HARVARD Kennedy School
BELFER CENTER
FOR SCIENCE AND INTERNATIONAL AFFAIRS
Managing the Atom Project

Managing the Atom – Goals, Topics, Approaches

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Managing the Atom Orientation

1 September 2021

belfercenter.org/mta

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Managing the Atom project goals

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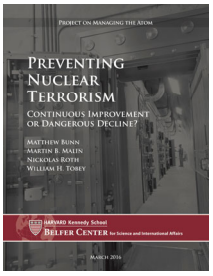
- Developing ideas for more sensible nuclear policies and convincing policymakers to adopt them
- Preparing the next generation of leaders for work in the nuclear policy field
- Providing authoritative information to educate policymakers, other experts, journalists, students, and the interested public

Research for a safer nuclear world



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MTA is…

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- Policy-focused
  - Research and analysis to *explain* and *influence* policy outcomes
  - No agreed political viewpoint
- Interdisciplinary
  - Physics + engineering
  - Social sciences
  - Policy analysis
- International
  - Participants from many countries
- A joint venture of major Belfer programs: STPP, ISP, ENRP
- A small core of staff and faculty, plus pre-doc, post-doc, and senior fellows
- Engaged in cooperation with others at BCSIA, others at Harvard, others in other centers and around the world

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Building a research community of respect

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- Everyone deserves respect for their ideas and contributions
  - Regardless of gender, sexuality, nationality, race, religion, politics…
- Goal: a vibrant, welcoming, cooperative research community that enhances everyone's work, and makes everyone welcome
- Statement on respect and belonging has been distributed

Source: C3Centricity

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Diversity, inclusion, and belonging

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- Managing the Atom has long sought diverse groups of scholars – and sought to make them feel a valued part of the MTA "family"
- Cooperation, listening are key
  - Much of what you learn at MTA is likely to come from other fellows
- Managing the Atom is now a participant in the "Gender Champions in Nuclear Policy" initiative
- Managing the Atom is also a participant in Belfer-wide initiative on racial, ethnic, and national diversity, inclusion, and belonging
  - Expanded outreach, broader speakers and topics
  - "Atomic Voices" focuses on unheard voices, issues
- If you have concerns or suggestions, by all means talk to us!

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Drawing on the MTA community to strengthen, facilitate your work

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- Don't be shy
  - Others here may have crucial insights or information on your topic
  - Feel free to ask for time with faculty, staff – we're here to help
  - Wide range of experts – at Managing the Atom, at Belfer, elsewhere at Harvard, elsewhere in Boston area
    - Resident at Belfer
    - Non-resident
- Joint projects and working groups can seize synergies
  - Where your interests overlap, find common projects to work on together
  - Form working groups if several people are interested
  - If you're interested in a topic the faculty and staff are working on, by all means find ways to get involved

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Two large outcomes we'd like to influence

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Reduce the probability of nuclear use

- Keep nuclear weapons out of terrorist hands
- Prevent proliferation to additional states
- Address nuclear dangers among existing nuclear states
- Reduce roles, numbers of nuclear weapons in ways that reduce risks of use

Provide needed energy while reducing the chance of catastrophic climate change

- Develop options to overcome obstacles to nuclear growth on the scale needed for climate contribution, while mitigating risks
- Explore pros and cons of nuclear energy *in comparison to* other carbon-reduction options

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Nuclear weapons, energy, and linkages

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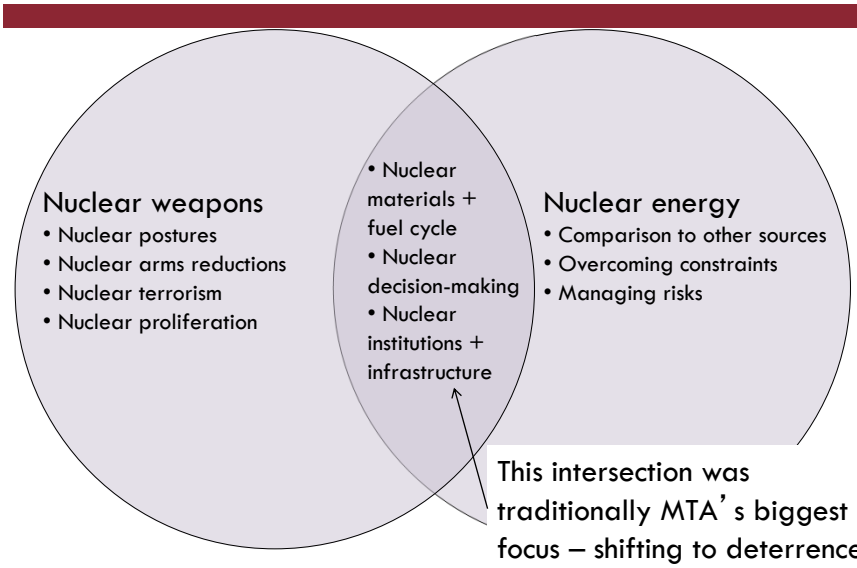

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Picking topics to work on

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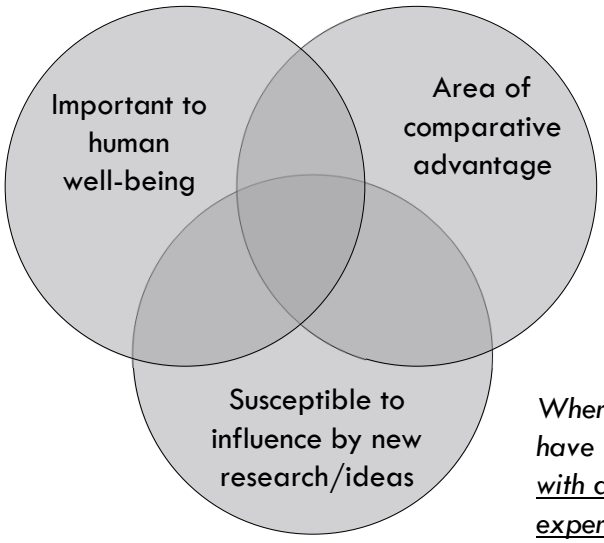

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Two key ways MTA does its work

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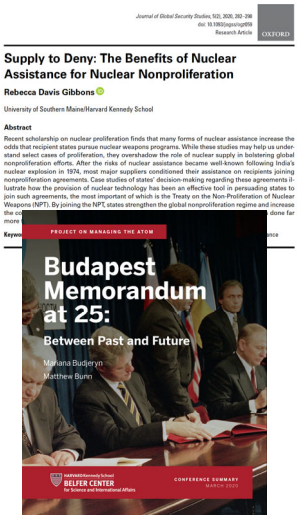
- Fellows' projects
  - Cover a broad range of topics – nonproliferation, nuclear energy, arms reductions…
  - Broad range of forms – dissertations, journal articles, op-eds, policy briefs…
  - In some cases, fellows and staff join together in joint projects
  - Key sponsors: MacArthur, Stanton, Koch
- Sponsored research projects on particular topics
  - Commitments to MTA funders
  - Largely carried out by staff and faculty – but fellows also involved
  - Key sponsors: MacArthur, Carnegie, others…



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Some current MTA research projects

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- Global research network on "Rethinking Nuclear Deterrence"
  - Multiple working groups, policy outreach…
  - Arms control, disarmament, and risk reduction in a new era (context of Russia's war on Ukraine, multipolar, and with defenses, cyber, counter-space, precision conventional…)
  - MTA's own contributions:
    - Track II dialogues, NAS committee
    - "Data for Deterrence" – past near-misses, war games
    - Other work on pathways to nuclear war, reducing their risk
    - Future of arms control – including non-treaty initiatives
  - Talk to us to get involved!
- Nuclear security and nuclear terrorism, including:
  - Ideas for new initiatives
  - Rethinking nuclear safety and security in the context of war
  - Insider threats, security culture

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Some current MTA research projects (II)

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- Chinese nuclear policies
  - Fuel cycle, nuclear security, arms control and transparency, N. Korea
  - Major project on nuclear weapons development and testing
- Managing the risks of Iran's nuclear program
  - Long-term ideas for nuclear arrangements after the JCPOA
  - Iran Working Group (joint with Middle East Initiative)
- Managing the risks of North Korea's nuclear program
  - Mainly handled by sister group, "Korea Project"
- Broader nonproliferation issues
  - Future of the regime, and of the nuclear fuel cycle…
- Future of nuclear energy
  - Assessing potential climate change role – obstacles, risks of large-scale growth, how they could be addressed

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The Korea Project

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- The Korea project is a separate sister group
  - Focus on security transformation on the peninsula
  - Speakers, workshops, research projects, working groups
  - Led by Dr. John Park

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The MTA seminar, other events

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- Weekly MTA research seminar
  - Wednesdays, 10-11:30AM Eastern time
  - Mix of fellows, outside visitors…
  - Hope you all will attend
- "Atomic Voices" – focus on expanding the dialogue, unheard voices, topics
- Working groups – various
- More informal and social events
  - "Coffee and Catatrophe"
  - "Beer, Biscuits, and Bombs"
  - Professional skills workshops
- Occasional workshops
  - October 14: 60th anniversary workshop on lessons of the Cuban Missile Crisis

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Your MTA time

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- We hope to provide:
  - A stimulating, cooperative research environment
  - Some mentoring and training
  - Help for your work
- We ask of you:
  - Participate! In seminars, activities…
  - Present at the MTA seminar
  - Produce at least 1 major item of publishable work
- A request on publications
  - PLEASE let us know when you're submitting something – we can help, coordinate (and it helps us in reporting to funders, others)

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Resources to take advantage of…

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- Number one: your MTA colleagues
  - Many opportunities for cross-fertilization of ideas
  - Potential opportunities to work together on joint projects
  - Can form working groups on topics where several people are interested
- PIs and senior staff happy to help – come see us
  - I will try to meet with each of you to discuss your work – others available too
  - Opportunity to be matched to a senior mentor if you'd like
  - Don't let yourself get "stuck" on a particular problem without asking others for help, ideas

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Resources to take advantage of…

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- Some key experts at the Belfer Center, beyond strict limits of MTA:
  - Faculty, Senior Fellows, and Staff: Graham Allison, Ash Carter, Joseph Nye… (Also many non-resident senior fellows… E.g. Laura Holgate, Frederica Mogherini)
- Bunn nuclear weapons course this fall
  - IGA-232, fellows encouraged to audit
  - 9-10:15AM T/Th
- Frequent seminars beyond MTA seminar itself
  - Belfer Center talks, HKS "Forum" events…
  - MTA "Nuclear 101" series
- MIT, Fletcher, and elsewhere
  - Key experts, courses, lectures, seminars (e.g., Scott Kemp, Jim Walsh, Vipin Narang, John Deutch, Richard Lester…)

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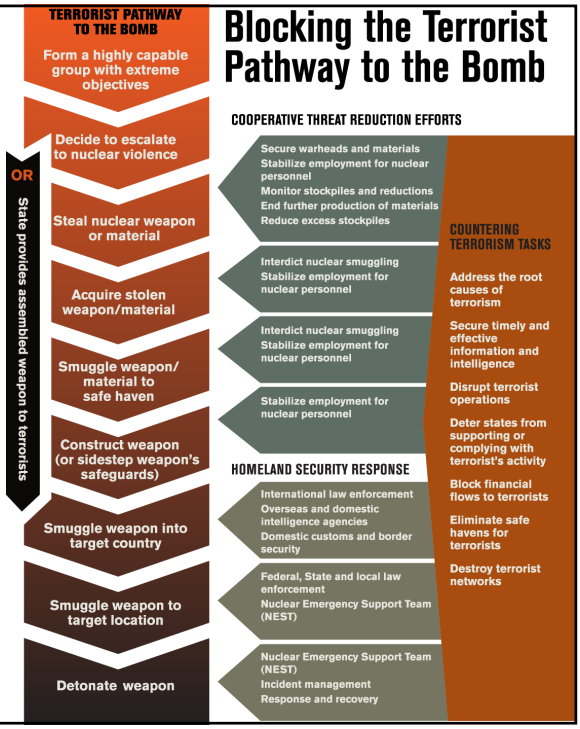
Blocking the Terrorist Pathway to the Bomb



Source: Matthew Bunn, *Securing the Bomb 2010: Securing all Nuclear Materials in Four Years* (2010)

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Reducing dangers of existing arsenals

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- Seek to understand, reduce, risks of potential pathways to nuclear war
  - U.S.-Russia, U.S.-China, India-Pakistan, U.S.-North Korea…
  - In the context of geopolitical conflict, evolving cyber, counter-space, missile defense, precision conventional, and other technologies
- Suggest pathways to stabilizing arms restraint
  - Is there room for further arms control beyond New START? What does that look like?
- Reduce impact of existing arsenals on proliferation, nuclear terrorism
  - High security for all nuclear warheads, weapons-usable materials
  - Maintain, strengthen global nonproliferation measures
  - Address political tensions over disarmament, the NPT, and the ban treaty

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Reducing proliferation risks – lessons of proliferation crises

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- Engage the hard cases
- Beef up nuclear security
- Strengthen nuclear safeguards
- Take new steps to stop black-market networks
- Stem the spread of enrichment and reprocessing
- Toughen enforcement
- Reduce demand
- Keep the weapon-states' end of the bargain

With the right policies, we can hope that 20 years from now there will still be only 9 nuclear weapon states – or fewer.

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The challenge of disarmament

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- Non-nuclear weapon states will not support more measures that constrain *them* – new fuel cycle controls, tougher enforcement, stronger safeguards, more stringent export controls – unless the nuclear weapon states also accept constraints on their nuclear postures
- Need to renew the fundamental NPT bargain: nuclear weapon states committed to pursue nuclear disarmament in good faith
- Need for both immediate steps and fundamental analysis of feasibility, desirability of particular near-term actions and longer-term visions…
  - Ban treaty likely to have major impact on future international politics of nonproliferation and disarmament

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Nuclear in the energy-climate context

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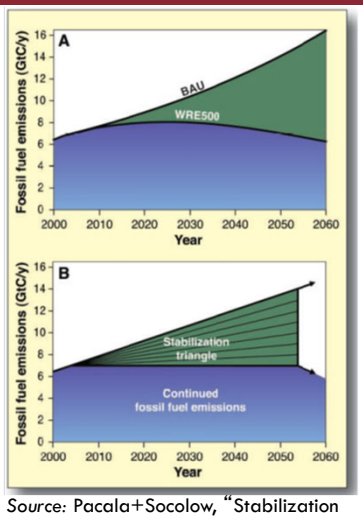
- *Dramatic* nuclear growth required for climate contribution large enough to be significant
- To provide *one* of seven "wedges" needed to stabilize CO2 at 500 ppm, nuclear would have to add 700 GWe of capacity by 2050 – in addition to replacing existing 369 GWe of existing capacity
- 2 wedges may be unobtainable
- 10-14 wedges may be needed



Source: Pacala+Socolow, "Stabilization Wedges," *Science* **305** 968-972 (2004)

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For a nuclear "wedge," huge increase in construction needed

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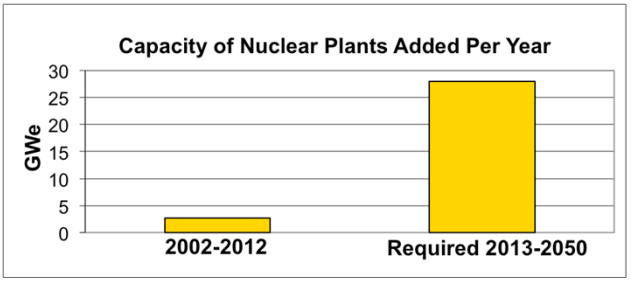

- Need to shift from 3 to 28 GWe/yr
- Nuclear must become dramatically *more* attractive to governments and utilities than it was before Fukushima – a difficult challenge
- Any further disaster, from accident or terrorism, would doom any realistic prospect for growth on this scale

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Nuclear growth implies nuclear spread: the story so far

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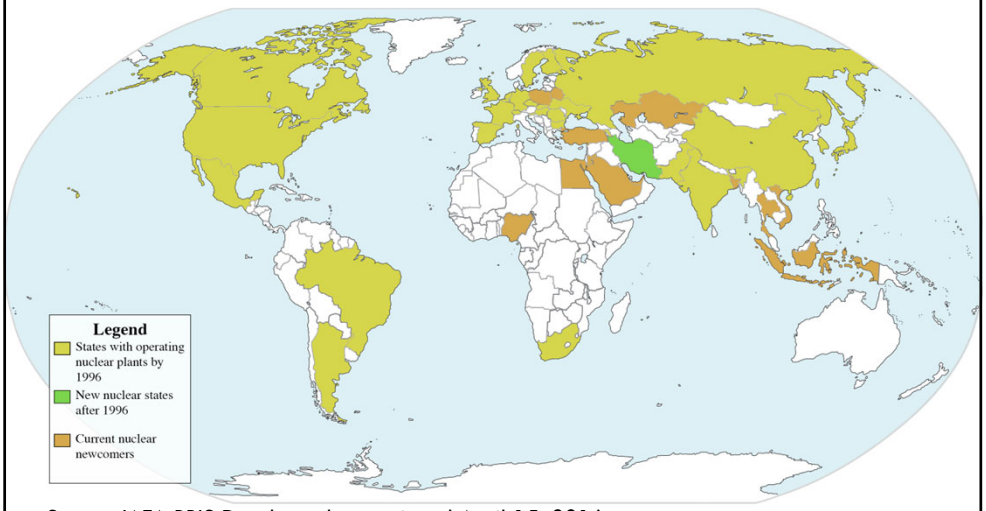

Source: IAEA PRIS Database, last retrieved April 15, 2016

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Key constraints on large-scale nuclear energy growth

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- Cost – and financing
- Safety risks – real and perceived
- Security risks – real and perceived
- Nuclear waste management – mostly politics
- Siting and public acceptance
- Limited government and industry capacity
- Stringent regulation
- Proliferation risks – mainly from the nuclear fuel cycle
- U supply: Not likely to be a constraint this century

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