



# *Export Control Ramifications of Nuclear Energy-Related Knowledge and Equipment Transfers*

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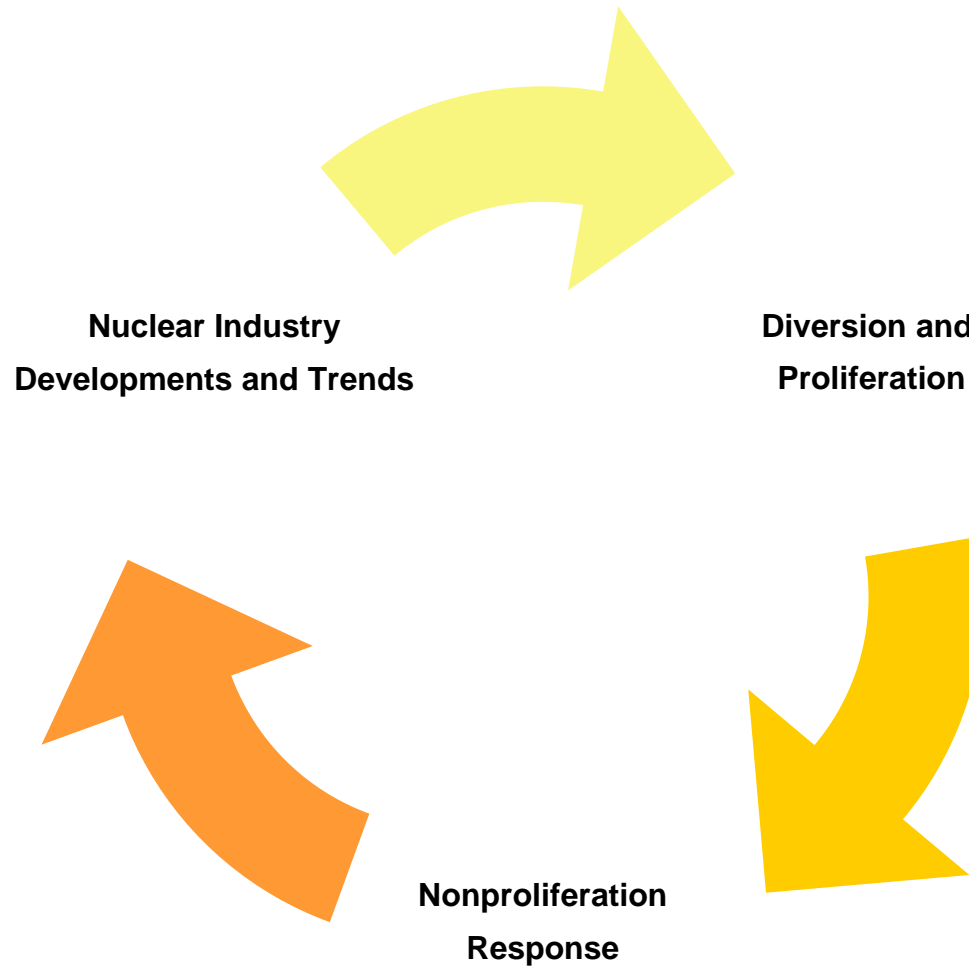
# ***Purpose of Presentation***

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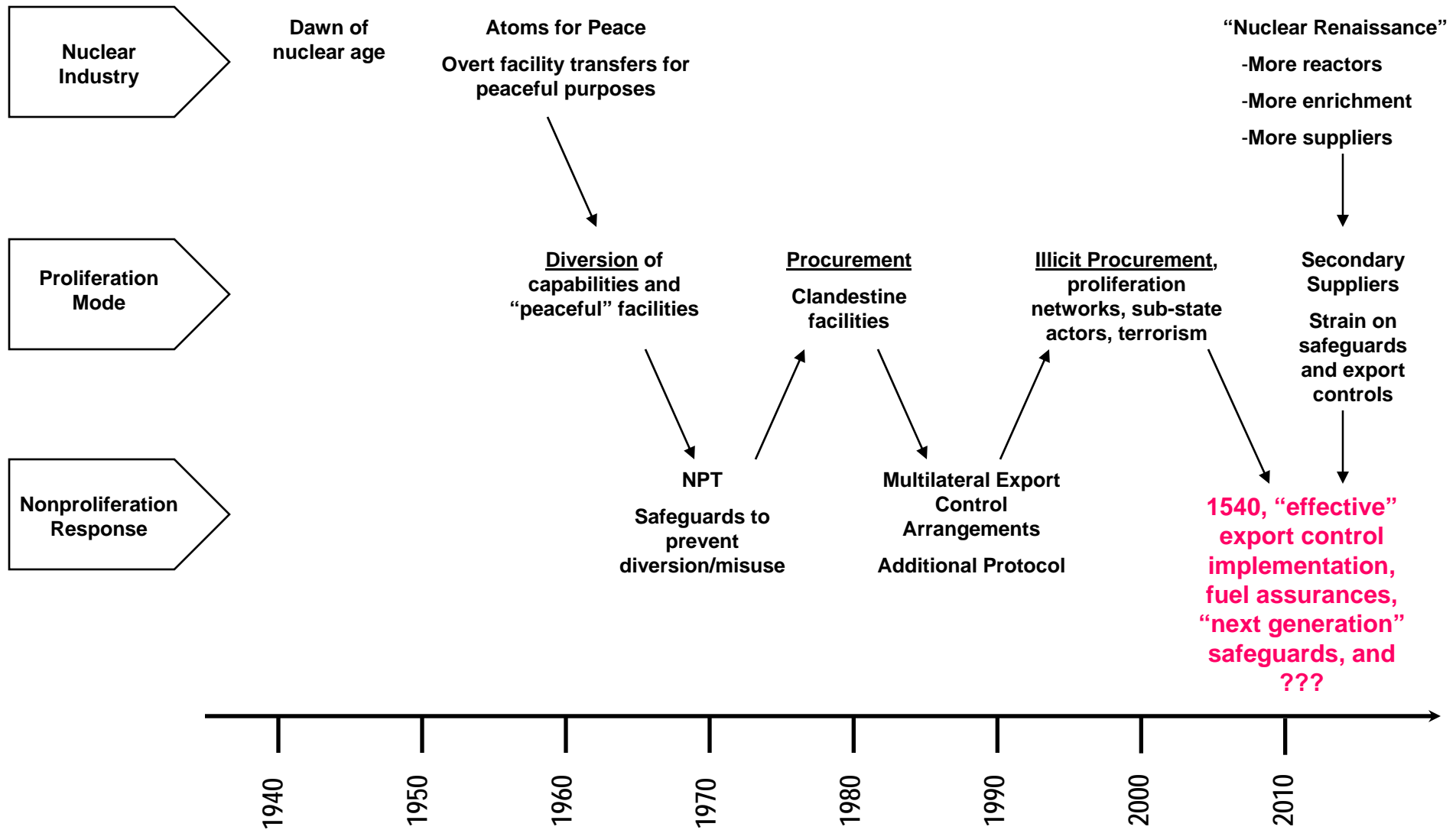
- **A brief history of nuclear proliferation and nonproliferation**
- **Overview of global nuclear energy trends**
- **Historical Conditions on Nuclear-Related Transfers**
- **The Importance of Establishing Effective Export Control Measures**

# ***Nuclear industry presents proliferation risks and nonproliferation measures impact industry***

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# A brief history of proliferation and nonproliferation





# Nuclear Industry Today and Tomorrow

- **Nuclear Power Plants**

- 439 Nuclear Power Plants in 30 countries
  - 14% of global energy supply
- 37 Nuclear Power Plants under construction in 11 countries
- 24/30 nuclear energy countries considering additional NPPs
- 47 non-nuclear countries considering or planning their first NPP

- **Fuel Cycle Facilities**

- Increased nuclear power generation requires additional uranium enrichment capacity
- Spread of enrichment is greatest *near-term* proliferation concern
- As spent fuel inventories grow, and eventually as uranium depletion becomes a concern, spread of reprocessing capabilities pose *longer-term* proliferation concern

Countries considering nuclear power	
...in 10 yrs	...in 20 yrs
Azerbaijan	Algeria
Belarus	Australia
Egypt	Bahrain
Indonesia	Chile
Kazakhstan	Georgia
Norway	Ghana
Poland	Jordan
Lithuania	Kuwait
Estonia	Libya
Latvia	Malaysia
Turkey	Morocco
Vietnam	Namibia
	Nigeria
	Oman
	Qatar
	Saudi Arabia
	Syria
	UAE
	Venezuela
	Yemen



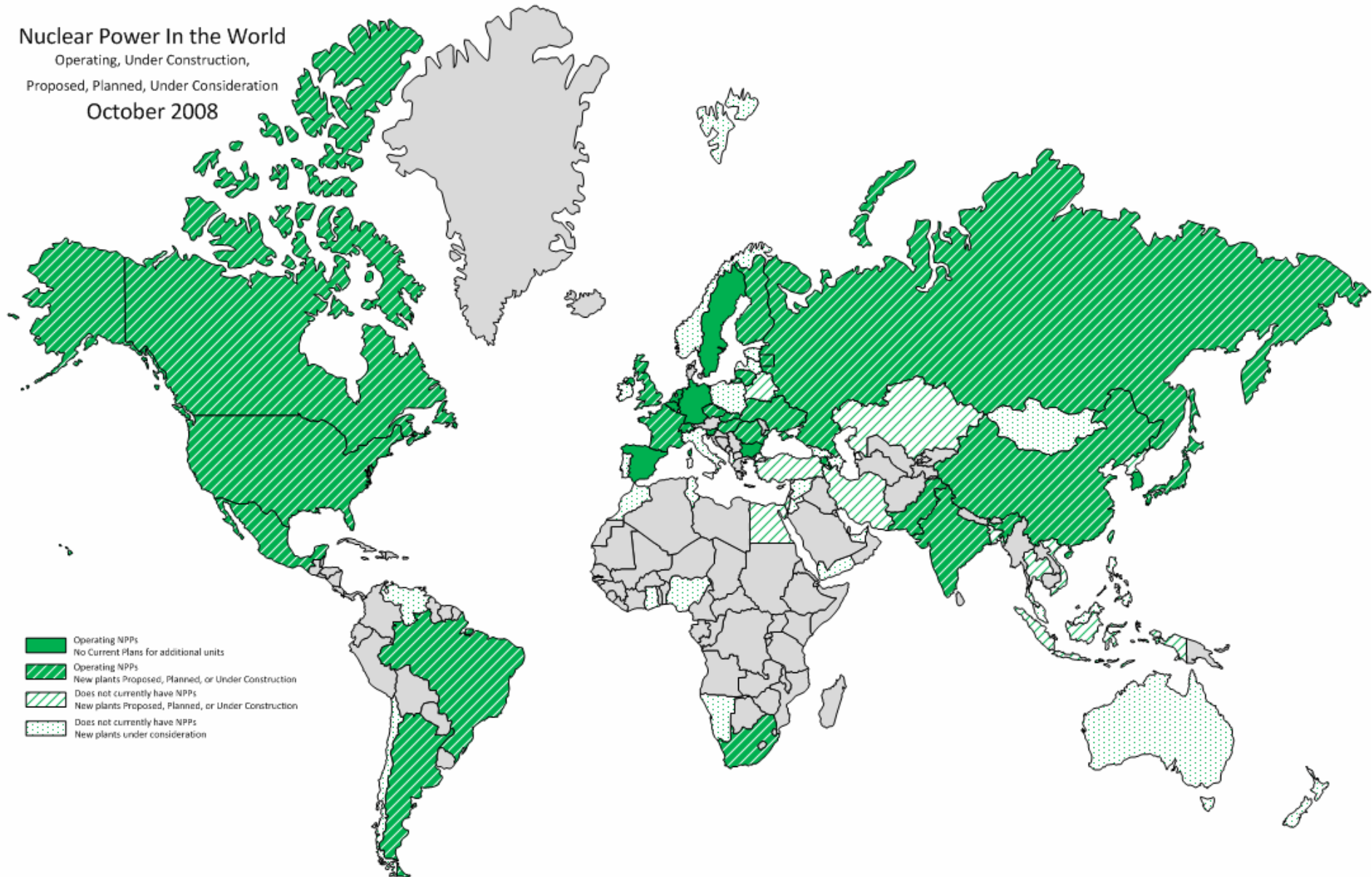
# Global Nuclear Energy Trends

## Nuclear Power In the World

Operating, Under Construction,

Proposed, Planned, Under Consideration

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- Operating NPPs  
No Current Plans for additional units
- Operating NPPs  
New plants Proposed, Planned, or Under Construction
- Does not currently have NPPs  
New plants Proposed, Planned, or Under Construction
- Does not currently have NPPs  
New plants under consideration



# ***The Nuclear Nonproliferation System***

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- **Nuclear Non-Proliferation Treaty**
  - Recognized US, Soviet Union (now Russia), UK, France and China as weapon states
  - Only Israel, India, Pakistan, Cuba, DPRK outside NPT
- **Regional Arrangements**
  - Nuclear-weapon-free zones in Latin America, Africa, and South Pacific
  - Argentina-Brazil Safeguards Agreement
- **Multilateral Activities**
  - Proliferation Security Initiative (PSI)
  - Container Security Initiative (CSI)
  - Global Initiative (GI)
  - UNSCR 1540 Experts Committee
- **International Atomic Energy Agency**
  - NPT inspection arm
  - Implements safeguards, including Additional Protocol
- **Export Controls**
  - Nuclear Suppliers Group (NSG)
  - NPT Exporters' Committee (ZC)
  - Conditions on peaceful nuclear trade



# ***Conditions on Nuclear-Related Transfers***

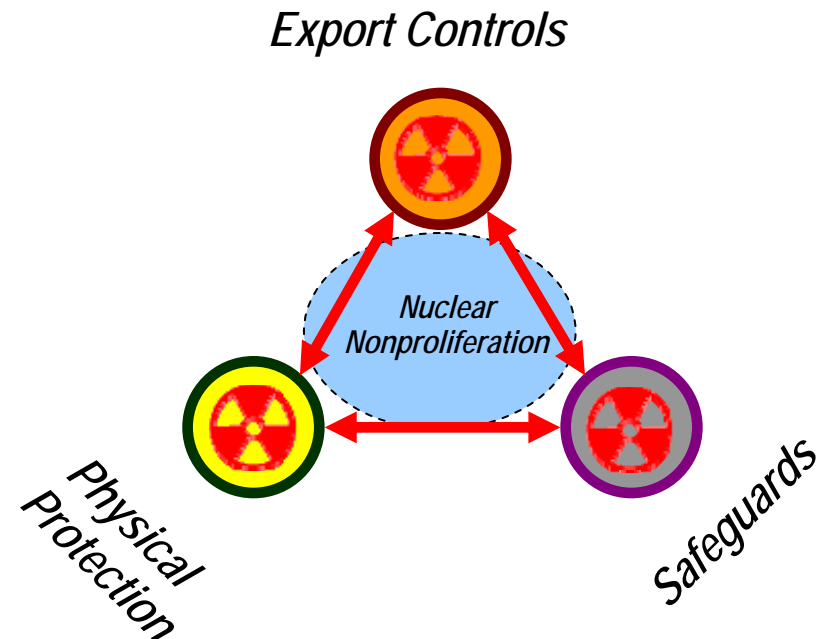
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- **Two Key Challenges identified by the IAEA for sustainable global nuclear power expansion:**
  - Establishing necessary infrastructure for countries introducing nuclear power
  - Maintaining confidence in nuclear non-proliferation efforts in all countries
- **Countries must have the infrastructure to safely and securely operate NPPs and have the processes in place to effectively meet and implement nonproliferation commitments. These factors work together to ensure the responsible use of sensitive commodities:**
  - Industrial infrastructure such as manufacturing facilities
  - Legal and regulatory framework
  - Institutional measures to ensure safety and security
  - Human and financial resources
  - Safeguards
  - ***Export Controls and Conditions of Supply***

# Conditions on Nuclear-Related Transfers (cont'd)



- “Conditions of supply” as defined by NPT Zangger Committee and Nuclear Suppliers Group (NSG) Part 1 guidelines include specific criteria for the export of items that are “especially designed or prepared” for nuclear use:
  - **Safeguards** – Part 1 NSG guidelines require recipient States adopt IAEA safeguards as a condition of supply for nuclear exports
  - **Physical Protection** – the NSG urges States to adopt IAEA-recommended measures to prevent the theft of nuclear material and unauthorized access to nuclear material or facilities
  - **National Export Controls** – NSG Part 1 Guidelines stipulate that any re-export of nuclear-related items or technology should meet the same criteria that was applied to the original export to the original importing country.



# Conditions on Nuclear-Related Transfers (cont'd)

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- **Related and Supporting Precedents:**
  - IAEA Model Additional Protocol includes provision for tracking and reporting to the agency imports and exports of nuclear items and nuclear-related “activities” such as R&D.
  - NSG Part II Guidelines that cover exports on nuclear-related dual-use items urge suppliers not to authorize transfers of equipment, materials, software, or related technology when there is an unacceptable risk of diversion to illicit weapons programs.
  - **The 2004 UNSCR 1540 Resolution strengthens the legitimacy of these and related measures by underscoring the imperative of preventing illicit internal and cross-border transfers of nuclear and other WMD-related commodities.**

# Establishing Effective Export Control Measures



- **Projected nuclear sector growth will necessitate improved export control measures.**
  - Controlling technology transfers
    - *Challenge: outsourcing production will result in technology transfers subject to export control. Recipients of this production technology must have effective control over intangible transfers*
  - Preventing re-export of nuclear equipment
    - *Challenge: both supplier and recipient states must have export control laws and process.*
  - Improved industry compliance
    - *Challenge: Industry must move toward self-compliance with international export control norms*
- **Solution**
  - Enhanced Government-Industry Cooperation in support of heightened awareness, transparent application of export control licensing standards, secure supply chains.
  - Universal adherence to multilateral norms

# ***Establishing Effective Export Control Measures (cont'd)***

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- **National laws and resulting processes and regulations should:**
  - Establish a control list of sensitive commodities that is consistent with the multilateral export control regimes.
  - Provide authority to control the export, re-export, transit and transshipment of controlled items
  - Require that all license applications are subject to thorough end-use/end-user analysis to ensure exports are consistent with international norms.
  - Provide tools and the legal framework to enable enforcement personnel, including inspectors, investigators, and prosecutors, to enforce their national nuclear export control requirements
  - Promote Industry outreach to ensure companies understand their country's export control requirements and are aware of the potential role their products could play in a weapons program.
  - Facilitate companies' access to national licensing and supply chain functions so as to maximize the effectiveness of internal compliance systems.

# Establishing Effective Export Control Measures – role of technical specialists



## EFFECTIVE EXPORT CONTROLS



### Licensing

- Maintaining control lists in light of emerging technologies of proliferation significance
- Assessing credibility of declared end uses and significance of diversion risks



### Enterprise Compliance

- Educating strategic commodity suppliers regarding procurement threats and to comply with export control requirements



### Enforcement

- Training customs personnel and border guards to recognize WMD-related materials and equipment
- Providing technical “reachback” support to Customs personnel



**Each element depends on technical expertise**

# ***Proliferation in Context: Challenges to Nonproliferation Efforts***

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- **Globalization**
  - Globalized nuclear industry, multi-national nuclear enterprises, outsourcing of production, Increasing transshipment trade
- **Modernization**
  - Technology advancement and diffusion, ease of intangible transfer of technology
- **WMD Brokering**
  - Front companies, procurement networks
- **Terrorism**
  - Threat of development and use of WMD by sub-national groups
- **Secondary Proliferation**
  - Emerging suppliers of WMD commodities and know-how outside nonproliferation regime
- **Strain on export controls and safeguards**
  - High-volume, fast-paced globalized trade strains ability to implement and enforce export controls
  - Additional nuclear facilities, and new types of nuclear fuel facilities strain the manpower-intensive safeguards system



# Summary

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- **The nuclear proliferation threat has evolved rapidly over the past several years at the very same time that national governments have expressed renewed interest in nuclear power generation.**
- **Countries require an extensive infrastructure to support the expansion of the nuclear energy sector, and this infrastructure needs to include effective export controls.**
- **Applying appropriate conditions on supply can reduce the risk of proliferation of nuclear equipment, materials and knowledge.**
- **An effective Export Control system that includes regulations, licensing and enforcement process, and technical expertise should be an integral component of governments' seeking to establish or expand their nuclear power infrastructure.**

**Robust strategic trade control systems are indispensable to detecting and preventing the illicit procurement of equipment, materials, and technological know-how by states and terrorist organizations seeking WMD**