

A Systems Framework for NP Research and Development

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Purpose

Nonproliferation entails many different aspects.

There are international and national aspects of NP.

It includes politics, technologies and capabilities.

Our goal:

identify the different aspects to NP and

understand how they integrate together to form a single structure.

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Key Elements of Nonproliferation and their Inter-relation

Political Basis

- Political Basis provides the rules of engagement.**
- It provides the guidelines to allow the exchange of nuclear information and technologies within the purview of international cooperation.**
- Provides the baseline to impose international pressure if a country goes outside of the defined rules.**
- Provides agreements and commitments for the elimination of nuclear weapons, nuclear materials or nuclear testing.**
- The political basis both drives and is driven by the global nuclear environment.**
- It is the definitive umbrella for NP.**

Global Nuclear Environment (GNE)

- The domestic status of nuclear material on a country-by-country basis defines the GNE.**
- It includes each country's national and international NP policies and technical means.**
- The GNE both drives and is driven by the political basis.**

Political Basis and Global Nuclear Environment

The following are the key elements of the Political Basis for NP:

POLITICAL BASIS:

INTERNATIONAL

- International Treaties**
- Bi-lateral, Unilateral and regional treaties and agreements**
- International Organizations and Committees**

GLOBAL NUCLEAR ENVIRONMENT:

NATIONAL

- Foreign Policy, Aid and Military Support**
- Political Standing**
- Nuclear Policy**
- Domestic Safeguards**
- Intelligence and Export Controls**

Past Nonproliferation Environment and Current NP Environment

Past NP Environment:

- Primarily a bi-polar world.
- Resulted in regional political stability and control of nuclear weapons material.

Current NP Environment:

Global Nuclear Environment- Major world changes redefining the NP balance:

- Breakup of the Soviet Union and a change in the political structure
- Discovery of the Iraq nuclear weapons program
- North Korea limitation of IAEA on-site inspectors

Political Basis - New and proposed treaties and agreements:

- NPT renewal.
- US, Russia and England agree to suspend nuclear weapons testing.
- US/Russia agreements and treaties to limit number of nuclear weapons.
- Current debate on a CTBT and fissile material cut-off.

Current Political Events- Results

The following are the results of the current political situation:

- Excess nuclear material from dismantled weapons**
 - increase in nuclear material smuggling**
 - policies are required for the disposition of nuclear weapons material**
- Extension of the IAEA to weapon states**
 - world-wide budget concerns**
 - over-extended within current inspection requirements**
 - potential transfer of nuclear weapons design information**

Developing Safeguards and Nonproliferation Needs

New Challenges for Conventional Safeguards:

- Potential for increased demands for nuclear energy
- Safeguarding of large reprocessing facilities, and
- facilities to convert retired nuclear material (LEU/MOX or long-term disposal or accelerator transmutation)

Enhanced Safeguards:

- IAEA 93+2 program
- International safeguard's support to FSU
- Proposed international monitoring for the CTBT
- Fissile material production cut-off monitoring

Additional Proliferation Pathways:

- Increased reports of nuclear smuggling
- Recent examples where current technologies or inspection capability did not detect nuclear weapons programs.

Path Forward

Overview:

- new approach required to alleviate strain on current IAEA
- continued international support with stronger interchange for FSU
- international cooperation to respond to the tracking of smuggled nuclear material. Potential requirement for international response to nuclear emergencies.

Path Forward

Technical Solutions:

- Enhanced environmental monitoring program.
- Development of remote, unattended monitoring technologies for:
 - long-term storage/infrequent access or
 - verification of disarmament w/o transfer of design information.
- Technologies for locating of diverted material.
- Technologies for identifying underground facilities.
- Technologies to detect transport of nuclear material.
- Advanced information management and analysis.
- Integrated monitoring system to detect nuclear weapons testing.

Political Solutions:

- **Continued communication and development of trust between FSU and other countries for the strengthening of their safeguard programs.**
- **Examine role of IAEA for nuclear weapons states and examine alternatives.**
- **Strengthen international communication in the area of nuclear materials smuggling and emergency response.**
- **Continued support for the development of additional nuclear free-zones.**
- **Develop international policy for countries that defy the NPT and limit the role of the IAEA inspector.**
- **Develop a solution for the strong, long-term disposition of nuclear weapons material by the nuclear weapon states.**
- **Continued dialogue among the international community on the long-term status of nuclear weapons.**

Summary

- The political and national nuclear basis is constantly changing.
- The key elements of nonproliferation must be examined from a system perspective to ensure balance between the threat and the cost.
- Targeted technological solutions can provide a cost-effective means of reducing the NP threat.
- Strong national safeguards must be top priority for all nuclear weapon states.
- Role of the IAEA must be evaluated for weapon and nonweapon states to ensure it maintains a viable NP check.
- Nuclear smuggling is a current concern and must be addressed at a national and international level.

Title