GLOBAL DIALOGUE ON NUCLEAR SECURITY PRIORITIES

NUCLEAR SECURITY PRIMER: THE EXISTING SYSTEM

May 2015

This Nuclear Security Primer provides an overview of the key international organizations, agreements, guidelines, multilateral engagement mechanisms, and implementation services that make up today's nuclear security system. It also summarizes the benefits and limitations of each.

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I. INTERNATIONAL ORGANIZATIONS

UNITED NATIONS

Overview and Benefits

The United Nations (UN) was formed in 1945 with the signing on June 26 of the United Nations Charter (Charter). There are currently 193 member states. **The UN's primary mission is to maintain international peace and security.** The most prominent of the UN's organs are the Security Council and the General Assembly.

The **UN Secretary General** acts as the depositary for a wide range of international agreements, including, in the nuclear security realm, the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT). The Secretary General may also draw the attention of the Security Council to matters that threaten international peace and security (such as a potential nuclear security threat). The **General Assembly** is made up of all member states. It deliberates at an annual session on a broad array of international issues and adopts non-binding resolutions, including on nuclear security and the work of the IAEA. The General Assembly also initiates studies and investigations and may negotiate and adopt treaties.

The **Security Council** has 15 members, five of which are permanent (China, France, Russia, the United Kingdom, and the United States). Security Council resolutions adopted under Chapter VII of the UN Charter are binding on all member states. **Security Council resolutions** must be passed with the affirmative vote of nine members and no veto. Each of the **five permanent members** has the power to veto Security Council resolutions. The Security Council has adopted numerous resolutions related to **non-compliance with IAEA safeguards**, including the authorization of sanctions.

The Security Council has also passed several resolutions related to preventing acts of nuclear terrorism and securing weapons-usable nuclear materials, including **UN Security Council Resolution (UNSCR) 1373 and UNSCR 1540**. UNSCR 1540 established a committee, often referred to as the 1540 Committee, to assist in the implementation of UNSCR1540. States must report the status of implementation of the resolution to the 1540 Committee and the Committee assists in coordinating and facilitating support to implement obligations under the resolution. See below for more detail. The UN has been observer at the Nuclear Security Summits and participated in the GICNT process.

Other bodies of the UN relevant to nuclear security include:

- The **UN Disarmament Commission** (UNDC) also comprises all UN member states, meets annually for several weeks, and debates nuclear and conventional disarmament issues with a view to adopting non-binding reports and recommendations. The UNDC could, in principle, consider the issue of nuclear security.
- The **UN Office for Disarmament Affairs** (UNODA), part of the UN Secretariat, promotes disarmament and arms control, conducts studies, publishes analysis and information, and collects data on relevant topics.
- The **Advisory Board on Disarmament Matters** (ABDM) advises the UN Secretary General on relevant issues and recommends studies (including potentially on nuclear security).
- The **UN Institute for Disarmament Research** (UNIDIR), based in Geneva, is an independent, UN research institute, mostly funded by voluntary contributions by states, which conducts studies on a wide range of security-related issues, including those relevant to nuclear security.
- The **UN Office of Drugs and Crime and Terrorism Prevention** (UNODC) is mandated to assist member states in their struggle against illicit drugs, crime and terrorism and to promote and facilitate adherence to and implementation of 19 universal legal instruments against terrorism[1] along with the relevant protocols and resolutions.

Limitations

- In general the United Nations has **not adopted nuclear security as a priority concern**, in part because a majority of its members see nuclear disarmament as a higher priority.
- The **General Assembly**, while being able to express the broad collective will of the international community, is only able to adopt **non-binding** resolutions.
- A veto may **prevent action by the Security Council**.
- Although Security Council resolutions adopted under Chapter VII of the UN Charter are legally binding on all member states, **resolutions sometimes lack widespread support due to the limited** Security Council membership**.**
- Even when Security Council resolutions are adopted under Chapter VII it is not always possible for the Security Council to enforce compliance. The UN Secretariat and its related bodies suffer from a lack of human and financial resources to carry out their mandate.

[1] See http://www.un.org/en/terrorism/instruments.shtml

INTERNATIONAL ATOMIC ENERGY AGENCY

Overview and Benefits

The International Atomic Energy Agency (IAEA) was established by the Statute of the IAEA, which was approved on October 23, 1956, by the **Conference on the Statute of the International Atomic Energy Agency**, held at the United Nations (UN). The Statute came into force on July 29, 1957, and the IAEA currently has 162 member states. The genesis for the IAEA arose from a speech to the UN General Assembly by President Dwight D. Eisenhower encouraging the establishment of an entity to promote the peaceful use of energy and ensure that nuclear energy would not be used for military purposes.

The purpose of the IAEA as originally stated in the Statute is to **"seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world."** The IAEA was tasked with encouraging, assisting, and supporting **research on the peaceful use of atomic energy** through materials, services, equipment, and facilities and by fostering **scientific and technical exchanges**. Importantly, it was tasked with "**establish[ing] and administer[ing] safeguards** designed to ensure that special fissionable and other materials, services, equipment, facilities, and information made available by the Agency or at its request or under its supervision or control are not used in such a way as to further any military purpose; and to apply safeguards, at the request of the parties, to any bilateral or multilateral arrangements, or at the request of a State, to any of that State's activities in the field of atomic energy." In addition, the Statute **authorizes the IAEA to establish or adopt nuclear safety standards**.

As more states began to acquire nuclear weapons, there was a desire to come to an internationally legally binding agreement to stop the further spread of nuclear weapons. This resulted, in 1968, in the **Treaty on the Nonproliferation of Nuclear Weapons (NPT)**, discussed further below. One of the IAEA's **primary missions is to apply safeguards**. Pursuant to Article III of the NPT, non-nuclear-weapon states (NNWS) are obligated to conclude an agreement with the IAEA under the Agency's safeguards system with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Safeguards independently **verify the correctness and the completeness of the declarations** made by states about their nuclear material and activities for the purpose of verifying that **nuclear material is not diverted** from peaceful uses to use in nuclear weapons or nuclear explosive devices. **All NNWS party to the NPT are legally required to submit all their nuclear material and facilities to safeguards. The five nuclear-weapons states** (NWS) recognized by the NPT voluntarily submit in varying degrees to safeguards over certain "eligible" facilities in their civilian sectors.

The four nuclear-armed states not party to the NPT also accept safeguards on some facilities (e.g., where required by the technology supplier). The safeguards regime is described in further detail below.

The head of the IAEA is the **Director General**. A **General Conference**, made up of all member states, meets annually and sets broad policy for the organization as well as approving the program and budget and new members. A 35-member **Board of Governors**, comprising quasi-permanent members and others elected for two-year terms, on a rotating basis with regional adjustments, meets several times a year. It governs the IAEA's operations, and, before sending the matter to the General Conference, approves the program and budget of the IAEA, new member States and safeguards agreements**,** and it rules on member states' compliance with obligations in safeguards agreements. The IAEA has the right (and obligation) to report non-compliance of safeguards agreements to the UN Security Council.

The **IAEA's role in nuclear security** is gradually expanding, as envisaged in its successive Four Year Plans, and demonstrated by the upgrading of its Office of Nuclear Security to a Division, and by the growing demand for its services and the growth of both its regular budget and of the Nuclear Security Fund. The IAEA organizes international conferences and workshops on nuclear security, promotes universalization of relevant treaties and codes of conduct, acts as the depositary for several relevant treaties, including the Convention on the Physical Protection of Nuclear Material and nuclear safety conventions, and organizes review and amendment conferences. An Advisory Group on Nuclear Security (AdSec) provides programmatic advice to the Director General. The IAEA has also been an observer in the Nuclear Security Summits and has participated in the processes leading up to the Summits. The IAEA has also contributed to the activities of the Global Initiative to Combat Nuclear Terrorism.

The IAEA offers **peer reviews, advisory services, training and assistance to member states,** funded primarily through voluntary donations by member states to the Nuclear Security Fund**.** The IAEA also supports the establishment and operation of Centers of Excellence, regional networks and nuclear security training and education. Finally, the IAEA manages the formulation, by expert advisory groups, of IAEA nuclear security recommendations and guidelines, and publishes these and other materials through its **Nuclear Security Series**. IAEA guidelines and services are described in further detail below.

The IAEA's role in nuclear security remains constrained by both its members' reluctance to expand its role, either outright or at the expense of other IAEA programs, and by budgetary constraints. Opposition is no longer based on arguments about the IAEA's mandate but by concerns about state sovereignty. The Statute does not specifically refer to physical protection

or security, though there are provisions on protection of health and safety which can be read as including security. Successive Directors General have made it clear that the IAEA's mandate does include security, and this has been accepted by the Board of Governors and the membership. However, the historic absence of security in the IAEA's regular budget, and differences among members about the priority to be given to the various IAEA programs, continue to be reflected in an inadequate level of funding for security.

Limitations

- The IAEA's role in nuclear security is **constrained by differences among its members** about the priority to be accorded to the IAEA's various mandates and by concerns about impingements on state sovereignty.
- The IAEA's security work is primarily funded by **voluntary donations** to its Nuclear Security Fund.
- The IAEA's existing mandate is **limited to civilian materials**.

INTERPOL

Overview and Benefits

INTERPOL is the **world's largest international police organization**, with 190 member states. INTERPOL provides training, investigative support, and facilitates international police cooperation. Upon request of a member state with a valid arrest warrant, **INTERPOL may issue notices** for certain individuals. Member states are free to decide how to act on a notice. A separate mechanism called a **diffusion** allows member states to automatically transmit assistance requests to other member states of its choosing without INTERPOL review.

INTERPOL's activities are defined by its **Constitution**, which highlights the need for INTERPOL's activities to be conducted within the spirit of the Universal Declaration of Human Rights. The Constitution serves a vital role in preserving its neutrality and insulating INTERPOL against attempts to use INTERPOL for political purposes. INTERPOL is led by a **Secretary General and Executive Committee**, made up of 13 member states.

One of INTERPOL's focus areas is **preventing radiological and nuclear terrorism** by ensuring that the world's law enforcement services are prepared to confront the threat. The INTERPOL **strategy for countering the threat posed by radioactive or nuclear materials** consists of three pillars: (1) **operational data services**: collating and analyzing information on illicit trafficking and other unauthorized activities involving radioactive or nuclear materials; (2) **investigative**

support: operational assistance in the face of an imminent threat through issuing notices, conducting searches of DNA, fingerprint, or travel databases, and deploying Incident Response Teams (IRTs); and (3) **capacity building**: training courses and tabletop exercises designed to help member state police forces to develop capacity to prevent and respond to nuclear or radioactive incidents. In support of the 2012 Nuclear Security Summit, INTERPOL initiated **Operation Fail Safe** to support the international law enforcement community in tracking individuals involved in the illicit trafficking of radioactive or nuclear materials.

INTERPOL concluded a Cooperation Arrangement with the IAEA in 2016, and as part of that cooperation together developing the IAEA manual, "Combating Illicit Trafficking in Nuclear and Other Radioactive Material." INTERPOL also represents the law enforcement community as an **observer of the Global Initiative to Combat Nuclear Terrorism** (GICNT). It is also an **observing international organization in the Nuclear Security Summit process**, taking part in the 2012 and 2014 Nuclear Security Summits.

Limitations

- There are **no membership standards or mechanisms for expulsion** of member states.
- INTERPOL **has not been immune to politically motivated requests** to issue notices in several controversial cases.
- The use of "**diffusions" does not require review** and can be abused for political reasons.
- Member states can **choose how to respond** to a notice and there is **no enforcement mechanism**.

II. AGREEMENTS AND GUIDELINES

CONVENTION FOR THE PHYSICAL PROTECTION OF NUCLEAR MATERIAL (CPPNM) AND 2005 AMENDMENT

Overview and Benefits

Physical protection of nuclear materials, weapons, and facilities is the first line of defense against the unlawful acquisition of nuclear material by terrorists. The Convention on Physical Protection of Nuclear Material (CPPNM) establishes the foundation for the physical protection of nuclear materials. It requires states to apply **measures of physical protection to nuclear material used for peaceful purposes during international transport**. The CPPNM also requires states to provide **cooperation and assistance in the case of theft of nuclear materials** to

recover and protect the nuclear material, inform concerned states, and exchange information. It requires states to **criminalize certain offenses** related to the theft or unlawful possession of, and threats to use, nuclear material.

Recognizing the limited scope of the CPPNM (i.e., primarily to nuclear material in international transport), the **2005 Amendment** to the convention increased the scope of the CPPNM's coverage to require **physical protection measures on nuclear materials in domestic use, storage, and transit** and also protection of **nuclear facilities from sabotage**.

Pursuant to **Article 16,** states parties are to review implementation of the CPPNM, as well as its adequacy "as concerns the preamble, the whole of the operative part and the annexes in light of the then prevailing situation," five years after entry into force of the CPPNM. A review conference was duly held in 1992. Once the 2005 Amendment enters into force, a similar review conference must be held after five years. Although only one review conference is required under the Convention, and one under the 2005 Amendment, Article 16(2) allows for a majority of CPPNM states parties to obtain the convening of further review conferences, at intervals of not less than five years, by submitting a proposal to this effect to the IAEA. This provision has not yet been invoked, but could form the institutional basis for continuing discussion of nuclear security. Results of such review conferences could include anything from voluntary measures to share information and boost confidence in implementation of the treaty to adopting common understandings or making efforts at clarification of certain provisions.

The International Atomic Energy Agency (IAEA) is the depositary for the CPPNM. Under Article 14.1, states party to the CPPNM are to "**inform the depositary of its laws and regulations which give effect to [the CPPNM]. The depositary shall communicate such information to all States party.**"

Limitations

- The CPPNM is **not universal**, currently having only 152 parties.
- The **2005 Amendment is not in force**. The amendment will enter into force when two-thirds of the states party to the CPPNM (currently 102 parties) ratify the amendment. To date, only 84 out of the 152 CPPNM member states have ratified the amendment.
- There **is no mechanism to enforce the treaty** or **monitor implementation**, and there are **no prescribed consequences** for non-compliance.
- The **Article 14.1 reporting mechanism is underutilized** and there is no other mechanism to provide verification or assurances to other countries through external review.
- Both the CPPNM **an**d the 2005 Amendment define basic security levels, but **neither**

provides specific guidance on implementation. Therefore, **variable implementation across states** may compromise achievement of CPPNM objectives.

- Neither the CPPNM nor the 2005 Amendment **cover military materials**, though the security of military materials is referenced in the preamble.

UNITED NATIONS SECURITY COUNCIL RESOLUTION 1540

Overview and Benefits

United Nations Security Council Resolution (UNSCR) 1540 is binding on all members of the United Nations, making it the **only universal legally binding instrument requiring physical security measures** for nuclear material. Moreover, as long as the 2005 Amendment is not in force, UNSCR 1540 covers a **broader range of nuclear material than the CPPNM, including military materials**.

UNSCR 1540 requires states to take measures to **prevent non-state actors from developing, acquiring, manufacturing, possessing, transporting, transferring, or using** nuclear, chemical, or biological weapons and their delivery systems. It requires states to **establish "appropriate effective" laws** to prohibit such acts and **appropriate controls, including appropriate effective security and accounting**, over related materials, to prevent the proliferation of nuclear, chemical, or biological weapons and their means of delivery. The resolution also calls upon states to:

- **Promote the universal adoption**, as well as full implementation and strengthening, of multilateral treaties aimed at preventing the proliferation of nuclear, biological, or chemical weapons
- **Adopt national rules and regulations** to ensure compliance with their commitments under the key multilateral nonproliferation treaties
- Renew and fulfill their **commitment to multilateral cooperation**
- Develop appropriate ways to **work with and inform industry and the public** regarding their obligations under such laws.

Responsibility for managing the implementation of the resolution rests with the **1540 Committee**. States must report progress on their implementation of the resolution to the committee. Since the committee's inception, the UN Security Council has passed subsequent resolutions extending the committee's mandate. On April 20, 2011, **UNSCR 1977 extended the mandate** for a period of ten years to 2021. It also **strengthened the committee's role** to facilitate the provision of technical assistance and to enhance cooperation with relevant

organizations. The resolution also provided for two comprehensive reviews of the implementation of UNSCR 1540. The most recent resolution, **UNSCR 2055**, adopted on July 29, 2012, **requested an increase in the size of the group of experts** that leads the committee in recognition of the committee's increased workload.

Limitations

- There is **no mechanism to enforce the resolution** beyond the UN Security Council, and there are **no consequences** for non-compliance.
- UNSCR 1540 **does not provide specific guidance on implementation**, including the definition of "appropriate effective."
- Although countries are required to submit reports to the 1540 Committee, **the reporting requirements are weak and ill-defined**. The content of the reports varies widely, and many of the reports are incomplete and provide inadequate detail.
- The **1540 Committee is under-resourced and overburdened**. As such, UNSCR 1540 does not provide for a strong and reliable **mechanism or body to monitor implementation** or **provide verification or assurances** to other countries through mandatory reporting or external review.
- **Variable implementation across states** may compromise achievement of UNSCR 1540 objectives.

UNITED NATIONS SECURITY COUNCIL RESOLUTION 1373

Overview and Benefits

The nuclear security system would be incomplete without a means of **deterring, preventing, and punishing** malicious acts, including acts of terrorism, using nuclear material. Following the events of 9/11, the UN Security Council, recognizing the threat of terrorism, passed **UNSCR 1373** requiring states to **take action to prevent terrorist attacks**, including by suppressing the financing of terrorist acts, criminalizing activity to finance terrorists, suppressing the provision of safe havens for terrorists, and providing other countries assistance in criminal investigations related to the financing or support of terrorist acts.

Limitations

- There is **no mechanism to enforce the resolutions or monitor implementation**.
- There is **no mechanism to provide verification or assurances** to other countries through

mandatory reporting or external review.

INTERNATIONAL CONVENTION FOR THE SUPPRESSION OF ACTS OF NUCLEAR TERRORISM (ICSANT)

Overview and Benefits

The **International Convention for the Suppression of Acts of Nuclear Terrorism** (ICSANT) was designed **to strengthen the global legal framework for countering terrorist threats specifically involving radioactive materials and nuclear facilities**. ICSANT requires states to **criminalize and prosecute offenses** related to the use or possession of radioactive material and use or damage of a nuclear facility, or threats to do so. ICSANT also establishes a **legal framework for cooperation** among states to **detect, prevent, suppress, and investigate offenses**, and to institute **criminal proceedings** against alleged offenders by sharing information and assisting one another in connection with criminal investigations and extradition proceedings. ICSANT **does not apply** when the offense occurs within a single state, is committed by a national of that state, and when no other state can claim jurisdiction over that offense. ICSANT establishes a system of cooperation through which the global community can respond to the offenses set forth in the treaty and establish consequences for those who commit those offenses but does not describe how to prevent acts of nuclear terrorism.

ICSANT also requires states party to "shall make every effort to adopt appropriate measures" to protect radioactive material, taking into account relevant recommendations and functions of the IAEA.

The Secretary General of the United Nations is the depositary for ICSANT.

Limitations

- ICSANT is **not universal**, having only 99 parties.
- There is **no mechanism to enforce the treaty or monitor implementation**, and there are **no consequences** for non-compliance.
- There is **no mechanism to provide verification or assurances** to other countries through mandatory reporting or external review.
- **Language on physical protection is limited**. For example, ICSANT states that parties "shall make every effort to adopt appropriate measures" to protect radioactive material and to "take into account" International Atomic Energy Agency (IAEA) recommendations.

- **Variable implementation across states** may compromise achievement of ICSANT objectives.

IAEA NUCLEAR SECURITY RECOMMENDATIONS ON PHYSICAL PROTECTION OF NUCLEAR MATERIAL AND NUCLEAR FACILITIES (INFCIRC/225/REV. 5)

Overview and Benefits

While the CPPNM, its 2005 Amendment, and UNSCR 1540 require states to apply physical protection measures, they do not provide specific guidance on implementation. The **International Atomic Energy Agency** (IAEA) has attempted to fill this gap and now plays an **increasingly important and unique role in the nuclear security system** shall make every effort to adopt appropriate measures, including through the publication of recommendations and guidance in its Nuclear Security Series.

The first IAEA document on nuclear security is **INFCIRC/225**, which is now revised five times. It provides **guidelines and recommendations for the physical protection of nuclear material and facilities**, including measures against **unauthorized removal** of nuclear materials and protection of nuclear material or facilities against **sabotage**. The protections apply to nuclear material in use and storage and during transport. INFCIRC/225/Rev. 5 provides **basic international guidance** for physical protection of nuclear material and facilities.

INFCIRC/225 was created when the Director General of the IAEA convened an international group of experts to draft guidelines for the protection of nuclear materials. These recommendations were revised and published as the first iteration of INFCIRC/225 in 1975. It has since undergone revisions in 1977, 1989, 1993, 1999, and most recently in 2011. The **latest revision was made to reflect contemporary threats,** such as terrorism, and the need to align the document with the 2005 Amendment to the CPPNM. It also strengthened guidance related to protection of nuclear facilities against sabotage and provides a graded approach to physical protection based on the type and quantity of nuclear materials at a location.

The IAEA's Nuclear Security Series also includes **implementation guides** to support the recommendations. Finally, the IAEA takes INFCIRC/225/Rev. 5 into account as a basis for evaluation during the provision of advisory services (discussed below).

Limitations

- INFCIRC/225/Rev. 5 is **non-binding** and **does not provide clear performance objectives** or any **performance criteria** for ensuring that all states consistently meet a minimum

standard or best practice**.**

- There is **no mechanism to provide assurances** to other countries that states are meeting INFCIRC/225/Rev. 5 recommendations through reporting or external review.
- **Variable implementation across states** may compromise achievement of INFCIRC/225/Rev. 5 objectives.
- IAEA guidelines **apply to civilian materials only**.

IAEA SECURITY OBJECTIVES AND FUNDAMENTAL PRINCIPLES

Overview and Benefits

In September 2001, the IAEA Board of Governors considered and endorsed a set of Security Objectives and Fundamental Principles (Fundamental Principles) based on the **recommendations of a team of legal and technical experts** convened to consider possible amendments to the CPPNM. The Fundamental Principles were **drawn from the recommendations, concepts, and terminology of INFCIRC/225**.

Endorsement of the Fundamental Principles was meant as a step toward **strengthening the physical security regime** and **promoting the effective implementation and improvement of physical protection worldwide**. The purpose was to define and establish principles at the state level. The Fundamental Principles were **later incorporated into the operative part of the 2005 Amendment to the CPPNM**. The following is a summary of the Fundamental Principles:

- Primary **responsibility for the physical protection regime** rests entirely with the **state**.
- States' responsibilities for protection of nuclear material extend to **international transport**.
- States are responsible for establishing and maintaining a **legislative and regulatory framework to govern physical protection**, which should include a system of evaluation and licensing, a system of inspection to verify compliance, and means of enforcement.
- States should establish a **competent authority responsible for implementation of the legislative and regulatory framework** that is independent from the body charged with promoting nuclear energy.
- **Primary responsibility for implementation** of physical protection should rest with the **holders of licenses** or other authorizing documents.
- Organizations involved in implementing physical security should give **priority to security culture**.
- The state's physical protection should be **based on the state's current evaluation of the**

threat.

- Physical protection requirements should be based on a **graded approach**.
- The state's requirements for physical protection should reflect **several layers and methods of protection**.
- The state should establish and implement a **quality assurance policy and programs** to provide confidence that requirements of physical protection activities are satisfied.
- **Contingency plans** to respond to unauthorized removal of nuclear material or sabotage of nuclear facilities should be prepared.
- The state should establish **requirements for protecting confidentiality** of information, the unauthorized disclosure of which could compromise physical protection.

Limitations

- The Fundamental Principles are **non-binding until the 2005 Amendment to the CPPNM enters into force**, and then will only be binding for parties to the amendment.
- There is **no mechanism to provide verification or assurances** to other countries that states' security practices reflect the Fundamental Principles through mandatory reporting or external review.
- **Variable implementation across states** may compromise achievement of the Fundamental Principles' objectives.

JOINT STATEMENT ON "STRENGTHENING NUCLEAR SECURITY IMPLEMENTATION" (IAEA INFCIRC/869)

Overview and Benefits

The **Joint Statement on "Strengthening Nuclear Security Implementation,"** announced at the 2014 Nuclear Security Summit in The Hague, was published as **IAEA INFCIRC/869** in October 2014 upon request of the 35 states that signed on to the initiative at the 2014 Summit. INFCIRC/869 asks member states to indicate commitment to the initiative via note verbal to the IAEA Secretariat and to request that this communication be circulated to all member states.

INFCIRC/869 looks toward laying the groundwork for a more robust international system based on national commitments to the domestic application of international principles and guidelines and on actions to continuously improve nuclear security, in general, as well as the effectiveness of domestic nuclear security regimes and operators' systems, more specifically. States that have signed on to the initiative pledge to **"subscribe to the fundamental principles"** as laid down in IAEA Nuclear Security Series No. 20 and to **"meet the intent of the recommendations" in Nuclear Security Series** documents Nos. 13-15 (Nuclear Security Series No. 13 is also known as

INFCIRC/225/Rev.5). While the initiative does not change the legally non-binding status of these instruments, some adaptation of domestic laws, regulations, administrative systems, organizations or other measures in accordance with the instruments is to be expected in carrying out the initiative.

INFCIRC/869 also commits subscribing states to support **continuous improvement of the effectiveness of national nuclear security regimes** and operators' systems through hosting international peer reviews (such as IPPAS and INSServ missions) periodically and conducting and self-assessments. In addition, subscribing states pledge to ensure that management and personnel that are responsible for nuclear security are **demonstrably competent**. INFCIRC/869 concludes with a list of actions further aimed at continuous improvement of nuclear security, one or more of which subscribing states intend to take.

Limitations

- INFCIRC/869 is **not universal**, having only 35 subscribers so far.
- The language (e.g., "subscribe to" and "meet the intent of") gives **significant discretion** to states in how they choose to implement the commitments and **implementation may vary**.
- INFCIRC/869 is **non-binding**.

PLUTONIUM MANAGEMENT GUIDELINES (INFCIRC/549)

Overview and Benefits

The *Guidelines for the Management of Plutonium* were published by the IAEA in 1998, as INFCIRC/549. The objective is to increase **transparency** of the management of separated plutonium in civilian programs through each participating state (i) declaring that its policies for the management of separated plutonium are based on these guidelines, and (ii) publishing annual statements of its holdings of separated plutonium. Participating states are also invited to publish statements on their HEU holdings. Currently there are **nine states** participating in the INFCIRC/549 arrangements: the five NPT nuclear-weapon states plus Belgium, Germany, Japan, and Switzerland. Others are invited to join.

The Guidelines include applying the requirements of the CPPNM and IAEA security recommendations INFCIRC/225 Rev.3 (though all nine states have submitted *notes verbale* updating the reference to take into account INFCIRC/225 Rev. 5). The Guidelines refer to **principles** such as balancing plutonium supply and demand and limiting the number of sites

where plutonium is held.

Although the INFCIRC/549 participants have convened for consultations in the past, it is understood this group does not function as a regular forum for cooperation or policy coordination at present.

Limitations

- The participants are a **limited** group, but do include all significant producers/users of plutonium except India.
- Currently activities pursuant to the Guidelines are very **limited**, e.g., the publication of annual statements by the participating states.
- Its **possible use as a forum has not been leveraged** to the extent possible for participants to meet or to coordinate programs, etc.

COMPREHENSIVE SAFEGUARDS AGREEMENTS (INFCIRC/153)

Overview and Benefits

An essential first step in securing all nuclear material is to ensure that **all nuclear material is identified, characterized, quantified, and accounted for**. The IAEA has developed a **standard nuclear material accounting system** that it requires of all states with nuclear material subject to IAEA safeguards. The outline of the system is given in the standard safeguards agreement, **INFCIRC/153**. The system is further elaborated in the IAEA's **Nuclear Material Accounting Handbook**, Services Series 15, and a number of more specific technical guides. In combination, these requirements and guidelines form a **standardized accounting system**, with defined technical procedures and standards.

The Nuclear Nonproliferation Treaty (NPT) requires **non-nuclear-weapon states** (NNWS) to conclude **comprehensive safeguards agreements** (based on INFCIRC/153) with the IAEA and place under safeguards all nuclear materials in all peaceful nuclear activities in the state's territory, jurisdiction, or under its control. Safeguards agreements allow and obligate the IAEA to verify, through identification, characterization, quantification, and accounting for all nuclear materials within the state's purview, that **nuclear material is not diverted** from peaceful uses to use in nuclear weapons or devices. In case of non-compliance with IAEA safeguards, the **IAEA Board of Governors** may call upon the violator to remedy such non-compliance and must report the non-compliance to the UN Security Council and General Assembly. The Security

Council may impose measures to enforce compliance.

As the **nuclear-weapon states** (the P5 countries) and **non-NPT states** (India, Pakistan, Israel, and North Korea) have nuclear material outside safeguards, comprehensive safeguards agreements are not applicable to them. The NWS have concluded **voluntary offer safeguards agreements** (based on INFCIRC/153) offering nuclear material and facilities from which the IAEA may select to apply safeguards (the United States and the United Kingdom have designated all civilian facilities). India, Pakistan, and Israel have concluded **item-specific safeguards agreements** (based on INFCIRC/66) offering specified material and facilities for safeguards. Voluntary offer agreements and item-specific agreements have similar material accounting requirements to comprehensive safeguards agreements.

While **the purpose of safeguards is not security**, the requirement for a **national system of accounting for and control** of all nuclear material subject to safeguards is **a basic foundation for nuclear security**. However, it is important to remember that although the IAEA, through its safeguards system, has a crucial role in *verifying* that nuclear materials are not diverted from peaceful use to nuclear weapons, this **role does not extend to ensuring the security of nuclear materials.** The IAEA role for nuclear security is one of *service and assistance,* similar to the role it exercises for nuclear safety. This is reflected by both its mandate and its budget.

Safeguards are not—nor have they ever been—designed to provide physical security measures for the safeguarded facilities. IAEA safeguards inspections are designed for the specific purpose of detecting—after the fact—whether nuclear material is missing from a facility or has not been declared and whether the inspected state may have diverted the material to a weapons program. Such **inspections do not prevent material from being stolen**.

Limitations

- Because IAEA comprehensive safeguards are not, and in current circumstances cannot be, universal, there is **no universal system of accounting for nuclear materials**. Even if IAEA safeguards were applied to all civilian facilities and inventories, military materials would be excluded.
- While INFCIRC/153 requires a material accounting system, it **does not provide specific guidance** on implementation. The **Nuclear Material Accounting Handbook** and **technical guides** are **non-binding**. Therefore, there is **variable implementation across states**.
- IAEA safeguards agreements are designed to detect and deter the diversion of nuclear material from peaceful uses, **not to prevent acquisition of nuclear material by**

unauthorized persons. Accounting and control measures for preventing theft of nuclear materials are somewhat different from the measures required for confirming non-diversion.

NUCLEAR SUPPLIERS GROUP (NSG) GUIDELINES

Overview and Benefits

The Nuclear Suppliers Group (NSG) was established in 1975 to introduce common control of proliferation sensitive material and technology. NSG suppliers apply a **uniform approach to nuclear and nuclear-related exports and dual-use exports.** NSG members pursue the aims of the NSG through **voluntary adherence to NSG Guidelines** that are adopted by consensus, and through an **exchange of information**, notably on developments of nuclear proliferation concern. The NSG Guidelines have two parts, one for nuclear material, equipment, and technology (the "trigger list") and one for dual-use items. The NSG Guidelines aim to ensure that nuclear trade for peaceful purposes **does not contribute to the proliferation** of nuclear weapons or other nuclear explosive devices, while not hindering international trade and cooperation in the nuclear field.

The NSG is an **important adjunct to the NPT regime**, addressing a core dilemma posed by the NPT—that nuclear material and technology acquired for peaceful purposes can also be used in weapons. The NPT-related (from Article III.2) Zangger list of proliferation-sensitive materials and technology is fully harmonized with the lists of NSG. Key to the NSG Guidelines is **that suppliers should authorize transfers of trigger list items to a NNWS only where those items will be subject to IAEA safeguards, in most cases comprehensive safeguards**. The NSG Guidelines also state that **recipients should have physical security measures** in place to prevent theft and unauthorized use of their imports.

NSG membership is composed of 48 supplier states; the European Commission serves as a permanent observer.

Limitations

- Guidelines are **non-binding**, political commitments.
- Adherence to the NSG Guidelines is dependent on national laws and practices, leading to **inconsistent implementation**.

CONFERENCE ON DISARMAMENT

Overview and Benefits

For over two decades, attempts have been made to begin formal negotiations for development of a Fissile Material Cutoff Treaty (FMCT), which would end global production of fissile material for use in nuclear weapons. In addition to the primary objective of capping the quantity of nuclear material available for weapons, ending production of fissile material for weapons is important to nuclear security because of the **relationship between quantities and risk**—the more material, the greater the risk that material could be stolen.

The principal body responsible for negotiations of the FMCT is the **Conference on Disarmament** (CD), which operates on the basis of consensus. The CD is a limited membership, multilateral forum the purpose of which is to negotiate treaties.

Limitations

- **Requirement for consensus** means one country or a small group of countries can stall progress.
- A **crowded agenda**, including deadlock over the FMCT, does not leave much room for nuclear security discussions.

THE TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS AND RELATED REVIEW CONFERENCES

Overview and Benefits

Opened for signature in 1968 and having entered into force on 5 March 1970, the **Treaty on the Non-proliferation of Nuclear Weapons** (NPT) is the flagship instrument of the nuclear non-proliferation regime and has, at this point, achieved near-universality, with 190 states parties. The NPT is often described as resting on three pillars: (1) **nonproliferation**: NPT non-nuclear-weapons states (NNWS) agree not to acquire nuclear weapons and the five recognized nuclear-weapons states (NWS) (China, France, Russia, the United Kingdom, and the United States) agree not to assist a NNWS in acquiring nuclear weapons; (2) **peaceful use of nuclear energy**: the NWS agree to share the benefits of peaceful nuclear technology with the NNWS and NNWS agree to accept and comply with IAEA safeguards; and (3) **disarmament**: all parties agree to "pursue negotiations in good faith" toward nuclear disarmament. The NPT had an initial

duration of 25 years, with a decision to be taken on extension beyond this period. In May 1995, the parties agreed to extend the NPT indefinitely.

While the safeguards system was set up to focus on detecting and deterring diversion by states of nuclear material to non-peaceful purposes, it was **recognized that physical protection of nuclear material and nuclear facilities from acts such as theft and sabotage was also highly important to both non-proliferation and radiation safety**, though such measures were not obligated under the safeguards agreements and the Agency was given no responsibility with respect to a state's physical protection system. At the **first review conference of the NPT** in 1975, the Conference of States Parties **called upon all states to "enter into such international agreements and arrangements as may be necessary to ensure" the physical protection of nuclear material in use, storage and transit,** "including principles relating to the responsibility of states, with a view to ensuring a uniform, minimum level of effective protection for such material" and "in the framework of their respective physical protection systems, to give the earliest possible effective application to the IAEA's recommendations," meaning the 1972 document entitled "Recommendations for the Physical Protection of Nuclear Material", which was subsequently revised in 1975 and published as INFCIRC/225. This led to the negotiation of the CPPNM.

At the 2010 NPT review conference, coinciding with the first Nuclear Security Summit, the Conference of States Parties reiterated the importance of effective physical protection of all nuclear material and the need for stronger international cooperation on physical protection. In the recommendations for follow-on actions, the Conference listed several actions related to nuclear security, including encouraging states to:

- maintain the highest possible security standards for nuclear materials and facilities;
- apply IAEA recommendations on physical protection, namely INFCIRC/225;
- ratify the CPPNM Amendment and become party to ICSANT;
- implement the Code of Conduct on the Safety and Security of Radioactive Sources; and
- improve efforts aimed at combating illicit trafficking.

Limitations

- Nuclear security is only a **tangential issue for the NPT**, which focuses on non-proliferation, peaceful use and disarmament.

CODE OF CONDUCT ON THE SAFETY AND SECURITY OF RADIOACTIVE SOURCES

Overview and Benefits

The **Code of Conduct on the Safety and Security of Radioactive Sources** is not legally binding, but instead provides guidance on preventing unauthorized access or damage to, and loss, theft or unauthorized transfer of, radioactive sources, as well as on mitigating or minimizing the radiological consequences of accidents or malicious acts involving a radioactive source. A radioactive source under the Code of Conduct is a subset of radioactive material that excludes unsealed radioactive material, sources outside regulatory control (orphan sources), material encapsulated for disposal, and nuclear material as defined by the CPPNM, except for sources incorporating plutonium-239. The scope of the Code of Conduct in terms of the material covered is narrower than ICSANT, as it also excludes sources in military and defense programs. However, the Code of Conduct is aimed generally at ensuring adequate security throughout the lifecycle of radioactive sources, from the production of radioisotopes to disposal or recycling of disused sources, and is, therefore, of more general application that ICSANT. Because the Code of Conduct is formulated as a non-legally binding instrument, it does not set forth rules with which states, even having expressed political commitment, are legally obligated to comply. Yet, it does provide guidance for domestic laws and regulations that, in light of these political commitments, creates a certain level of confidence.

A **formalized process for exchange of information and lessons learned** with respect to the Code of Conduct was established in 2006 for a "**periodic exchange of information and lessons learned and for the evaluation of progress made by States towards implementing the provisions**" of the Code of Conduct and the associated Guidance on the Import and Export of Radioactive Sources (see GC(49)/RES/9). The mechanism created, and subsequently endorsed by the Board of Governors, is voluntary and comprises **triennial dedicated international meetings** to be organized by the IAEA Secretariat and regional meetings scheduled on an ad hoc basis to be organized by participants, though these could also be scheduled in conjunction with IAEA meetings in the various technical cooperation areas or meetings of other relevant regional organizations. The objectives in promoting information exchange include, inter alia, assisting states in implementation of the Code of Conduct and Import/Export Guidance and inviting and encouraging more States to implement and politically commit to the two instruments (Attachment to Chair report from TM 28817, 31 May to 2 June 2006). This process, partially because it is not a formalized review procedure as often foreseen in legally binding instruments, allows for greater flexibility, particularly in the broader participation including

both IAEA member States and non-member States and those that have not yet made political commitments to the Code of Conduct and Import/Export Guidance. Such a process can serve both to increase the sense of obligation among States that have already committed to one or both of the instruments, thereby strengthening the compliance pull, and to incentivize those States that have yet to commit to do so.

Limitations

- The Code of Conduct is **non-binding**.
- There is **no mechanism to provide verification or assurances** to other countries that states' security practices reflect the Code of Conduct through mandatory reporting or external review.
- **Variable implementation across states** may compromise achievement of the Code of Conduct's objectives.
- The Code of Conduct is **not universal**, with only 123 countries making a political commitment.

III. MULTILATERAL ENGAGEMENT MECHANISMS

NUCLEAR SECURITY SUMMITS

Overview and Benefits

Securing all nuclear materials worldwide requires first an **acknowledgment of the urgency of the threat** and **political will** on the part of key decision makers to act to reduce the threat. The Nuclear Security Summit process has been an **important step toward reaching a consensus and focusing high-level attention** on the threat. The Nuclear Security Summits bring together government leaders from countries around the world and representatives from key international bodies to agree on an **agenda for securing all vulnerable nuclear material**, **including nuclear materials used in nuclear weapons.**

The first Summit, held in Washington, D.C., in April 2010, was attended by 47 countries and three international organizations and resulted in more than 60 national commitments to take specific actions. Over 80 percent of the commitments made at the Summit had been fulfilled as of March 2012. The second Summit, held in Seoul, Korea, in March 2012, was attended by 53 countries and resulted in over 100 national commitments. The third Summit, held in The Hague, The Netherlands, in March 2014, was attended by 53 countries and resulted in **18 joint statements or "gift baskets,"** through which countries made joint commitments in certain

topical areas (e.g., information security, radiological security, etc.). National commitments include reducing quantities of nuclear materials, strengthening nuclear security laws and regulations, ratifying important international agreements, participating in workshops and training through the Global Initiative to Combat Nuclear Terrorism or Centers of Excellence, and providing financial support to the IAEA's Nuclear Security Fund or the World Institute for Nuclear Security, among others.

The **2014 Summit produced a communiqué identifying areas of priority toward improving nuclear security**, including the need for a **nuclear security architecture** and the **importance of confidence-building mechanisms**, such as peer review, and newer areas of focus such as radiological security and information security. The next Summit will be held in the United States in 2016.

Limitations

- Commitments made at the Summits are **voluntary**, **non-binding, political commitments**.
- There is **no mechanism to provide assurances** to other countries through reporting or external review that countries are meeting their commitments.
- As the communiqué is a **consensus-driven document**, this can lead to a lowest common denominator outcome.
- A means to **maintain high-level attention** is needed to **ensure sustainability of the nuclear security mission** after the Summit process ends.

GLOBAL PARTNERSHIP AGAINST THE SPREAD OF WEAPONS AND MATERIALS OF MASS DESTRUCTION

Overview and Benefits

While international agreements and other binding instruments are important pieces of the global nuclear security system, **informal mechanisms for country cooperation** on nuclear security enable countries to **match resources to specific projects**, resulting in **more effective implementation** of international agreements and commitments. The Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (Global Partnership) has played an important role in bringing countries together for this purpose.

The Global Partnership, announced at the June 2002 G8 summit in Kananaskis, Canada, is a G8 initiative committed to **preventing terrorists, or those that harbor them, from acquiring or**

developing nuclear, chemical, radiological, or biological weapons, missiles, or related materials, equipment, and technology. The G8 countries pledged $20 billion over ten years to **fund projects to secure and dismantle stockpiles of weapons of mass destruction**, initially in Russia. G8 leaders agreed on six principles for the initiative and on a set of guidelines for implementation. The principles focus on:

- **Universalizing multilateral treaties** and international instruments
- Measures to **secure and account** for weapons of mass destruction and weapons-related materials, equipment, and technology
- **Physical protection** measures
- Effective **border controls, law enforcement, and international cooperation** to detect, deter, and interdict illicit trafficking of such items
- **National export and trans-shipment controls**
- **Management and disposal of stockpiles** of fissile materials, elimination of chemical weapons, and minimization of holdings of biological materials.

A Senior Group coordinates Global Partnership activities, monitors progress, and identifies priorities.

Since its inception, the Global Partnership has **successfully implemented numerous projects**, mainly in Russia and the former Soviet Union but also in other places. The number of Global Partnership donor countries also has expanded to include 18 non-G8 countries. At the G8 summit in Deauville, France, in May 2011, members agreed to **extend the Global Partnership for ten more years** and address **security of nuclear and radiological materials**, **biosecurity**, **engagement with weapons scientists** in the field of nonproliferation, and **implementation of UNSCR 1540**. Members also agreed to expand the Global Partnership's membership.

Limitations

- Commitments are **voluntary, non-binding, political commitments**.
- There is **no mechanism to enforce commitments or provide verification or assurances** to other countries through mandatory reporting or external review.
- Operations are **based on voluntary contributions**.

GLOBAL INITIATIVE TO COMBAT NUCLEAR TERRORISM (GICNT)

Overview and Benefits

Another informal mechanism that has helped **countries establish nuclear security approaches** and **share information** on different elements of their nuclear security enterprise is the Global Initiative to Combat Nuclear Terrorism (GICNT). The mission of GICNT, established on July 15, 2006, by President George Bush and President Vladimir Putin in part as a complement to ICSANT, is to **strengthen global capacity to prevent, detect, and respond to nuclear terrorism** by conducting multilateral activities that strengthen the plans, policies, procedures, and interoperability of partner nations. Countries become partners by endorsing a **Statement of Principles** encompassing the following deterrence, detection, prevention, and response objectives:

- Improve **accounting, control, and protection** of nuclear and radiological materials
- Enhance security at civilian **nuclear facilities**
- Develop **capabilities to detect and halt illicit trafficking** of such materials
- Improve **capabilities to search for, confiscate, and establish safe control** over nuclear or radiological materials
- Assure **denial of safe haven and resources** from terrorists seeking to acquire or use nuclear or radiological materials
- Put in place **laws to counter nuclear terrorism-related activity**
- **Share information** to prevent and respond to acts of nuclear terrorism
- Develop **capability to respond to and mitigate** acts of nuclear terrorism.

Partner nations conduct **multilateral activities, workshops, and table-top and field exercises**. Recently, partners have recognized the importance of cooperation between the private sector and governments. An **Implementation and Assessment Group** is charged with implementing priorities and ensuring that **GICNT's activities are coordinated with and complementary to other international efforts**, in particular implementation of ICSANT, the CPPNM and its amendment, and UNSCR 1540. There are 85 partner nations and the IAEA is one of four official observers.

Limitations

- Membership is **voluntary** and **not universal**.
- There is **no mechanism to enforce commitments, monitor implementation, or provide**

verification or assurances to other countries through mandatory reporting or external review.

- Focus areas are defined by consensus agreement leading to a **limited scope of large project areas**, although "one off" activities can be hosted by GICNT members acting independently.
- Operations are **based on voluntary contributions**.

CENTERS OF EXCELLENCE AND NUCLEAR SECURITY TRAINING AND SUPPORT CENTERS

Overview and Benefits

Centers of Excellence (COEs) and IAEA-supported Nuclear Security Training and Support Centers (NSSCs) are schools or training centers hosted by states to **provide domestic or regional nuclear security training and education**. Many COEs and NSSCs also provide training in other areas, such as nuclear safety, or broadly focus on nuclear science and technology. COEs/NSSCs provide a means of exchanging best practices, providing technical assistance, and offering networking opportunities to nuclear security practitioners.

The IAEA plays a coordinating role for COEs/NSSCs and provides a platform for the exchange of information through its online portal. Several states have committed to opening COEs/NSSCs at the Nuclear Security Summits.

Limitations

- Participation is **voluntary**.
- Despite some coordination, **the quality of COEs/NSSCs varies** and there are **no agreed-upon standards** to ensure consistent training across centers and presently there is **no system to certify** the competence or knowledge obtained.
- Some COEs/NSSCs may not be sustainable due to **lack of financial or other resources**.

PROLIFERATION SECURITY INITIATIVE (PSI)

Overview and Benefits

The Proliferation Security Initiative (PSI) is an **informal grouping of states** which have joined together to prevent trafficking by **detecting and intercepting** weapons of mass destruction (WMD), their means of delivery, and WMD-related materials.

The **PSI Statement of Interdiction Principles** commits participants to establish a more **coordinated and effective basis** through which to impede and stop these items. Countries commit to:

- **Interdict transfers** to and from states and non-state actors of proliferation concern to the extent of their capabilities and legal authority
- Develop procedures to facilitate the **exchange of information** with other countries
- **Strengthen national legal authorities** to facilitate interdiction
- Take specific actions in **support of interdiction** efforts.

103 countries participate in the PSI.

A number of members have signed **bilateral Mutual Shipboarding Agreements** with the United States that allow both parties to the agreement **permission to board vessels** sailing under their national flags which are suspected of transporting proliferating material or technology. Many of these countries are **flag-of-convenience states** allowing the PSI to **broaden its reach**. Several **high-profile successes** in interdicting or turning back WMD-related shipments have been attributed to PSI cooperation.

Limitations

- Participation is **voluntary**.
- Commitments are **non-binding, political commitments**.
- The PSI **lacks an organizing structure**.
- A number of countries do not participate in PSI, such as India, Pakistan, and China, and cooperation is **not universal**.
- Boarding agreements **apply only to commercial transportation**, not government transportation.

IV. IMPLEMENTATION MECHANISMS

IAEA NUCLEAR SECURITY ADVISORY SERVICES

Overview and Benefits

The IAEA's mandate for conducting **inspections** is currently limited to safeguards, and does not include security. However, under the IAEA's Statute, individual states or groups of

states (including states party to a multilateral treaty) could conclude agreements requesting the IAEA to conduct security inspections.

Recognizing that the IAEA has the **technical knowledge and experience to provide advice and assistance in the area of security**, the IAEA, funded through voluntary donations of member states to the Nuclear Security Fund, provides **advisory services.** Combined with IAEA recommendations, guidelines, and other materials, these **services provide a needed resource to help states strengthen** their nuclear security.

Upon a state's request, the IAEA may conduct **missions, evaluations, and provide technical services** to help the requesting state **assess its nuclear security needs** and **improve its capabilities** for securing its nuclear material. The IAEA offers the following services relevant to nuclear security:

- **International Physical Protection Advisory Service** (IPPAS): IPPAS missions carry out detailed **reviews of a state's legal and regulatory basis for physical protection** of nuclear activities and **assess whether systems are consistent with the CPPNM, its Amendment and recommendations of INFCIRC/225/Rev. 5**. IPPAS missions also compare the state's practices to IAEA guidance. Additionally, they are focused on specific facilities and are not state-wide assessments. Following the review, the IAEA may conduct follow-up assistance, such as training and technical support. Additional follow-up missions can review actions taken to address prior recommendations. Although mission reports are confidential, at least one state has published a redacted version of its report.
- **International Nuclear Security Advisory Service** (INSServ): INSServ missions help **identify a state's nuclear security requirements** and measures needed to meet them.
- **SSAC Advisory Service** (ISSAS): ISSAS missions **provide recommendations and suggestions for a state's systems for accountancy and control of nuclear material**. The missions evaluate the regulatory, legislative, administrative, and technical components of the SSAC and assess how the SSAC meets the obligations contained in the state's safeguards agreement and, if applicable, additional protocol.
- **Integrated Regulatory Review Service** (IRRS): IRRS missions help states to improve the **effectiveness of national regulatory bodies** and to implement national safety legislation and regulations.
- **Integrated Nuclear Security Support Plan** (INSSP): INSSP is a means to provide a holistic approach to **nuclear security capacity-building** based on findings and recommendations from its nuclear security missions in a way that is tailored to country-specific needs.

The IAEA's advisory services are offered in connection with the IAEA's **Nuclear Security Plan (2014-2017)**. The 2014-2017 Nuclear Security Plan covers seven elements: 1) information collation and assessment; 2) external coordination; 3) supporting the nuclear security framework globally; 4) coordinated research projects; 5) assessment through self-assessment and/or through peer review missions; 6) human resource development; and 7) risk reduction and security improvement. The plan envisions **supporting states, upon their request,** through assistance in capacity-building, guidance, human resource development, sustainability, and risk reduction.

Limitations

- The IAEA provides advisory services only **upon the request of a state**.
- Unless requested, review missions **do not assess the actual quality of physical protection** at facilities but rather whether systems are in place to support the security mission.
- IAEA advisory services are designed to cover **civilian material only**.
- Advisory service **outcomes are confidential**, with no public release of even broad conclusions. States are **not obligated to respond to conclusions** or **address identified deficiencies**.
- The IAEA's advisory services are only partly covered by the IAEA's regular budget and are instead **primarily supported through voluntary contributions** to the Nuclear Security Fund.

WORLD INSTITUTE FOR NUCLEAR SECURITY (WINS)

Overview and Benefits

The World Institute for Nuclear Security (WINS) is an organization whose purpose is to provide a forum for nuclear security professionals to share and promote best security practices. Best practice exchanges can be a valuable tool to enable rapid and dynamic improvements for facilities' security implementation. WINS produces **best practices guides in 10 languages**, including **self-assessment tools**, conducts international and country-specific workshops on specific nuclear security topics and has **started the WINS Academy to enable professional accreditation** for those engaged in nuclear security activities from the guards to the senior executives with legal responsibilities for material protection. WINS is also **developing peer review offerings** for its members. WINS has over 2,000 members from over 108 countries. Participation in WINS is voluntary.

Limitations

- Best practices are **non-binding**.
- WINS activities are **funded through donations**, which means its budget is contingent on (and activities limited by) these commitments.

GLOBAL THREAT REDUCTION INITIATIVE (GTRI)

Overview and Benefits

The mission of the Global Threat Reduction Initiative (GTRI) is to **reduce and protect vulnerable nuclear and radiological material located at civilian sites worldwide**. As part of a coordinated **global effort**, GTRI is working cooperatively with more than 100 countries around the world. GTRI supports the global nuclear security goal by preventing terrorists from acquiring nuclear and radiological materials that could be used in weapons of mass destruction or other acts of terrorism. GTRI works towards achieving its mission by **converting research reactors and isotope production facilities** from the use of highly enriched uranium (HEU) to low enriched uranium (LEU), **removing and/or disposing of excess nuclear and radiological materials**, and **protecting high-priority nuclear and radiological materials** from theft. Together, these efforts provide a comprehensive approach to preventing terrorists' access to nuclear and radiological materials. A key part of this effort has been to work with the Russian Federation and the IAEA to safely and securely transport Russian-origin HEU from third countries back to Russia. Since the first Nuclear Security Summit in April 2010, all Russian-origin HEU has been removed from seven countries -- Ukraine, Libya, Hungary, Vietnam, Romania, the Czech Republic, and Serbia.

- GTRI's **Convert program** works with domestic and international civilian research reactors and isotope production facilities to assist them in converting from the use of WMD-usable HEU fuel and targets to LEU fuel and targets. These efforts result in permanent threat reduction by **eliminating the need for WMD-usable HEU fuel and targets**. Once the need is eliminated, any remaining HEU fresh and spent fuel can be permanently disposed of by GTRI's Remove Program.
- GTRI's **Nuclear and Radiological Material Removal program** removes or disposes of excess WMD-usable nuclear and radiological materials from civilian sites worldwide. The scope of work includes removing Russian-origin nuclear material, U.S.-origin nuclear material, other nuclear material not covered by the Russian and U.S. origin efforts, and removal of excess radiological material worldwide that could be used to make a dirty bomb. These efforts result in permanent threat reduction because

WMD-usable material is eliminated.

- GTRI's **Nuclear and Radiological Material Protection program** protects at-risk WMD-usable nuclear and radiological materials worldwide from theft and sabotage until a more permanent threat reduction solution can be implemented. These efforts result in threat containment because **WMD-usable materials are protected from theft**.

Limitations

- Participation is **voluntary**.
- Projects are subject to **funding availability**.

INTERNATIONAL MATERIALS PROTECTION AND COOPERATION (IMPC) PROGRAM

Overview and Benefits

The International Materials Protection and Cooperation (IMPC) program began in 1994 as a **task force to mitigate the security vulnerabilities of special nuclear material arising from the collapse of the Soviet Union**. Since that time, the program has evolved into a **global effort**, engaging over 40 countries to deny terrorists the vital materials needed to engage in acts of nuclear terror.

The IMPC program employs a **two-tiered strategy** to implement its mission:

- **The Material Protection, Control, and Accounting program** (MPC&A) improves the **security of nuclear weapons and materials** at their source, through material protection, control, and accounting upgrades at nuclear sites in Russia and other countries of concern. The scope of the MPC&A Program includes 37 Russian nuclear material sites, 73 Russian nuclear warhead sites, and 13 non-Russian nuclear material sites. The MPC&A Program also includes efforts to **consolidate and convert weapons-usable nuclear material stocks**, to develop a **sustainable MPC&A infrastructure** in Russia, and to support the **implementation of nuclear security best practices** by countries outside of Russia.
- **The Second Line of Defense** strengthens the capability of foreign governments to **deter, detect, and interdict illicit trafficking in nuclear and other radioactive materials** across international borders and through the global maritime shipping system. IMPC works collaboratively with foreign partners to **equip border crossings, airports, and seaports with radiation detection equipment**. The Second Line of Defense (SLD) Program **provides training** in the use of the systems for appropriate law enforcement officials

and **initial system sustainability support** as the host government assumes operational responsibility for the equipment.

Limitations

- Participation is **voluntary**.
- Projects are subject to **funding availability**.

OTHER REGIONAL AND BILATERAL MECHANISMS

Although the **primary focus of the Global Dialogue on Nuclear Security Priorities is on a global nuclear security system**, this should not exclude consideration of **regional and bilateral mechanisms** for giving effect to nuclear security objectives. Regional and bilateral mechanisms may contribute directly to promoting acceptance of multilateral standards and measures. Further, where agreement on particular matters can be more readily reached on a regional rather than global basis, progress at the regional level can serve as a positive example that over time can contribute to achieving global agreement.

Regional mechanisms include atomic energy communities, such as the **Euratom Treaty, and nuclear-weapon-free zone treaties**, some of which provide for the parties to implement security measures equivalent to those in the CPPNM and IAEA guidelines (see the Treaty of Pelindaba, Article 10, and the Treaty of Semipalatinsk, Article 9). The **Centers of Excellence** mentioned above can also be considered as regional-based mechanisms.

At the bilateral level, it is common for nuclear cooperation agreements to require the parties to commit to a particular nuclear security standard. For example, **many bilateral agreements, such as those of the U.S., Australia, Canada and the E.U., refer to the most recent version of INFCIRC/225**, making implementation of this document a condition of the agreement. Effectively this makes INFCIRC/225 **legally binding** as between the parties to the particular agreement.