…
- Heightened U.S.-Russian tensions — Ukraine, and other issues
  - Potential for conflict, e.g., in Baltics
- Russian forces, command and control vulnerable; potential for launch on false alarm
Dateline: China

- Much smaller nuclear force, but major modernization underway
- U.S.-China tensions — South and East China seas, cyber, other issues
- No arms control, verification, dialogue on strategic issues in place
  - China (and Russia) concerned over U.S. missile defenses, conventional strike capabilities, nuclear modernization

Dateline: United States
Strategic modernization

- Existing U.S. strategic weapons are aging
- Obama and Trump administrations have laid out a plan for new ICBMs, SLBMs, submarines, bombers, and cruise missiles, with “life extended” (upgraded) warheads
- >$1 trillion cost over 30 years
- Likely to be unsustainable in the face of conventional needs, other priorities
- Need broader debate over what is needed for deterrence, how to achieve it cost-effectively, integration with arms control
Dateline: Global
Strengthening the global regime

- Many states unhappy with Nonproliferation Treaty – failed treaty review in 2015, another coming in 2020
- Ongoing challenges controlling sensitive technologies – new tech. such as additive manufacturing makes more difficult
- Possible spread of ostensibly civilian enrichment and reprocessing as nuclear energy grows and spreads – steps needed to reduce risks
- Ban Treaty creates, manifests new frictions

Source: AFP

Dateline: Global
Strengthening the global regime (II)

- States threatened by powerful neighbors or major powers may still seek nuclear weapons – or “hedging” capability that would allow them to build weapons quickly
  - Much to do reduce “demand” for nuclear weapons, especially in Middle East and East Asia
- IAEA needs more resources and authority
- Given U.S.-Russian tensions, accusations of violations, little near-term prospect for further arms reductions – means more political tension in nonproliferation regime
  - Little near-term prospect for bringing Comprehensive Test Ban Treaty into force or negotiating fissile cutoff
  - Little near-term prospect of real progress toward Middle East Weapons of Mass Destruction Free Zone
  - All nuclear powers modernizing their forces
  - Ban treaty manifests frustrations by non-nuclear weapons states
Huge, transformational nuclear growth needed for substantial climate role