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AN APPROACH FOR RESPONSIBLE NUCLEAR SUPPLY AFTER FUKUSHIMA

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Outline

- Context
- Why need "responsible" nuclear supply?
- Potential Approaches
  - Vendors
    - Bilateral/unilateral governments
    - Multilateral/international
- Questions for discussion

Starting point

- Conventional wisdom: Nuclear supply follows free market competition and nuclear suppliers only need to follow government legal restrictions
- Reality: Government policies have huge impact on terms of nuclear supply, from NSG guidelines to nuclear cooperation agreement requirements to export financing terms. Suppliers make choices based on their risk assessment. Recipients (operators, governments, financiers) can increase or reduce risks.
- Responsible nuclear supply: Requires efforts by governments and suppliers and recipients.

Is there a universal definition of responsible nuclear supply?

- No. Increasing talk of "nuclear governance" as it relates to nuclear safety & nuclear security, particularly post-Fukushima.
- Nuclear governance as it relates to nonproliferation handled under NPT, Nuclear Suppliers Group.
  - NSG not universal, but members generally follow principle of "no undercut".

Defining responsible nuclear supply

- MINIMIZES OR DOES NOT INCREASE RISKS OF RELEASE OF RADIATION TO THE ENVIRONMENT, PEOPLE OR SOCIETY
- Radiation release could come from
  - Nuclear explosive
  - Radiological dispersal device
  - Accident
- Elements of responsible nuclear supply
  - Nonproliferation
  - Nuclear security
  - Nuclear safety

Is responsible nuclear supply different after Fukushima? Yes

- Not because Fukushima could have been prevented by better nuclear governance, but impact possibly could have been mitigated with better nuclear governance in place.
- Also, pause in construction could affect scale, pace & costs.
- Some suppliers will get out of the game
  - Siemens already; Japanese?
  - Question of markets – without a domestic market can exports be competitive?
- Before Fukushima, cost paramount. Safety after?

Is responsible nuclear supply different after Fukushima? No

- Nuclear "newcomers" that go forward (e.g., Vietnam, UAE, Saudi Arabia) won't be as constrained as existing nuclear power states
  - By public opinion
  - By need to "retrofit" existing reactors
  - By need to revamp existing regulatory systems
- Holistic approaches for the system more difficult to engineer than patchwork regimes so any changes likely to be incremental

Bottom Line

- No matter what, need to shape nuclear energy to reduce risks. Long-term sustainability of nuclear energy likely requires more global governance in following areas:
  - Nuclear safety
  - Nuclear security
  - Fuel cycle limitations (enrichment/reprocessing) for nonproliferation reasons.

- Will require all states, all stakeholders to reduce risks.

A few governance objectives

- **Enhance focus on security**
  - Nuclear Security Summit 2014
  - World Institute for Nuclear Security
  - Better adherence to international standards (amended CPPNM)
- **Limit amount of directly weapons-usable nuclear material growth**
  - Discourage Pu, HEU use in civil cycle
  - Promote LEU, open fuel cycle, limiting spread of sensitive fuel cycle facilities
- **Reduce risks from the fuel cycle** – not just front end (enrichment, fuel) but also back end (spent fuel, waste).

Approaches

- At vendor level
  - Codes of conduct, etc.
  - Self-regulation approaches
- Unilateral/Bilateral government actions
  - Export licensing
  - Nuclear Cooperation Agreements
- Multilateral/international
  - Nuclear Suppliers Group Guidelines

Nuclear Governance: Vendor Approaches

- **Nuclear Principles (Nuclearprinciples.org); 2011**
- Vendors: CANDU, Ge-Hitachi, Westinghouse, Atomstroyexport, Areva, Mitsubishi, Atmea, Toshiba
- Principles:
  - Safety
  - Security
  - Environment
  - Compensation for Nuclear Damage
  - Nonproliferation
  - Ethics
- **Dual-use exporter voluntary actions**
  - E.g., Oerlikon's sharing of information with government about rejected export requests

Nuclear Governance: Unilateral, Bilateral Approaches

- **Export licensing**
  - **Equipment**
  - **Technology, know-how (Part 810 in U.S. system)**
- **Export promotion**
  - **Governments can choose not to single out nuclear energy (a la Sarkozy) but offer comprehensive energy advice**
    - Promote *all energy options* (especially efficiency) and *all approaches*, including regional facilities, cross-border electricity transmission, regional fuel cycle centers
- **Nuclear Cooperation Agreements**
  - **Can go beyond NSG requirements (e.g., Additional Protocol, fuel cycle assurances)**

Nuclear Governance: Multilateral, International Approaches

- Within the Nuclear Suppliers Group
  - Additional Protocol as condition of supply
  - Greater transparency and harmonization of nuclear cooperation agreements
- Promote multinational voluntary approaches
  - Enrichment providers should open up to investment (e.g., KEPCO, US LES)
  - Reinvigorate global campaign for international repository
  - Fund regional storage repositories
- Reshape FMCT negotiations for legally binding e/r restrictions
  - Require multinationalization of all sensitive fuel cycle facilities to level the playing field; give FMCT a real disarmament job; divert the "rights" argument away from the NPT
  - Argument: If not making fissile material for weapons, do we need national facilities?

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