Disarmament and Global Threat Reduction in the Context of a Growing Nuclear Power Industry

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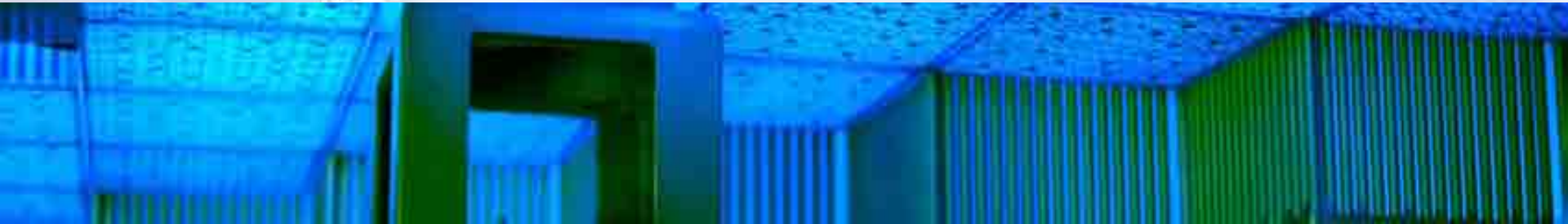
Nuclear Power Outlook

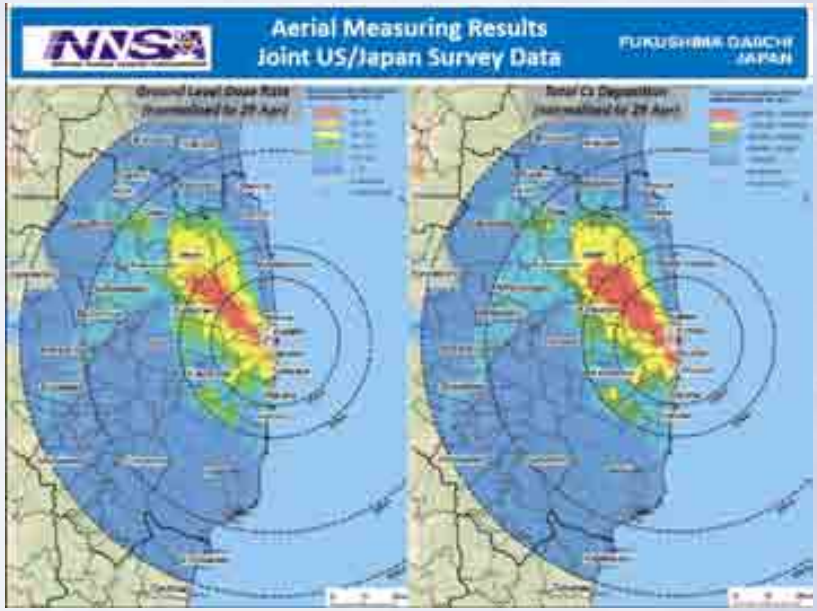
- By 2030, global energy demand is expected to grow over 50%
- 70% of growth is expected to come from developing countries
- 65 new reactors under construction in 15 countries
- License applications for 26 new reactors in the United States

Towards a Low-Carbon Future

- Nuclear provides about **20%** of total U.S. electricity but **70%** of its carbon-free electricity
- 15 countries rely on nuclear energy to supply at least one-quarter of their total electricity
- Flexible and reliable = energy assurance



With Benefits Come Risks…



"The tragic events at Fukushima make clear that nuclear energy, which holds great promise for global development and as a carbon-free source of power, also brings significant challenges to our collective safety and security. Going forward, we must rededicate ourselves to the principle that when pursuing nuclear energy, safety and security must be our highest priority."

— President Obama, September 2011

With Benefits Come Risks…


The Washington Post

FINAL

Risky Stash of Uranium Secured

U.S., Russia Remove Weapons-Grade Nuclear Material From Yugoslavia

- Potential for theft or diversion of material

- Terrorist theft of nuclear material is neither a new nor unexpected threat

IAEA Peaceful Uses Initiative

"Today, the President has asked me to announce that the United States will make an additional commitment of $50 million over the next five years for a new IAEA Peaceful Uses Initiative. We hope other partners will match this contribution with an additional $50 million."

— Secretary of State Hillary Clinton, May 2010

Funded so far:

- Human Health: $1.6 million
- Nuclear Power Infrastructure Development: $5.5 million
- Water Resource Management: $2.1 million
- Food Security: $ 2.5 million

More than 100 Member States have benefitted directly.

International Framework for Nuclear Energy Cooperation

- Forum for Participating States to explore mutually beneficial approaches to the use of nuclear energy.
- Ensures that such use is efficient and meets the highest standards of safety, security and nonproliferation.
- Participating States voluntarily share in the effort and gain the benefits of economical, peaceful nuclear energy, without giving up any rights.
- Reliable Nuclear Fuel Services.
- Infrastructure Development.

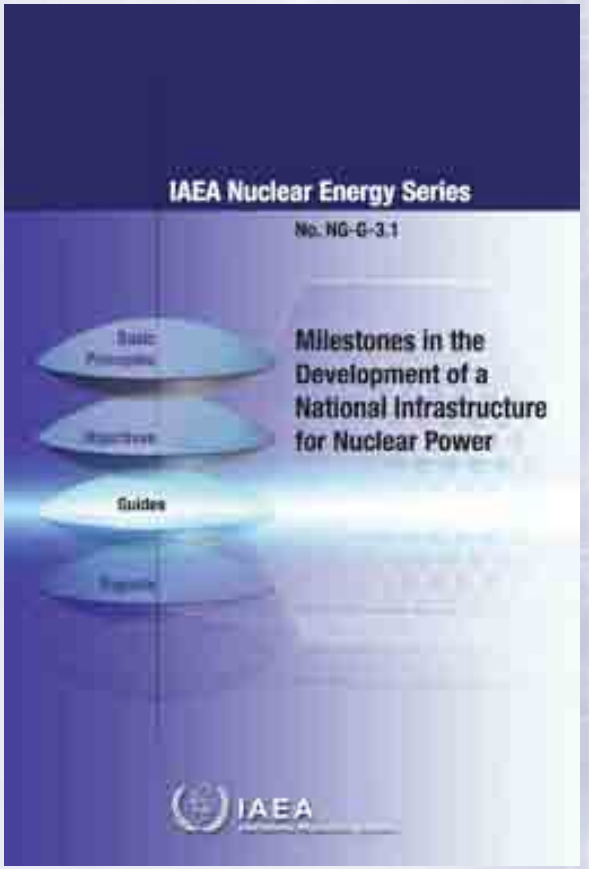
Cooperative Partnerships

- NNSA is building international partnerships to address the challenges posed by the expansion of nuclear energy
- Through an extensive network of laboratories and universities, NNSA is helping countries develop nuclear infrastructures that emphasize safety, security, and nonproliferation.

A technical training program for the Middle East was held at two NNSA laboratories to emphasize the role of international safeguards for nuclear newcomers.

Infrastructure Development

- IAEA National Infrastructure Milestones document
- The 2010 Nuclear Security Summit affirmed the importance of infrastructure development and capacity-building
- NNSA engaging 17 bilateral and regional partners on 94 ongoing projects to improve capabilities to account for and control nuclear material



South Africa as a Nuclear Security Leader

Convert

Convert research reactors and isotope production facilities from the use of highly enriched uranium (HEU) to low enriched uranium (LEU).

Results in permanent threat reduction by minimizing and, when possible, eliminating the need for HEU in civilian applications—each reactor converted or shut down eliminates a source of bomb material.

- **NTP Radioisotopes (South Africa)**

  Currently in the process of conversion, expected to be complete by 2013.

  - **June 2010:** First large-scale production of Mo-99 with LEU.
  - **October 2010:** NNSA awarded up to $25M to accelerate Mo-99 conversion to LEU.
  - **December 2010:** First LEU-based Mo-99 approved for use in the U.S.
  - **June 2011:** Record quantities of LEU-based Mo-99 enter the U.S. from South Africa and Australia to avoid a Mo-99 shortage while the Canadian NRU reactor is down for scheduled maintenance.

A Unique Opportunity

- We are at the beginning of a long process that will require collective leadership and creativity.
  - Build security and science through advancing capacity to conduct analyses of the uranium ore and ore concentrates from mining operations.
  - Characterization of uranium sources is an effective means to detect and track the movement of radioactive materials.
  - Can also build basic competence in uranium characterization and analysis
  - South Africa's technical expertise can help build that regional capacity.

Conclusion

- We can ill afford to ignore the potential impact of the expansion of nuclear energy on disarmament and threat reduction efforts.
- Much of this risk can be mitigated through actions now, when many countries are still in the planning stage for their nuclear power expansion.
- Working with the IAEA and in partnerships with each other, countries like South Africa and the United States can make a substantial contribution to promoting peaceful uses of nuclear technology, while minimizing the any related risksl

DISCUSSION