IMPLEMENTATION OF THE IAEA NUCLEAR SECURITY PLAN 2006–2009

IAEA
International Atomic Energy Agency

The IAEA supports States in strengthening nuclear security at major public events like the 2008 Olympics in China.

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In response to relevant General Conference resolutions, the Agency developed two successive Nuclear Security Plans for the periods 2002–2005 and 2006–2009 and submitted to its policy making organs individual reports describing in detail the measures taken during each year. The purpose of this document is to summarize the implementation of the Nuclear Security Plan 2006–2009.

The Agency's Nuclear Security Plan 2006–2009 was structured around three key areas: Information Management and Coordination, including evaluation, cooperation with bilateral and multilateral support programmes, and the collection of information, which underpin the entire Plan and support its implementation; Prevention, i.e. the protection of nuclear and other radioactive material and facilities and transports from malicious acts; and Detection and Response to nuclear security events involving nuclear or other radioactive material.

In implementing the Plan, full account was taken of activities undertaken in the Agency's nuclear safety and safeguards programmes and the synergies between safety, safeguards and security. Activities were implemented with respect to existing competences throughout the Agency with a view to avoiding duplication and promoting both sustainability and the Agency's 'one house' approach.

Introduction

Global Context

With the increased concern over the threat of nuclear terrorism, the international community has responded with various global, regional and national efforts to advance nuclear security.

The nuclear security legal framework continued to be critical for effective national and global nuclear security. The legal framework includes both binding and non-binding international legal instruments adopted under both Agency and other auspices. Guidance provided by the Agency helped in the implementation of effective nuclear security, through its IAEA Nuclear Security Series of publications.

Nuclear Security Programme

The objective of the Agency's Nuclear Security Programme, as described in the Agency's Programme and Budget documents, is consistent with the objective of the Nuclear Security Plan: to contribute to global efforts toward achieving worldwide, effective security wherever nuclear or other radioactive material is in use, storage and/or transport, and of associated facilities, by supporting States, upon request, in their efforts to implement activities in this regard. Such assistance includes capacity building, guidance, human resource development, sustainability and risk reduction. The objective is also to assist adherence to, and implementation of, nuclear security related international legal instruments and to strengthen international cooperation and coordination of assistance given through bilateral programmes and other international initiatives in a manner that contributes to enabling a broader use of nuclear energy and of applications with radioactive substances.

In conducting the Nuclear Security Plan 2006–2009, the Agency provided advice concerning the implementation of binding and non-binding international legal instruments; developed guidance and other documents and conducted numerous mission and advisory services, on request, to review and assess States' needs and priorities; provided support to States in strengthening their legal, regulatory and physical infrastructures; and provided outreach and information exchange through databases, conferences, workshops and fellowships.

In promoting best practices for dealing effectively with nuclear and radiological threats, the Agency conducted international conferences, training courses, seminars and workshops and has issued nuclear security guidance and other publications. In that regard, special attention was given to sustainability.

The overall success of the Plan was measured by assessing the outputs and outcomes, by appraising feedback from beneficiaries and by taking stock of independent evaluations that have been conducted. All of these are discussed below.

International Legal Instruments Relevant to Nuclear Security

The international legal framework for nuclear security embodies both binding and non-binding instruments adopted under both Agency and other auspices.[1] Among its nuclear security activities, the Agency facilitates adherence to and implementation of the legal framework by assisting States, upon request, in effectively implementing their obligations under the relevant international instruments.

A number of international instruments and initiatives make reference to the role of the Agency. In some cases, it is assigned specific responsibilities.

The Convention on the Physical Protection of Nuclear Material (CPPNM), adopted under Agency auspices, is one of the 13 counter-terrorism instruments in force. The CPPNM is the only internationally legally binding undertaking in the area of physical protection of nuclear material used for peaceful purposes. In addition to physical protection, the CPPNM also deals with criminalization of certain offences and international cooperation. Since the beginning of the Nuclear Security Programme, adherence to the CPPNM has doubled. With 142 Parties as of the end of 2009, the CPPNM has the largest number of contracting States of all conventions under IAEA auspices.

The 2005 Amendment to the CPPNM is also vitally important for nuclear security and, upon its entry into force, will have a major impact on reducing the vulnerability of States Parties to nuclear terrorism. The Amendment extends the physical protection measures of the CPPNM to nuclear facilities and material in peaceful domestic use, storage and transport. It also provides for expanded cooperation between and among States regarding rapid measures to locate and recover stolen or smuggled nuclear material, mitigate any radiological consequences of sabotage and prevent and combat related offences. The Amendment also confers a number of additional functions on the Agency, which were set out in GOV/2005/51 and approved by the Board of Governors. While the Amendment to the CPPNM has received strong political support, only 33 States had formally accepted the Amendment as of December 2009.

Safeguards agreements and protocols concluded between the Agency and States provide, inter alia, through state systems of accounting for and control of nuclear material, central contributions to preventing illicit trafficking and to deterring and detecting the diversion of nuclear material.

[1] In addition to the primary legal instruments specifically addressed in Section B, the broader legal framework for nuclear security also includes the following legal instruments adopted under Agency auspices: the Convention on Nuclear Safety, as well as the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. The broader legal framework also includes the following legal instruments adopted under other auspices: the International Convention for the Suppression of Terrorist Bombings, the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) and the regional Nuclear-Weapon-Free Zone Treaties as well as the 2005 Protocol to the IMO Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation and the 2005 Protocol to the IMO Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms located on the Continental Shelf.

Also adopted under Agency auspices, the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency provide an international response mechanism for rapid information exchange and a mutual assistance mechanism, respectively, with a view to minimizing the consequences of nuclear accidents or radiological emergencies and protecting life, property and the environment against the effects of radioactive releases. These Conventions provide a robust role for the Agency which it continues to carry out in accordance with the relevant resolutions of the General Conference and the Board of Governors. As of 30 December 2009, the Convention on Early Notification had 106 Parties and the Convention on Assistance had 104 Parties.

The International Convention for the Suppression of Acts of Nuclear Terrorism, adopted under United Nations auspices, details offences relating to unlawful and intentional possession and use of radioactive material or a radioactive device, and use or damage of nuclear facilities and requires States Parties to adopt measures as necessary to criminalize these offences. The Convention also requires "States Parties to make every effort to adopt appropriate measures to ensure the protection of radioactive material, taking into account relevant recommendations and functions of the Agency". The functions assigned to the Agency under this Convention were set out in GOV/2007/41. The Board approved the functions specifically assigned to the Agency and authorized the Director General to implement them subject to the availability of resources. As of the end of 2009, 63 States, including 56 Member States, were party to the Convention.

Adopted under Chapter VII of the UN Charter, Security Council resolutions 1373 (2001) and 1540 (2004) have been recognized by the Board of Governors as being an integral part of the international legal framework for nuclear security.

Security Council resolution 1373 (2001), inter alia, calls upon all States to become parties as soon as possible to the relevant international conventions and protocols relating to terrorism, including the CPPNM, and "notes with concern the close connection between international terrorism … and illegal movement of nuclear… and other potentially deadly materials…". In this regard, the Security Council also emphasized "the need to enhance coordination of efforts on national, sub-regional, regional and international levels in order to strengthen a global response to this serious challenge and threat to international security".

Security Council resolution 1540 (2004) refers specifically to the CPPNM and to the IAEA Code of Conduct on the Safety and Security of Radioactive Sources and sets out the obligations of States with respect to weapons of mass destruction and non-State actors. The measures imposed in the resolution mirror the structure and activities of the Agency's Nuclear Security Plan, including in respect of the required legal and regulatory infrastructure, physical protection measures, illicit trafficking, safeguards, accounting and control systems and export and import controls. In April 2008, following a two year extension in 2006, the mandate of the 1540 Committee was further extended through 2011.

Several non-binding instruments are also relevant for nuclear security.[2] INFCIRC/225/Rev.4 (Corr.) [3], on the "Physical Protection of Nuclear Material and Nuclear Facilities", provides widely accepted recommendations for physical protection against unauthorized removal of nuclear material in use and storage, for physical protection against sabotage of nuclear facilities and of nuclear material during use and storage, and for physical protection of

[2] In addition to the non-binding instruments adopted under Agency auspices, the broader legal framework for nuclear security also includes the United Nations Global Counter-Terrorism Strategy (UN General Assembly Resolution 60/288) which, inter alia, sets out measures to build the capacity of States to prevent and combat terrorism. In that connection, the Strategy encourages the Agency to continue its efforts in helping States to build capacity to prevent terrorists from accessing nuclear or other radiological material, to ensure security at related facilities and to respond effectively in the event of an attack using such material.

[3] INFCIRC/225/Rev.4 (Corr.) is currently being updated. When finalized, INFCIRC/225/Rev.5 will also be an integral part of the IAEA Nuclear Security Series.

nuclear material during transport. While the recommended measures are not mandatory, they acquire a binding nature when and where they have been included as an obligation in international agreements concluded by States, including the IAEA Project and Supply Agreements and the Revised Supplementary Agreements for the Provision of Technical Assistance by the IAEA.

The Code of Conduct on the Safety and Security of Radioactive Sources is a non-binding international legal instrument that provides guidance, through the development, harmonization and implementation of national policies, laws and regulations, and through the fostering of international cooperation, to: (i) prevent unauthorized access or damage to, and loss, theft or unauthorized transfer of, radioactive sources; and (ii) mitigate or minimize the radiological consequences of accidents or malicious acts involving a radioactive source. Also non-binding, the supplementary Guidance on the Import and Export of Radioactive Sources was developed to support the import and export provisions of the Code. During the four year period, the number of States expressing their commitment to implementing the non-binding Code of Conduct on the Safety and Security of Radioactive Sources grew from 79 to 95. A more significant increase occurred in the rate of States' formal support for the Code's supplementary Guidance, which rose from 17 States at the beginning of 2006 to 53 by the end of 2009.

The 'Code of Conduct on the Safety and Security of Radioactive Sources,' is an international legal agreement which had 53 States' support by the end of 2009.

IAEA Nuclear Security Series

The IAEA Nuclear Security Series of publications[4] provides guidance on the prevention and detection of, and response to, theft, sabotage, unauthorized access and illegal transfer or other malicious acts involving nuclear material, other radioactive substances or their associated facilities.

Publications in the Series are issued in the following four categories: Nuclear Security Fundamentals, containing objectives, concepts and principles of nuclear security and providing the basis for security recommendations; Recommendations, presenting best practices that should be adopted by States in the application of the Nuclear Security Fundamentals; Implementing Guides, providing further elaboration of the Recommendations in broad areas and suggesting measures for their implementation; and Technical Guidance, comprising Reference Manuals, with detailed measures and/or guidance on how to apply the Implementing Guides in specific fields or activities; Training Guides, covering the syllabus and/or manuals of Agency training courses in the area of nuclear security; and Service Guides, which provide guidance on the conduct and scope of Agency nuclear security advisory missions.

[4] http://www-ns.iaea.org/security/nuclear_security_series.htm.

In drafting the publications in the IAEA Nuclear Security Series, the Secretariat benefited from the assistance of Member States' experts. In developing the IAEA Nuclear Security Series, the Agency held open-ended technical meetings to provide interested Member States and relevant international organizations with the opportunity to review the draft texts prior to their publication. Technical Guidance publications were also developed in close consultation with Member States' experts, with technical meetings conducted when considered necessary to obtain a broad range of views. To ensure a high level of international review and consensus, the Secretariat also submitted the draft documents to all Member States for a period of 120 days for formal review, affording Member States the opportunity to express their views before the text is published.

Nuclear Security Fundamentals

A draft of the nuclear security fundamentals publications was developed, containing:

- Nuclear Security; Essential Elements

Recommendations

Recommendations documents in the latter stages of development included:

- Nuclear Security Recommendations on Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Rev. 5)
- Nuclear Security Recommendations on Radioactive Material and Associated Facilities
- Nuclear Security Recommendations on Nuclear and other Radioactive Material out of Regulatory Control

Implementing Guides

The following five Implementing Guides were published:

- Nuclear Security Culture[5] (NSS-7)
- Preventive and Protective Measures Against Insider Threats[6] (NSS-8)
- Transport of Radioactive Material[7] (NSS-9)
- Development and Maintenance of a Design Basis Threat[8] (NSS-10)
- Security of Radioactive Sources[9] (NSS-11)

Implementing Guides in development included:

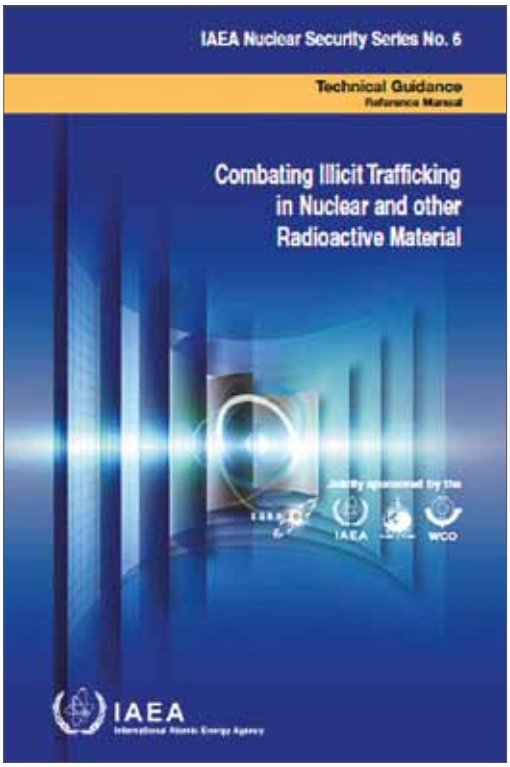
- Protection Against Sabotage
- Radioactive Waste Security
- Nuclear Security at Major Public Events
- Nuclear Security Guidance in the Design, Siting and Construction of New Reactors
- Confidentiality of Nuclear Security Sensitive Information

[5] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1347_web.pdf
[6] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1359_web.pdf
[7] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1348_web.pdf
[8] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1386_web.pdf
[9] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1387_web.pdf

Technical Guidance

The following six Technical Guidance reports were published:

- Nuclear Forensics Support (NSS-2, 2006)[10]
- Guidelines for Monitoring Radioactive Material in International Mail Transported by Public Postal Operators (NSS-3, 2006)[11]
- Engineering Safety Aspects of the Protection of Nuclear Power Plants against Sabotage (NSS-4, 2007)[12]
- Identification of Radioactive Sources and Devices (NSS-5, 2007)[13]
- Combating Illicit Trafficking in Nuclear and Other Radioactive Material (NSS-6, 2007)[14]



IAEA Nuclear Security Series 6 on 'Combating Illicit Trafficking in Nuclear and other Radioactive Material', is one of 6 technical guidance publications published between 2002–2009.

Technical Guidance publications in development included:

- Nuclear Security Glossary
- Model Regulations for Security of Nuclear Material and Associated Nuclear Facilities
- Model Regulations for Security of Radioactive Sources
- Identification of Vital Areas at Nuclear Facilities
- INPRO Manual on Physical Protection
- Physical Protection of Research Reactors and Associated Facilities
- Computer Security at Nuclear Facilities
- Nuclear Material Accountancy Systems at Facilities
- Procedures for Examining Legal Shipment of Radioactive Material for the Detection of Illegal Activities
- Detection and Response to Radioactive Material in Seaports
- Educational Programme for Nuclear Security

[10] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1241_web.pdf
[11] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1242_web.pdf
[12] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1271_web.pdf
[13] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1278_web.pdf
[14] http://www-pub.iaea.org/MTCD/publications/PDF/pub1309_web.pdf

Conferences

International Conference on Effective Nuclear Regulatory Systems, February–March 2006, Moscow [15]

The independent and efficient oversight of the nuclear industry and other users of nuclear technology and material are essential to assuring the public that nuclear activities are conducted at high levels of nuclear safety and security which are consistent with international norms. In February–March 2006, the International Conference on Effective Nuclear Regulatory Systems, organized by the Agency and held in Moscow, considered a range of issues associated with nuclear safety, radiation safety and nuclear safety and security regulation. In attendance were more than 200 representatives of regulatory bodies in 57 States. The conference called for the Agency: to consult with Member States on expanding the Illicit Trafficking Database, to establish the IAEA Nuclear Security Series of publications as a resource for regulators; to continue to develop programmes in education and training and to increase the Agency's cooperation with relevant international organizations.

Pan American Meeting on Strengthening Implementation of International Instruments in the Americas for Enhanced Nuclear and Radiological Security, April 2006, Quito

In April 2006, 91 representatives of 31 out of the total 35 American States convened in Quito, Ecuador, to consider questions and concerns related to nuclear security.

The meeting, which was organized by the Agency, recognized that high consideration should continue to be placed on nuclear security priorities in the Americas in view of the ongoing efforts to promote economic and social development through the expanded use of peaceful nuclear applications, particularly nuclear energy. Failures in nuclear security could negatively affect political and public support for the use of nuclear and other radioactive material in peaceful applications in the region. The proceedings emphasized the importance of international coordination and cooperation to strengthen the legal, technical and administrative infrastructures that are necessary to effective approaches against the nuclear security threats posed by non-State actors and considered how resources could be most effectively engaged to implement these approaches. The meeting called on the Agency to continue to support States requiring assistance in developing and implementing the means for meeting national responsibilities under the international legal instruments that are relevant for nuclear security.

In April 2006, IAEA representatives and regional delegates participated in the Pan American Meeting on Strengthening Implementation of International Instruments in the Americas for Enhanced Nuclear and Radiological Security, in Quito, Ecuador.

International Symposium on the Minimization of Highly Enriched Uranium (HEU) in the Civilian Sector, June 2006, Oslo[16]

In June 2006, some 130 participants from 45 countries participated in the International Symposium on the Minimization of Highly Enriched Uranium (HEU) in the Civilian Sector, which considered existing national practices with regard to HEU uses and discussed future directions for minimization. The symposium recognized that fissile material; in particular HEU, as well as radioactive sources, pose a security risk as they can be used for the production of nuclear weapons and other explosive devices. The role of HEU minimization was considered in the

[15] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1272_web.pdf
[16] Chair's Summary circulated as INFCIRC/677 http://www.iaea.org/Publications/Documents/Infcircs/2006/infcirc677.pdf

larger proliferation and disarmament context. Existing bilateral and international cooperative programmes and projects were also examined. The symposium also welcomed the Agency's role in assisting States, upon request, in converting nuclear facilities and the achievements of the Reduced Enrichment for Research and Test Reactors programme, to the work of which the Agency contributes.

Seminar on Strengthening Nuclear Security in Asian Countries, November 2006, Tokyo[17]

In November 2006, the Agency convened a Seminar on Strengthening Nuclear Security in Asian Countries, hosted by the Government of Japan, which addressed the need to strengthen nuclear security through the implementation of existing and strengthened international instruments and by enhanced cooperation within the region. The seminar urged that high priority be given to strengthening nuclear security in the region as an integral part of the economic development in the region, which includes the expanded use of peaceful nuclear applications, particularly nuclear energy. Special attention was paid to promoting the implementation of the then recently adopted Amendment to the CPPNM and the International Convention for the Suppression of Acts of Nuclear Terrorism. The seminar also acknowledged the importance of international multilateral initiatives for increasing nuclear security and emphasized the role of the Agency in assisting States. The seminar was attended by 105 representatives from 19 States. Nine of the 10 core States of the Association of South East Asian Nations (ASEAN) were represented, including all of those having nuclear facilities.

International Conference on Illicit Nuclear Trafficking: Collective Experience and the Way Forward, November 2007, Edinburgh[18]

Three hundred people from 60 States and 11 international organizations took part in the International Conference on Illicit Nuclear Trafficking — the largest nuclear security conference since 2003 — held in Edinburgh, United Kingdom. The conference took stock of achievements in recent years, challenges in addressing the need to combat illicit nuclear trafficking and avenues for future action. Particular attention was paid to areas where further actions of individual States and cooperative international actions might usefully be initiated. The conference concluded that illicit nuclear trafficking remains an international concern, with the potential for serious consequences, and that efforts must continue to establish effective systems to control both the legal and the illicit movement of nuclear and other radioactive material.

International Symposium on Nuclear Security, March–April 2009, Vienna[19]

From 30 March to 3 April 2009, more than 500 people from 76 countries gathered in Vienna to take stock of achievements in nuclear security in recent years. The International Symposium on Nuclear Security, which was organized by the Agency, noted the need to strengthen legal elements of the international nuclear security framework; to continue to harmonize efforts in the areas of security, safeguards and safety; and to promote participation in initiatives for the exchange of nuclear security information, particularly with regard to lessons learned. It encouraged the strengthening of national efforts to secure nuclear and other radioactive material and associated facilities and transports, which should be complemented by increased efforts at the global level. The role of the nuclear industry in contributing to a stronger nuclear material security regime was also highlighted. The symposium noted the contribution of the Agency's Nuclear Security Programme, including nuclear security guidance documents, human resource development services, nuclear security education and Integrated Nuclear Security Support Plans.

[17] Chair's Conclusions: http://www.mofa.go.jp/policy/energy/iaea/seminar0611.pdf
[18] http://www-pub.iaea.org/MTCD/publications/PDF/Pub1316_web.pdf
[19] http://www-pub.iaea.org/MTCD/Meetings/PDFplus/2009/cn166/cn166_SymposiumFinding.doc

International Conference on Effective Nuclear Regulatory Systems, December 2009, Cape Town[20]

In December 2009, the second International Conference on Effective Nuclear Regulatory Systems, conducted by the Agency and hosted by South Africa, reviewed and assessed the effectiveness of the global nuclear safety and security regime and proposed future actions to further enhance it. The conference was attended by a broad range of experts in the area of nuclear safety and security regulation, including senior regulators responsible for nuclear and radiation safety and nuclear security. The President's Report presented a large number of conclusions, noting, inter alia, that the Agency's safety standards and security guidance are important tools for countries embarking on nuclear power programmes. It was also recognized that countries should work with international organizations, including the Agency, to identify and promulgate nuclear security best practices through workshops and guidelines. The conference was attended by 250 participants from 54 States and eight international organizations.

Other Initiatives

Global Initiative to Combat Nuclear Terrorism

The Agency is an observer to the Global Initiative to Combat Nuclear Terrorism (GICNT), which was established by the Presidents of the Russian Federation and the United States of America in the margins of the July 2006 G8 meeting in St Petersburg. GICNT participating countries have adopted principles for combating nuclear terrorism, which are consistent with the objectives of the IAEA nuclear security programme. The Agency has participated at meetings to inform participating countries of how its programme assists States in their efforts to establish effective nuclear security and in order to enhance coordination and avoid duplication of activities. The GICNT Statement of Principles recognizes the role of the Agency in the field of nuclear security and places value on the Agency's contribution through its ongoing activities and technical expertise.

G8 Global Partnership

The G8 Global Partnership continued to make progress towards realizing its objectives to prevent terrorists, or those who harbour them, from acquiring or developing nuclear, chemical, radiological and biological weapons, missiles and related material, equipment and technology. As of 31 December 2009, 22 States[21] plus the EU had financed and implemented a number of projects to this end. In some cases, States contributed, as part of their G8 commitment, financial resources to the Nuclear Security Fund (NSF) for dedicated projects. More than €12 million of the donations to the NSF came from Global Partnership commitments.

Global Threat Reduction Initiative

The US Global Threat Reduction Initiative (GTRI) was established in 2004 to consolidate US efforts to assist other countries in removing and/or securing high risk nuclear and radioactive material and equipment. GTRI has provided financial and in-kind resources to the Agency for projects to repatriate to the supplier, manage or dispose of disused highly enriched research reactor fuel. GTRI has also provided significant contributions to the NSF in support of other major nuclear security projects.

[20] President's Report: http://www-pub.iaea.org/mtcd/meetings/PDFplus/2009/cn177/cn177_PresidentsReport.pdf

[21] Australia, Belgium, Canada, Czech Republic, Denmark, the European Union, Finland, France, Germany, Ireland, Italy, Japan, Republic of Korea, Netherlands, New Zealand, Norway, Poland, the Russian Federation, Sweden, Switzerland, Ukraine, the United Kingdom and the United States of America.

Coordination Efforts

European Union

The Council of the European Union adopted its Strategy against the Proliferation of Weapons of Mass Destruction in 2003 — the same timeframe in which the Agency's Nuclear Security Programme was established. The Council decided to support the Agency programme through a series of Joint Actions. The implementation of these Joint Actions has contributed to strengthening nuclear security in identified countries. By promoting and improving a State's own resources and capabilities, the activities have included measures to ensure sustainability.

Provided by the IAEA
with funding by the European Union

European Union

IAEA

Equipment is provided to States through EU/IAEA Joint Action initiatives. These radiation pagers enable individuals to detect radiation.

The European community has provided significant contributions and pledges to the NSF. Funding has been provided through three different mechanisms, as follows:

- **EU Strategy against the Proliferation of Weapons of Mass Destruction:** Since 2004, the European Union (EU) has adopted four Joint Actions entitled 'Support for IAEA activities in the areas of nuclear security and verification and in the framework of the implementation of the EU strategy against the proliferation of weapons of mass destruction'. Funding provided through these Joint Actions amounted to €21 941 000. Through the first three Joint Actions, the Agency assisted 52 States in Europe, Central Asia, the Middle East and Africa to improve their nuclear security in the following areas: legislative and regulatory infrastructure; security and control of nuclear and other radioactive material in use, storage and transport; and detection of, and response to, illicit trafficking. More than 200 specific tasks were implemented under the first three Joint Actions. Eighty-four States are eligible for assistance under the fourth Joint Action, which was established in 2008.

- **Stability Instrument for Lebanon:** 'Strengthening national infrastructure related to Lebanese trade and border control' began in September 2008 with a planned duration of 18 months. This is in the area of nuclear and radiological security, concentrating on the establishment of a comprehensive and sustainable radiation monitoring capability at borders and supported by an effective National Response Plan for an emergency involving nuclear or other radioactive material, and extended to cover chemical and biological material.

- **Instrument for Pre-Accession Assistance:** Using funds from this instrument, the Agency carried out an 'Assessment of needs and proposed actions to strengthen the safety and security of sealed radioactive sources' and an 'Assessment of needs and proposed activities to strengthen capabilities for combating illicit trafficking in nuclear and other radioactive material'. Albania, Bosnia and Herzegovina, Croatia, Montenegro and The Former Yugoslav Republic of Macedonia were eligible for assistance under this instrument; the recipient countries were subsequently extended to include Serbia and Kosovo (in accordance with UN Security Council resolution 1244/99).

Cooperation with States

Cooperation Arrangements

The Agency's Cooperation Arrangement with Brazil covered the Agency's assistance to the Government through a joint project for strengthening nuclear security measures for the 2007 Pan American Games in Rio de Janiero. The Agency has subsequently facilitated the participation of Brazilian personnel, trained in connection with the Games, in the delivery of Agency training for other States hosting major public events, including: China, for the 2008 Summer Olympic Games; Colombia, for the 2010 South American Games; Mexico, for the 2011 Pan American Games; and South Africa, for the 2010 World Football Cup.

Two officials coordinate with colleagues on the field to help prepare the Bird's Nest venue in advance of the Games in Beijing.

Activities under the Agency's June 2007 Practical Cooperation Arrangement with China included, in the first instance, a project for assisting the Government in its efforts to ensure the nuclear security of the 2008 Olympic Games. The Arrangement will also serve as the basis for a broader and long term cooperation between the Agency and the China Atomic Energy Authority in the area of physical protection of facilities and activities using radioactive material and the development of detection and response capacities. This includes training courses, technical and advisory missions and provision of some equipment for prevention and detection of, and response to, criminal or other unauthorized acts involving nuclear and other radioactive material.

Under a June 2007 Practical Cooperation Arrangement, cooperation was ongoing between the Agency and Qatar in the area of nuclear security infrastructure development. This includes training courses, technical and advisory missions as well as the provision of equipment. The focus is principally on strengthening detection capabilities at borders through the provision of radiation monitoring equipment and training of front line officers and the national mobile expert support team. A consultant was recruited specifically to assist in the implementation of the Qatari work plan during 2008. The cooperation activities are funded through Qatar's financial contribution to the NSF.

In effect between March and December 2008, a Practical Arrangement between the Agency and the Peruvian Institute for Nuclear Energy established the basis for the Agency's cooperation with Peru in providing nuclear security advice and technical support to the V Latin American and Caribbean–European Union Summit and the Asia-Pacific Economic Cooperation APEC CEO Summit 2008. The cooperation included nuclear security consultations, advisory activities and training and exercises, as well as dedicated work to improve the physical infrastructure to detect, interdict and respond to illicit trafficking incidents or other unauthorized acts.

In 2009, the Agency and France agreed on a Practical Arrangement elaborating a cooperation and support plan that will be valid until 2011 with the possibility of extension. This plan serves as the instrument through which the French Government provides technical support to activities outlined in the Agency's NSPs in the areas of nuclear security and protection against nuclear terrorism.

The joint programme with Pakistan is one of the Agency's largest nuclear security cooperative projects with a Member State. Under an Arrangement first established in 2005, the programme was extended in 2009 for an additional three years. The activities are in the areas of human resource development (education and training), the establishment of effective border control and effective mechanisms to respond to nuclear security events and upgrading the physical protection of facilities housing high activity radioactive sources. The Agency is providing radiation detection equipment for the planned Nuclear Security Training Centre in Islamabad; additional radiation detection instruments are being provided, with the use of Pakistan's contribution to the Nuclear Security Fund, to front line officers. Following the receipt of training under the cooperation programme, Pakistan Nuclear Regulatory Authority personnel have been recruited as lecturers for regional training activities.

Regular meetings are convened, normally twice a year, with States having contributed to the NSF and also with States receiving support from NSF funded activities. Specific attention is given to coordination of efforts through bilateral programmes with those conducted through the Agency's auspices. The establishment of regional capacities is given increased attention with regard to capacity building. Some resources — e.g. educational programmes at universities — are expected to address the needs of more than one State in a particular region.

Major Public Events

The success of the multilateral project to ensure the nuclear and radiological security of the 2004 Olympic Games in Greece led to the recognition that arrangements applied to other major public events should be complemented with radiation detection measures and preparedness for response in the case of a nuclear security event. The Agency has subsequently conducted projects for other States for meeting the unique nuclear security challenges presented by major public events by providing assistance in the form of information, detection equipment and the training of staff, in addition to facilitating peer based sharing of knowledge and expertise. Since 2006, nine

States have requested the Agency's assistance in implementing projects for this purpose. As described below, the Agency conducted projects to secure one major public event in 2006, one in 2007 and two in 2008. In 2009, preparations were under way for projects associated with two events to be held in 2010, three events in 2012 and one event in 2014.

In 2006, the Agency cooperated with the Government of Germany in a joint research effort for ensuring the radiological security of the major public events associated with the month long 2006 Football World Cup, the largest sporting event of the year, which was attended by an estimated 3.4 million people in 12 cities around the country. The Agency supplied information to facilitate threat assessment, provided detection equipment, coordinated a field exercise and made available, on standby, a detection expert and emergency response personnel.

In 2006, cooperation began between the Agency and the Government of China for the purpose of securing the major public events associated with the 2008 Olympic Games held from 8–24 August. Between March 2006 and May 2008, the Agency conducted four advisory and assessment missions and 10 training courses and provided China with 60 PRDs, six RIDs and one radiation detection backpack. The Agency also loaned the Government more than 200 pieces of additional equipment.

Under a Joint Action Plan with the Government of Brazil, the Agency provided assistance to Brazil in ensuring the nuclear security of the XV Pan American Games, held on 13–29 July 2007 at 14 venues in Rio de Janiero. The support included two technical support missions, three training events, a field exercise and the provision of information on current illicit trafficking activity from the Illicit Trafficking Database. On the basis of the experience gained during this project, Brazilian authorities assisted in the implementation in a 2008 project to secure major public events in Peru. This included the loan of detection equipment to be used in training events and during the major public events.

Left: Seats in Brazil's Maracana Stadium were filled with almost 80 000 spectators when the Pan American Games began in 2007. With over 6000 athletes from 40 countries in the Americas participating, it was vital that nuclear security measures were in place in advance of the Games.

Right: Experts equipped with detectors are able to monitor radiation levels amongst large crowds at major public events.

The Agency assisted the Government of Peru in implementing a programme of nuclear security measures for the V Latin American and Caribbean–European Union Summit (16–17 May 2008), held in Lima. This marked the first occasion upon which the Agency helped to ensure the security of an intergovernmental event. The Agency conducted one field exercise in response to a criminal act involving radioactive material as well as two related workshops. It provided Peru with 30 personal radiation detectors (PRDs) and three radioisotope identification devices (RIDs). Drawing on the training provided by the Agency, the Peruvian authorities were able to implement their own training programme of nine events, conducted without external support, in preparation for the APEC CEO Summit, also held in Lima, on 20–23 November 2008.

Coordination with International Organizations

Since its establishment in 2004, the Committee of the Security Council established pursuant to Security Council resolution 1540 (1540 Committee) has conducted outreach activities, including regional meetings, to increase States' awareness of the obligations and requirements of the resolution. From the beginning, the Agency has participated in regional meetings and workshops for this purpose, including eleven during the 2006–2009 time period. Agency representatives highlighted ways in which the Nuclear Security Programme may, upon request, advise States on the establishment of national plans of activities, including identifying the potential for synergies among national organizations and facilitating the sharing of information and best practices. This contribution was particularly constructive in that the Committee has increased its focus on States' methods of implementing the requirements of the resolution, which has occasioned the need for cooperation with other international, regional and sub regional organizations and, in some cases, technical assistance.

Cooperation continued between the Agency and the United Nations Interregional Crime and Justice Research Institute (UNICRI). Following the successful production, in 2005, of a report on Illicit Trafficking and Criminal Use of CBRN Materials and Weapons: An Analysis of the New Members of the European Union and their Neighbouring Countries, the Agency provided advisory support under a new project to establish a UNICRI knowledge management system on the trafficking of WMD agents. The Agency participated in developing the methodology for the information collection process and developed a questionnaire that will help UNICRI collect information on security of nuclear and radioactive material in the countries which are covered by the project. The collected information will be made available to all project participants via a restricted website which will enhance States' awareness of the problem of CBRN trafficking and ways to prevent it.

The Agency's cooperation with the United Nations Office on Drugs and Crime (UNODC) included several activities in connection with the Container Control Programme, which aims to assist specific governments in establishing effective container controls that will serve to prevent drug trafficking and other illicit activity whilst facilitating legal trade. The Agency also cooperated with UNODC in the delivery of two workshops and in conducting an evaluation mission and participated in several regional events on the suppression of acts of nuclear terrorism organized by UNODC. The Agency and UNODC have jointly elaborated model criminal provisions against nuclear terrorism to assist States in reflecting the offences contained in the CPPNM, its 2005 Amendment and the International Convention for the Suppression of Acts of Nuclear Terrorism in their domestic legislation. UNODC was a sponsor of the 2007 Edinburgh International Conference on Illicit Nuclear Trafficking and of the 2009 International Symposium on Nuclear Security.

The Agency continued to cooperate with the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) on harmonizing the security provisions in the IAEA Nuclear Security Series publication on Security in Transport of Radioactive Material with IMO's International Port and Ship Security Code and with ICAO's Technical Instructions for the Safe Transport of Dangerous Goods by Air. The Agency also consulted with the Sub-Committee of Experts on the Transport of Dangerous Goods for revising the portions of the Committee's recommendations on the Transport of Dangerous Goods–Model Regulations ('Orange Book') which relate to the security of Class 7 material.

In February 2006, a Cooperation Agreement was concluded between the Agency and the International Criminal Police Organization (Interpol). The agreement covers; the exchange and coordination of information relevant to illicit trafficking and to nuclear security regulatory infrastructures; cooperation on such technical activities such as meetings, missions and training. The Agency and Interpol have cooperated to enhance the value of information provided to the Illicit Trafficking Database Points of Contact and Interpol national focal points. Interpol was a sponsor of both the 2007 conference and 2009 symposium and contributed to the development of a Technical Guidance publication on combating illicit trafficking.

The Agency cooperated with the Organization for Security and Co-operation in Europe (OSCE) in the areas of border management and protecting critical infrastructure and in promoting adherence to and implementation of the international instruments relevant to nuclear security and counter terrorism. The OSCE's Counter Terrorism Network included nuclear information generated by the Agency. The OSCE also sponsored the 2009 symposium.

To promote States' application of security measures to postal operations, the Universal Postal Union participated in the development of guidance in the IAEA Nuclear Security Series publication on Monitoring for Radioactive Material in International Mail Transported by Public Postal Operators.

The Agency worked with the World Customs Organization (WCO) in connection with the Container Security Programme. WCO also contributed, as a sponsor, to the 2007 conference and 2009 symposium. The Agency participated in meetings of the WCO's Enforcement Committee and the WCO sponsored two IAEA Nuclear Security Series publications relating to illicit trafficking.

The Agency participated in meetings and seminars conducted under Europol auspices at which representatives of both States and international organizations shared experiences and information on illicit trafficking issues. Europol was a sponsor of both the 2007 conference and the 2009 symposium. It also sponsored a publication in the IAEA Nuclear Security Series.

In recognition of the need to exchange information and coordination of activities aimed at assisting States in the establishment of effective border controls, a Border Monitoring Working Group (BMWG) was established in 2006 with representatives of the European Commission (Joint Research Centre), the US Department of Energy and the Agency. The BMWG shares information for the purpose of harmonizing activities in the areas of equipment deployment, training and sustainability. Such coordination prevents the duplication of efforts, exploits organizational strengths and maximizes the impact of limited resources.

In September 2008, the World Institute for Nuclear Security (WINS) was launched on the margins of the Agency's General Conference. WINS was established, inter alia, to promote nuclear security through strengthening physical protection and the security of nuclear material and facilities by working with the nuclear industry and nuclear facility operators. The Agency has supported WINS, inter alia, by inviting WINS to be a sponsor of and contributor to the 2009 International Symposium on Nuclear Security. The Agency participated in the first WINS event in February 2008 in the United Kingdom as an observer. The Agency has also invited WINS to contribute, with a lecturer, to the nuclear security culture training which it regularly provides to States. Points of contact have been established to facilitate close cooperation.

Agency Nuclear Security Activities

Needs Assessment, Analysis and Coordination

To underpin the effective implementation of the Agency's activities to assist States in meeting the obligations of the strengthened security instruments, effective and efficient mechanisms for planning, prioritization, coordination, monitoring and reporting are required. Planning and prioritization are based on requests from States and assessments of needs. Needs are determined, in collaboration with States, by Agency missions and information analysis. Relevant information is also collected from all other available sources, including the Illicit Trafficking Database (ITDB) and from other international organizations and provides a basis for, inter alia, analysing potential threats.

Cars and trucks wait to clear what looks like a normal border crossing. Radiation portal monitoring systems have been installed and hand-held detection equipment provided to strengthen nuclear security.

Identifying Nuclear Security Needs

Nuclear Security evaluation and assessment missions and visits are key tools for needs assessment. Seventy-five missions were conducted, as well as a number of shorter technical visits. In the four year period, Agency nuclear security teams visited — in an advisory or implementation capacity — 60 nuclear sites, approximately 170 sites with other radioactive material and almost 70 border crossings.

Over the four year period, 12 International Nuclear Security Advisory Service (INSServ) missions coordinated with a broad range of government bodies in visiting land border checkpoints, maritime ports, airports, rail facilities, cargo processing centres, medical facilities, a mine site, research institutes and industrial and commercial enterprises. In performing the INSServ missions, the Agency engaged national bodies governing science and technology, energy, customs, internal security, public health and others. Relationships that were established between national stakeholders, implementing personnel and members of the Secretariat served as the basis for subsequent coordination within States and between States and the Agency.

Fifteen International Physical Protection Advisory Service (IPPAS) missions, of which four were follow-up missions, were conducted in the four year period. The Agency continued to coordinate with States on meeting the needs identified by previous IPPAS missions, including the provision of upgrades, the conducting of design basis threat workshops and a range of physical protection training for personnel at nuclear facilities.

The Agency continued to field International Team of Experts (ITE) missions to raise States' awareness of the importance of adhering to, and implementing, international legal instruments relevant to nuclear security and to familiarize them with the legal obligations thereunder. Eleven ITE missions were conducted in the four year period. In several cases, the ITE missions served as the Secretariat's first contact with the given State on nuclear security issues and, in three cases, the recipients were non-Member States. Of the total 27 States that had received ITE missions as of December 2009, and that were not already parties, eight subsequently became parties to the CPPNM, of which four also joined the Amendment, and seven became parties to the International Convention for the Suppression of Acts of Nuclear Terrorism, with an additional eight signatory to that instrument by December 2009.

The Agency's International SSAC[22] Advisory Service (ISSAS) mission mechanism was established in 2004 to strengthen the Agency's assistance to States in enhancing their national systems for accounting and control of nuclear material, which is essential for safeguards as well as nuclear security. Nine ISSAS missions were conducted in the four year period. In all cases, the missions took place in the context of other nuclear security cooperation programmes between the Agency and recipient States. For several States, the ISSAS missions were followed by, or will be followed by, training courses on SSAC and associated issues and in one case equipment was provided to help establishing a national reporting structure.

During 2006–2009, the Agency's NSF financed 28 regulatory infrastructure appraisal missions, of which 21 took place in African States. Radiation Safety and Security of Radioactive Sources Infrastructure Appraisal (RaSSIA) missions provided the Agency and recipient States with a means of evaluating progress in establishing and implementing a national regulatory infrastructure for radiation safety and security of radioactive sources. The primary objectives of RaSSIA missions were to determine, in detail, the status of development of each element of the regulatory regime and to provide advice and recommendations with regard to any identified needs for improvement. In 2007, the RaSSIA mechanism was subsumed by the Integrated Regulatory Review Service (IRRS), established to combine elements of previous advisory services, including legal and emergency preparedness and response elements.

Emergency Preparedness Review (EPREV) missions — which were not funded by the NSF — continued to assist Member States, upon request, to identify potential enhancements to emergency response measures at installation specific, national or regional levels. The number of EPREV missions carried out increased from only one in 2006 to three in 2007 and four in 2008. Two missions also took place in 2009.

Integrated Nuclear Security Support Plans

Beginning in 2003, the Agency has developed long term national work plans that consolidate, in a structured way, an individual State's range of nuclear security needs and the steps required to meet them. An Integrated Nuclear Security Support Plan (INSSP) enables the programming and coordination of national nuclear security improvements from both a technical and a financial point of view, optimizing the use of resources and avoiding duplication. The implementation of activities covered under an INSSP takes place wholly at the initiative of the State, although, upon request, the Agency may be in a position to support specific projects and to coordinate among bilateral or multilateral partners whose involvement the State may solicit for funding or implementing the work.

[22] State system of accounting for and control of nuclear material.

In 2006, Paraguay and Yemen became the first States to approve their INSSPs for implementation; 16 other States had followed by the end of 2009. As of December 2009, finalization meetings had taken place between the Secretariat and fourteen additional States. The Secretariat has prepared altogether 50 INSSPs.

Nuclear Security Education

Participants in the IAEA 's course on the 'Physical Protection of Nuclear Material and Nuclear Facilities for Pakistan ' receive training in Beijing, China.

The Agency has developed, together with academics and experts from Member States, an educational programme in nuclear security. The programme covers education in all areas of nuclear security, ranging from a Master of Science programme for the development of highly educated staff with in-depth knowledge to a certification programme for the development of certified nuclear security specialists. It is intended for use by universities and other academic institutions in developing their own curricula in nuclear security or in expanding their academic programmes related to this subject. These programmes are addressed to individuals interested in careers in nuclear security, working in such areas as nuclear industry, judiciary, health and environmental sciences, transport industry or law enforcement organizations. Requests received by the Agency for assistance in the development and implementation of tailored educational programmes recognize the need for in-depth expertise in the different nuclear security areas.

The Agency's first achievement in establishing nuclear security education took place in 2005 with the launching of a module on nuclear security at the Sevastopol National University of Nuclear Energy and Industry in Ukraine. As of 31 December 2009, 27 engineers specializing in nuclear security had received post-graduate degrees under the programme; all of those students had initially received bachelor's degrees in the same programme. An additional 21 students received bachelor's degrees in 2009. Almost all enrolled in the post-graduate course and were expected to graduate in 2010.

In 2008, the Agency established working contacts in the area of nuclear security education with the Tomsk Polytechnic University (TPU) in the Russian Federation. TPU launched an academic programme, in autumn 2009, entitled Nuclear Control and Regulation in Nuclear Security, which is based on an Agency guidance document and is accredited by the Russian Federation's national Competent Authority.

In 2009, an agreement was reached with the Naif Arab University for Security Sciences (NAUSS) for the cooperation to establish a certified nuclear security educational programme at NAUSS. The programme also includes NAUSS sponsorship of topical training events for representatives of countries belonging to the League of Arab States, under the auspices of which NAUSS operates.

Nuclear Security Support Centres

As a cornerstone in building up a sustainable human resource development programme and effective technical and scientific support services necessary to meet obligations under international instruments relevant to nuclear security, the Agency has assisted States in their efforts to establish Nuclear Security Support Centres (NSSCs). NSSCs aim, in particular, to support and facilitate the development of sustainable human resources through the provision of a national nuclear security training programme and at providing technical support services for life cycle equipment management and scientific support services for the detection of and response to nuclear security events. The ultimate goal of an NSSC is to achieve long term sustainability of nuclear security capabilities in individual States.

In achieving these two main goals, the NSSC also fosters nuclear security culture, enhances the national coordination and collaboration among the nuclear security competent authorities and, at the same time, supports the development of a nuclear security network of experts. This network can facilitate the exchange of information and experience among its members and provide access to relevant scientific and technical knowledge and tools to the nuclear security competent authorities in a State.

The Agency was able to support seven States in their efforts to establish NSSCs. As of the end of 2009, NSSCs were operational in Ghana, Greece and Pakistan. Further NSSCs in Colombia, Malaysia, Morocco, and the United Republic of Tanzania were in various stages of development.

Analysis and Exchange of Nuclear Security Information

Through its Illicit Trafficking Database (ITDB) programme, the Agency collects information on incidents of illicit trafficking and other unauthorized activities and events involving nuclear and other radioactive material. The scope of the ITDB information is broad, covering any acts or events that involve any type of nuclear or radioactive material outside legitimate control and protection. The database tracks events that occurred intentionally or unintentionally, including unsuccessful or thwarted acts. Between 2006–2009, 23 new States had joined the ITDB programme, bringing the total number of participants to 109 as of December 2009.

The continued reporting of incidents by States to the ITDB, whether criminal, unauthorized or inadvertent in nature, points to the need for further improvement in measures to secure nuclear and other radioactive material, wherever used or located, and the capabilities to detect illicit trafficking and inadvertent activities involving such material. From 1 January 2006 to 31 December 2009, 975 incidents were reported to the ITDB; 799 of these were reported to have occurred during this period and the remaining 176 were reports of prior incidents.

Seventy-five incidents reported to have occurred in 2006–2009 involved illegal possession, including attempts to sell or smuggle nuclear material or radioactive sources. In February 2006, criminals tried to sell about 80 grams of HEU (89% U-235). Although, no incidents involving illegal possession of HEU have subsequently been reported, HEU trafficking remains a security risk. Information collected by the Secretariat indicates that some small quantities of HEU seized between 1999 and 2006 are likely to have been samples of much larger quantities that remain in possession of criminals and are yet to be recovered.

Two hundred and twenty-nine incidents reported the theft or loss of radioactive sources or nuclear material, of which, in about 63% of incidents, the stolen or lost material had not been reported as recovered as of 31 December 2009. Portable or mobile industrial equipment using Cs-137, Am-241, Co-60, and Ir-192 radioactive sources, such as gauges or radiography devices, remained particularly vulnerable to theft or loss. Continuing regulatory and security vulnerabilities were also manifest through the 488 reported incidents involving other unauthorized activities, such as the detection of radioactive sources or of nuclear material disposed of in unauthorized ways, the detection of radioactively contaminated material, the recovery of uncontrolled sources and the inadvertent shipment or discovery of nuclear material or radioactive sources in unauthorized or undeclared storage. Reports about the remaining seven incidents did not contain sufficient information to assign them to one of the above three categories.

The quality and comprehensiveness of reporting to the ITDB depend significantly on the efficiency of information coordination within States. The Agency has been working with the Russian Federation on the establishment of a Centre for Illicit Trafficking Information (CITI). CITI, which is nearing completion, will enhance the effectiveness of information exchange among national stakeholders, maintain a national database of incidents and will contribute to the improved reporting to the ITDB. This form of support will be offered to other countries in need of augmenting their national information management and reporting systems.

Figure I.

Figure II.

The ITDB receives reports on the trafficking of material such as depleted uranium in Figure I and radioactive sources in Figure II.

Recognizing that the ITDB scope does not cover all relevant incidents, a new information resource was established with open source information relating to other nuclear security events. As a whole, information on material potentially available for malicious use or vulnerable to unlawful acquisition, together with additional insight into what is actually employed will give a more complete perspective. The development of specialized software applications for this purpose was completed in 2008.

The fourth ITDB Points of Contact (POC) meeting was held in May 2006. The meeting dealt with issues associated with the database's scope, the classification of incidents, the dissemination of information and the potential for an ITDB internet application. The meeting recognized the utility of maintaining the database's broad scope, not to limit information of relevance to the incident. The POCs accepted several changes to the database's 'nature of incident' categories, enabling greater precision in the incident classification for both reporting and analytical purposes. The meeting agreed to accelerate the work to enable electronic dissemination of Incident Notification Forms and to establish an internet based version of the ITDB for timely access to, and dissemination of, ITDB information.

The fifth meeting of ITDB national Points of Contact (POCs) was convened in December 2009. The POCs reviewed operations of the ITDB programme and considered ways to further enhance its effectiveness. POCs welcomed the Secretariat's efforts to improve analysis and dissemination of the ITDB information and emphasized the importance of the ITDB analysis and the production of analytical reports, which help States improve nuclear security and protect against threats. A pilot application of the web-based version of the ITDB was presented and discussed.

Once in operation, the web based version will significantly improve access to and dissemination of the ITDB information and reports. The POCs adopted ITDB reporting guidelines and welcomed their incorporation into the operations of the ITDB programme. The Secretariat presented an update on the Integrated Nuclear Security Information System and the Malicious Acts Database, which were still in development.

Information Security

Information security is a rapidly changing field that must keep pace with a changing threat environment, evolving technology and increasing knowledge and capabilities of attackers. Efficient measures to protect and secure sensitive information could make the difference between a successful and a foiled terrorist attack. The increasing reliance on information and on the automated systems that process it, as well as the ease of access to information held over electronic networks, make it crucial for all nuclear organizations to establish adequate programmes for the protection of information. In light of this, guidance and training instruments are under constant review to ensure their continued relevance. The Agency assists Member States in establishing, strengthening and reviewing their programmes through the provision of guidance, assessment and capacity building initiatives.

During the reporting period, the Agency developed two IAEA Nuclear Security Series guidance publications covering the protection of nuclear security sensitive information and the security of computer systems in nuclear facilities, the publication of which is forthcoming. Concurrently, the Agency began to offer a set of training courses that facilitate dissemination of the guidance as well as create a forum for the discussion and exchange of expertise among States. The Agency is also adding a module to its nuclear security advisory services for evaluation of information security measures and the effectiveness of computer based instrumentation and control systems in States' nuclear facilities.

Needs Assessment, Analysis and Coordination: Human Resource Development

From January 2006 to December 2009, in the area of information management and coordination, seven workshops were implemented, focusing on unreported incidents which subsequently were incorporated into the ITDB. In addition, two pilot training courses were launched; one is dedicated to the topic of nuclear information security management and the other to computer security for nuclear security practitioners. In total, more than 250 participants from 65 countries received training in the area of needs assessment, analysis and coordination.

Prevention

An essential element of nuclear security is the effective physical protection of nuclear material when in use, storage and transport and its associated facilities. Similarly, accurate accounting of other radioactive material, including radiation sources and radioactive waste, requires protection against malicious, criminal or terrorist access. The Agency promotes and assists States in the establishment and enhancement of systems for these purposes.

Improving Legal and Regulatory Infrastructures

The Agency has developed and is implementing a legislative assistance programme. By the end of 2009, the number of States having received legal assistance, including that relating to nuclear security, exceeded 90. Of these, 36 were African States, more than double the number of States in other regions.

National and regional events were conducted to highlight to States the synergies between safety, safeguards and security issues (the '3S'), with emphasis on the regulatory system that governs a State's nuclear activities. Participants received and exchanged information on national experiences in applying safety, safeguards and security practices. Training events were convened in Algeria (2006) and Turkmenistan (2007) and for regional audiences in Vietnam (2008) and the Dominican Republic (2009).

Comprehensive regulatory infrastructures are necessary for ensuring the continuous control of radioactive sources throughout their life cycle. In the 2006–2009 period, the Agency continued its efforts to assist States, upon request, in establishing effective and sustainable regulatory infrastructures. Regulatory review and advisory missions were conducted with that aim. Between 1 January 2006 and 30 December 2009, the NSF supported missions to 28 States, 22 of which were located in Africa. Equipment to support regulatory activities for radiation safety and the security of radioactive sources was provided to all these countries, and training of regulators on authorization and inspection of radiation sources was offered to these countries through three regional training courses held in Ghana, Lithuania and Morocco.

Improved SSACs

Between 2006 and 2009, the Agency conducted nine International SSAC Advisory Service ISSAS missions. In all cases, the missions took place in the context of other nuclear security cooperation between the Agency and recipient States. For several States, the Agency subsequently conducted SSAC training courses for personnel from the national organizations involved in the ISSAS missions

Human resource development continued to be an essential element of activities to strengthen SSACs. Between 2006 and 2009, the NSF supported the training of 510 people in 17 training courses and workshops at national and regional levels. Nine training courses were conducted for national audiences and eight for regional audiences. A further 19 training events, in which 407 people participated, also covered these issues, but were not funded by the NSF.

Technical Improvements to Physical Protection

Physical Installation Upgrades, like improved fencing around facilities, are an important component of prevention.

Between January 2006 and December 2009, the Agency conducted physical protection upgrades at 64 locations in 30 countries. Upgrades to physical protection were made, or were in the process of being made, to a total of 16 nuclear facilities in five States in Africa, three in Asia and the Pacific, five in Europe and one in West Asia. This was a significant increase over the previous period, in which such upgrades were performed in only four countries, all in Europe or the former Soviet Union. The Agency was also able to expand its technical support to implementing upgrades to the security of other radioactive material. Forty-eight sites — including waste storage facilities, research institutes and hospitals — in 16 countries received, or were in the process of receiving, upgrades to the security of radioactive material located on their premises, including Category 1 and 2 sources.

On the basis of the findings of missions and at the request of States, the Agency helped to secure nearly 4300 individual radioactive sources in 21 countries. The sources were placed in secure storage locations within the State. In some cases, the storage sites also received security upgrades or other improvements.

In 2008, the Agency began the deployment of remote monitoring equipment (RME) systems to facilitate the transfer of alarm signals to an external alarm station in the country, guaranteeing automatic notification of national response forces. As of December 2009, remote monitoring equipment systems were operational at five facilities housing nuclear material and three at facilities housing other radioactive material. Activities had begun at seven other new sites in three countries, with additional requests pending. Follow-up and upgrade work of existing systems had been started at two sites in two countries.

In 2009, the Agency completed its largest project to date for capacity building in the area of physical protection. The Agency had in 2004 commenced a project, jointly with the Russian Federation, to upgrade the nuclear security training facilities at the Interdepartmental Special Training Centre (ISTC) in Obninsk to enable field-based training for international audiences. The first phase of the project, completed in 2006, involved upgrades to ISTC's technical infrastructure to support indoor nuclear security training, which included the equipping of an international training auditorium. Under the second phase, two training laboratories were furnished respectively with equipment for a central alarm station and a local alarm station. Three outdoor training areas were also constructed, featuring, respectively, a full scale model of an NPP perimeter fencing area, a range of variants of fences used at NPPs and training stands for studying separate models of detection sensors based on various physical principles of operation. The ISTC's new nuclear security training facilities were inaugurated in May 2009 and the first international training course using these facilities took place in October 2009.

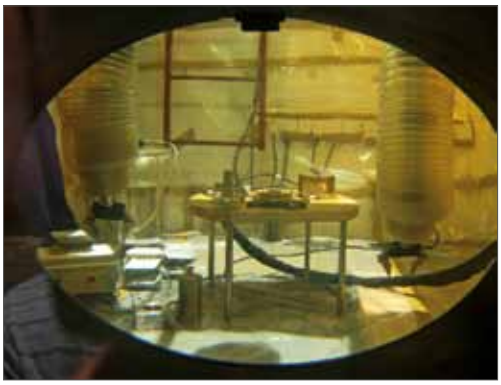
Recovery, Conditioning and Repatriation of Disused Dangerous Radioactive Sources

Experts recover unsecured radioactive sources.

One of the major threats to nuclear security is a malicious act resulting in the dispersal of radioactive material that had been subject to inadequate control measures. To reduce this risk, the Agency continued and expanded assistance to States for enhancing measures to control radioactive material and in dismantling and bringing disused vulnerable sources to safe and secure storage.

Between January 2006 and December 2009, the Agency was directly involved in activities to improve the security of 4207 radioactive sources in 21 States. The geographical regions assisted expanded, from the previous period's focus on Europe and the former Soviet Union, to Africa, Australia, Asia and the Pacific, West Asia and Latin America. The vast majority of sources (4030) were secured through arrangements in the country. Ten sources were secured with the use of the mobile hot cell, discussed below. The Agency arranged the repatriation of 168 sources to suppliers in China, the Russian Federation and the USA.

Beginning in 2004, the Agency worked to develop a mobile hot cell for the recovery, manipulation and conditioning of high activity sources (Categories 1 and 2) in developing countries, with the objective of preparing the sources for safe and secure long term storage. This represented the first mobile hot cell to be deployed in the field for the specific purpose of facilitating direct source recovery — including that of sources in remote areas — in countries lacking the necessary facilities. In March 2007, the successful pilot operation of the mobile hot cell took place in South Africa. In May 2009, the technology was successfully employed in the field in an operation in Sudan to condition high activity disused sealed radioactive sources. A similar operation took place in the United Republic of Tanzania in September 2009. Preliminary technical missions have been conducted in Brazil, Chile and the Philippines to assess the potential for mobile hot cell operations. A number of other States have discussed with the Agency the possible deployment of the technology in their countries in the future.



From the window of the hot cell, the operator can use manipulators to carry out work. On the table is an automatic welding machine that is used to encapsulate sources into leak-tight capsules.

HEU Repatriation

The Agency has been involved for almost 30 years in supporting international nuclear non-proliferation efforts associated with reducing the amount of HEU in international commerce. The Agency projects and activities have directly supported the Reduced Enrichment for Research and Test Reactors programme, as well as directly associated efforts to return research reactor fuel to the country where it was originally enriched.

Between January 2002 and December 2009, the Agency was, through its technical cooperation programme, an implementing partner in the repatriation of more than 600 kg HEU research reactor fuel — of which approximately 475 kg were spent fuel — to the supplying States. Additionally, the Agency was also involved, in an auxiliary capacity, in a much larger number of repatriation shipments involving a total of approximately 1525 kg of fresh fuel and more than 230 kg of spent fuel.

Since 2005, the Agency has been involved in a project to transport more than two tonnes of nuclear fuel from Serbia's Vinča Institute of Nuclear Sciences to the Russian Federation. The operation will take place in 2010. Several studies of the spent fuel stored at Vinča have been carried out, as well as other activities to improve the spent fuel storage conditions.

The conversion of research reactors from HEU to LEU cores continued to be a priority. The Agency assisted in the conversion of research reactors in Chile, Hungary, the Libyan Arab Jamahiriya, Poland, Portugal and Romania. The form of the support varied by country; it included the procurement of replacement LEU fuel, provision of equipment, human resource development, implementation of inspection capabilities and the return of fresh HEU fuel to the country of origin.

IAEA inspectors helped Polish authorities to remove close to 40 kg of highly enriched uranium (HEU) from a nuclear research reactor facility at Otwock-Swierk near the capital of Warsaw.

The Agency has procured and made available high capacity dual purpose spent fuel casks for the movement of HEU research reactor fuel. The November 2007 spent fuel shipment from the Czech Republic was the first in which the high capacity casks were used. They were subsequently employed in operations in Bulgaria, Hungary and Poland.

In August 2006, a Technical Meeting on National Experiences on Return of Research Reactor Spent Fuel to the Country of Origin, held in Vienna, was attended by 46 experts from 27 Member States. The meeting allowed operators and managers of research reactors that have successfully shipped spent fuel back to the country of origin to describe their experiences, exchange information and transfer lessons learned among managers and operators of research reactors.

Prevention: Human Resource Development

During the period January 2006–December 2009, in the prevention area, five international, 69 regional and 52 national training activities were implemented in order to assist States in their efforts to strengthen prevention measures in their countries. More than 3100 participants from 120 States received prevention training.

Detection and Response

States must have the best achievable capacity to detect and respond to the theft, the threat of theft, or fraudulent possession, transfer, including illicit trafficking, as well as dispersal and disposal of nuclear and other radioactive material and of sensitive nuclear equipment and technology for the production of this material. Detection of such acts is an essential part of nuclear security systems, should preventive measures fail. Continued reports of nuclear trafficking incidents indicate a need to strengthen States' capability to combat illicit trafficking in nuclear and other radioactive material. Improved coordination amongst organizations involved both within States and in the international community is necessary, as is further development of the technology to make available user friendly instruments for detection and the methodology for nuclear forensic or other purposes.

Technical Improvements

The Agency's Nuclear Security Equipment Laboratory (NSEL), utilizing a synergy between nuclear security and safeguards, continued to facilitate the technical support of the Nuclear Security Programme in the areas of research and development, equipment evaluation, procurement, testing and deployment. NSEL's involvement in training increased in the four year period, with its staff now assisting in most illicit trafficking courses involving practical training on the operation and maintenance of border monitoring equipment.

Between January 2006 and December 2009, the Agency provided 2549 pieces of detection equipment to 47 States, an increase of more than 600% over the 421 pieces provided to 12 States before 2006. The geographical regions receiving assistance also changed significantly; while all but one of the pre-2006 recipient States were in Europe or the former Soviet Union, 28% of recipient States in the later period were located in Africa, 24% in Europe, 20% in Asia (the Pacific), 17% in West Asia and 11% in Latin America. Major pieces of equipment provided to these States included eight RMEs, more than 350 radionuclide identification devices and 25 radiation portal monitors (RPMs).

Participants in a training course learn how to use handheld detection equipment like radiation isotope identifiers, that with built-in spectrometers, can determine what type of radioactive material is present.

More than 200 instruments were provided to three States in the course of projects for ensuring the nuclear security of major public events. In addition, the Agency began to accumulate a pool of detection equipment for loan to States, which by December 2009 included more than 100 instruments, with more in the process of being procured. The equipment available for loan included personal radiation detectors, radionuclide identification devices, neutron search devices, portable radiation scanners and expert level equipment.

The NSEL also played a direct role in the ongoing effort to improve radiological security at the United Nations organizations based at the Vienna International Centre and at the Agency Laboratories at Seibersdorf. The scope of the project included deployment of radiation detection equipment at the entrances to the respective complexes and establishment of appropriate mechanisms for responding to radiation alarms. NSEL staff provided inputs for development of design documentation and specifications, assisted with the selection of the hand-held equipment, its procurement and evaluation and contributed to the development of Concept of Operation and operating procedures. NSEL staff also bear responsibility for 24/7 on-call expert support and maintenance of the deployed equipment.

Beginning in 2006, the Border Monitoring Working Group (BMWG) — comprised of representatives from the European Commission, the US Department of Energy and the Agency — met regularly to coordinate their selection of and work at various border crossings and the types of equipment provided for detection, resulting in better use of the available resources. The BMWG has also implemented projects in the area of nuclear security training. In Ukraine, BMWG members coordinated their selection of border crossings to be equipped with radiation detection equipment, resulting in better use of the available resources. The implementation of a joint equipment deployment project in Georgia continued through the end of 2009. In January 2009, the BMWG partners implemented a joint training workshop in Georgia on radiation detection techniques for front line officers; the outcomes of the workshop which served as the basis for a joint syllabus, which continued to be revised during the year. In addition, the development of a joint syllabus on the training of trainers in radiation detection techniques began in 2009, with the implementation of the first workshop scheduled for 2010.

Coordinated Research Projects

Coordinated research projects (CRPs) were used as a vehicle to promote and facilitate research and development. Under the CRP mechanism, the Agency has conducted three year projects for improving technical measures — including instrumentation — for detecting and responding to illicit trafficking of nuclear or other radioactive material and for the application of nuclear forensics to illicit trafficking incidents. As of December 2009, almost 50 research institutions from 32 countries and the European Union had participated in the four nuclear security CRPs.

In 2006, the Agency concluded the CRP on Improvement of Technical Measures to Detect and Respond to Illicit Trafficking of Nuclear Material and other Radioactive Material, which was the first CRP established under the Agency's Nuclear Security Programme. This project was undertaken to address technical challenges associated with the practical use of instruments for detecting illicit trafficking incidents, which differs from that used in radiation monitoring applications that traditionally involve stationary or facility-specific settings. CRP contract and agreement holders worked on ways of solving this problem, resulting in the design of improved equipment. In addition to the above, other investigations relating to specific issues in border monitoring were undertaken, such as ways to detect shielded nuclear material, and ways to verify the isotopic and activity level of contents of legal shipments. The CRP involved 29 research groups from 18 Member States and the European Union.

Important results achieved under this CRP include:

- A significant contribution to standardization of border monitoring equipment.
- Improvement of radionuclide identification devices in the area of technical performance and usability.
- Feasibility study of new detectors for border monitoring equipment — LaBr-3 (Ce+), CWO, CaWO, LiI(Eu) and others.
- Development of new instrumentation for nuclear security applications — large volume CdZnTe detectors, LiI(Eu) based radionuclide identifiers and highly sensitive, hand held neutron monitors. Some of this equipment is now commercially available and authorized for safeguards use.
- Development of active interrogation methods for detecting shielded nuclear material.
- A feasibility study of spectrometric RPMs, featuring real time radionuclide identification to flag the presence of medical isotopes.
- Development of a methodology to contribute to verification of legal shipments.

The findings of the CRP were published as IAEA-TECDOC-1596 (CD).[23]

The CRP on Development and Implementation of Instruments and Methods for Detection of Unauthorized Acts Involving Nuclear and other Radioactive Material began in 2008 and will run through 2011. The objective of this CRP is to enhance responses to the seizure of nuclear and other radioactive material in illicit trafficking as part of ongoing national and international efforts to combat trafficking of this material. In particular, it aims to obtain improved equipment, response and maintenance procedures, to sustain established detection systems and thereby to enhance the detection of illicit trafficking of nuclear and other radioactive material. As of December 2009, 19 research groups from 14 States had participated in this CRP.

This CRP is:

- Evaluating new and emerging technologies;
- Evaluating performance, effectiveness and sustainability of deployed equipment;
- Investigating techniques for the fast categorization of alarms due to 'innocent' sources;
- Investigating methods and techniques to strengthen the technical support services for border monitoring programmes in Member States, including maintenance and recalibration of equipment;
- Developing a new class of instruments designed for 'special detection tasks', such as instruments to be used for security at major public events;
- Drafting, or updating, technical specifications and test procedures for existing and new radiation detection instruments.

The CRP on Application of Nuclear Forensics in Illicit Trafficking of Nuclear and other Radioactive Material is also being conducted between 2008 and 2011. This CRP will endeavour to establish procedures and improved techniques for: categorization and characterization of seized nuclear and other radioactive material, preservation of forensic evidence, sampling and transport in forensic analysis and nuclear forensic interpretations. This CRP will also improve procedures for providing nuclear forensic support to regulatory and law enforcement authorities. As of December 2009, seven research groups from six States and the European Union were participating in this CRP.

[23] http://www-pub.iaea.org/MTCD/publications/PDF/TE_1596_CD/Start.pdf

The CRP addresses the following broad areas in the field of radiation detection equipment and its use:

- Development of improved techniques and testing instruments;
- Development of common procedures to preserve evidence throughout the entire process of dealing with seized nuclear or other radioactive material and its characterization;
- Development of guidelines and procedures for sampling, packaging and transport of nuclear and radioactive material for nuclear forensic analysis and interpretation;
- Review of available instruments, techniques and procedures, development of methods and proposals to improve the availability of advanced capabilities to analyse and characterize nuclear material confiscated in seizures;
- Establishment of a process to provide nuclear forensic support, on request by States.

Scientists analyse information in a nuclear forensics lab.

The CRP on the Development of Methodology for Risk Assessment and State Management of Nuclear Security Regime began in September 2009 and will run through 2012. The CRP aims to develop methodologies for identifying nuclear security risks and for self assessment within a State, as well as for informing and guiding a national Government and policy makers in managing an effective and efficient nuclear security regime. The CRP will also develop specific guidance for applying these methodologies. As of December 2009, six research groups from five States and the European Union were participating in the CRP.

Specifically, the CRP seeks to develop:

- Methodologies for valuating effectiveness of a State's nuclear security regime;
- Assessment of risks associated with adversaries' activities in a State;
- Methods for optimizing a State's nuclear security regime;
- Draft guidance for State authorities on applying new methodologies.

Transport Security

Generating a dedicated approach for the security in transport of nuclear and other radioactive material was a priority of the 2006–2009 Nuclear Security Plan. The Agency's efforts in this regard facilitated States' application of uniform, sound, security principles in transporting nuclear material, sources and other radioactive material, including the reduction of security related delays in delivery of material.

Workers load nuclear fuel shipping containers onto heavy cargo trucks.

On the basis of course material generated in 2006–2007, the training course on security in the transport of radioactive material covers transport security technologies, applying a performance based approach to defining the security measures and developing a transport security plan. As of December 2009, the course had been delivered to six regional and three national audiences.

Published in 2008, Security in the Transport of Radioactive Material (NSS-9) provides States with guidance for implementing, maintaining or enhancing a nuclear security regime to protect radioactive material (including nuclear material) while in transport against theft, sabotage or other malicious acts that could, if successful, have unacceptable radiological consequences. From a security point of view, a threshold is defined for determining which packages or types of radioactive material need to be protected beyond prudent management practice. Minimizing the likelihood of theft or sabotage of radioactive material during transport is accomplished by a combination of measures to deter, detect, delay and respond to such acts. These measures are complemented by other measures to recover stolen material and mitigate possible consequences, to further reduce the risks.

The concealment of transport containers and falsification of the content has been identified as a potential scenario for criminal acts involving nuclear and other radioactive material. Accordingly, a methodology is under development to enable verification of the radioactive material content of shipments in transit, independent of data contained in related shipping, import/export and other authorizing documentation.

Emergency Preparedness and Response

The Incident and Emergency Centre (IEC) offers States guidance and practical tools for strengthening their nuclear emergency preparedness.

Since its establishment in 2005, the Agency's Incident and Emergency Centre (IEC) has served as the focal point for international preparedness, communication and response to nuclear or radiological emergencies, regardless of their cause. It has conducted a range of activities to strengthen Member States' preparedness and capabilities for responding to a nuclear or radiological emergency. External to the NSF, the IEC carries out its activities with funding from the Agency's regular budget, complemented by extra budgetary funding.

Despite improvements in recent years, many Member States still require assistance in building basic emergency preparedness and response (EPR) capabilities. Accordingly, IEC efforts have focused on: improving information access; building EPR capacity, particularly in Member States embarking on nuclear power programmes; testing existing EPR capabilities; and expanding the scope of States' EPR drills and exercises to include both safety and security related components.

Published in 2006, the Manual for First Responders to a Radiological Emergency — which was co-sponsored by the International Technical Committee for the Prevention and Extinguishing of Fires, the Pan American Health Organization and the World Health Organization — has become one of the most downloaded publications on the Agency's web site. The manual provides practical guidance for those who will respond during the first few hours to a radiological emergency and for national officials who would support this early response.

The Agency continued to assist in the development and enhancement of national systems for emergency preparedness and response by conducting 10 Emergency Preparedness and Response (EPREV) missions between 2006–2009. In addition to these missions, the IEC conducted/participated in expert missions and national exercises. Over the four year period, the IEC conducted training in more than 35 Member States on various aspects of EPR. To increase the access to, and number of end users of, IEC training tools, a web site based on the Manual for First Responders and e-learning training material was created. A First Responders Kit containing the manual and PDA instrumentation, including preloaded information, response cards and associated training material, was also developed and deployed for use in 2008.

The provision of adequate and timely information regarding incidents and emergencies in neighbouring countries is a challenge that the Agency has taken steps to address. Established in 2000, the Response Assistance Network (RANET) is an integrated system for the provision of international assistance to minimize the actual or potential radiological consequences for health, environment and property. With 16 Member States registered with RANET at the end of 2009, the network has been used successfully in recent response missions. Although each Member State must have plans and core resources available to deal with radiological incidents and emergencies, it is not practical for every Member State to possess a full range of specialized capabilities; enhanced regional and international cooperation is necessary. The Agency's RANET programme provides an efficient method both of registering national capabilities and of matching capabilities with needs. Many Member States have reported increased bilateral and multinational cooperation, including data exchange, for effective off-site emergency preparedness.

Detection and Response: Human Resource Development

To strengthen States' capacities in the area of detection and response, the Agency has convened eight international, 44 regional and 57 national training courses during the period covered by this report. Over 2725 participants from more than 120 States were trained. These activities helped to augment human resources in the area of detection and interdiction of, and response to, illegal acts involving nuclear and other radioactive material and associated facilities. In addition to the classroom training, the Agency has initiated in this area computer based training on radiation detection equipment for front line officers.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Programme Implementation

Relationship with Other Agency Programmes

In implementing the Nuclear Security Plan, full account was taken of activities undertaken in the Agency's nuclear safety and safeguards programmes and the relevant synergies between safety, safeguards and security. When safety and safeguards activities also served nuclear security purposes, additional funding was provided from the NSF to accelerate their implementation. The implementation of activities respected existing competences throughout the Agency with a view to avoiding duplication and promoting both sustainability and the Agency's 'one house' approach. Therefore, activities that were carried out in support of nuclear security were implemented according to the existing programme and budget documents under the respective programmes.

Programme Performance Management

Electronic Programme Support System, including Connection with other Agency Information Networks

EPSS has been developed over the years to adapt to the growing complexity of the NSF and to enrich its functions towards gaining a better integration in staff workflow, improved security of information and greater flexibility to handle multiple funds with diverse requirements. Substantial resources have been invested to ensure that the development of the system was closely related to the evolving business needs and processes.

Programme Evaluation

The Nuclear Security Programme was subject to the Agency's normal oversight and evaluation process. Comments on the programme made by the external auditor have been reported to the Board in accordance with standard procedures. An evaluation of the programme carried out in November 2007 by an external panel established by the Agency's Office of Internal Oversight Services (OIOS) found that the Nuclear Security Programme was highly regarded by Member States and was perceived as making a considerable contribution to the improvement of nuclear security and the protection of radioactive material.[24] The evaluation found extensive Member State support for the content, balance and effectiveness of the Nuclear Security Programme with almost 90% of those responding to the survey stating that they were either satisfied or very satisfied with the Agency's work. States in receipt of support reported that the training provided by the Agency — which is highly valued and respected — had also improved working relationships between State agencies such as regulators, police and border officials and improved national and regional nuclear security capabilities.

[24] See GOV/INF/2008/3.

Other evaluations were carried out on the effectiveness of training activities. The results of the evaluations showed that the programme has had a positive effect on the awareness amongst governments and organizations involved in relevant aspects of nuclear security. Further evaluation of the effectiveness of the programme was provided through follow-up missions and technical visits to States requesting assistance. These indicated that assistance provided has had a positive effect on nuclear security in the States concerned but have highlighted the need to ensure sustainability of programmes.

The OIOS External Panel made a number of recommendations relating to the structure and management of the Office of Nuclear Security, in particular on the prioritization of the programme and the setting of performance indicators. The Agency took account of those recommendations in the implementation of the Plan and in the drawing up of the Nuclear Security Plan 2010–2013 (GOV/2009/54-GC(53)/18).

Programme Prioritization

The overall priorities for the programme reflected those of the Agency's medium term strategy. In terms of functions, priority was given to assisting States to implement the relevant legally binding and non-binding international instruments. The Agency established a methodology, based on objective factors, to determine which States should be given priority in receiving support. Details of this methodology were provided in previous reports.

Prioritization was, however, affected by conditions placed on contributions and subject to the availability of funds.

Advisory Group on Nuclear Security

The Advisory Group on Nuclear Security (AdSec) continued to provide advice to the Director General. AdSec has met twice a year since 2002 and provides advice on a wide range of nuclear security matters. During the period covered by this report, AdSec provided recommendations and suggestions on various aspects of the implementation of the Plan for 2006–2009, including human resource development and the development of documents — including the scope and structure of individual documents — in the Nuclear Security Series. In 2009, AdSec and the Commission on Safety Standards established a joint task force to discuss safety and security synergies and interfaces and the feasibility of working towards the establishment of Nuclear Safety and Security Standards.

Nuclear Security Series Guidance Committee

In order to provide greater Member State involvement in the IAEA Nuclear Security Series, the Director General in 2009 established a Nuclear Security Series Guidance Committee for the purpose of providing advice on the development, review and revision of Nuclear Security Series guidance documents.

Funding of Nuclear Security Activities

Resources for the Period 2006–2009

Income and Expenditure

The following table sets out details of contributions to the NSF for the period 1 January 2006 to 30 December 2009.

NSF Disbursements and Contributions Received 2006–2009[25]		
Year	**Disbursements (US $)**	**Contributions (US $)**
2006	15 451 894	7 505 914
2007	15 712 282	23 134 738
2008	19 181 894	10 636 682
2009	22 768 374	29 109 299
Total	**73 114 444**	**70 386 633**

[25] Excluding Interest.

It appears that activities carried out under the Nuclear Security Plan have contributed significantly to national efforts to improve nuclear security. However, there is no room for complacency. The work needed to achieve and maintain a high level of nuclear security should be considered as work in progress which requires continual review.

In the course of implementing the Nuclear Security Plan, a number of lessons were identified that apply at State level, regional level, international level and to the Agency. These lessons, which are set out below, have been taken into account when developing the Nuclear Security Plan 2010–2013.

Conclusions and Lessons Learned

The main lessons learned that apply at the national level include the following:

- All States have responsibilities to establish appropriate systems to prevent, detect and respond to malicious acts involving nuclear or other radioactive material. Not doing so may create a weak link in global nuclear security;
- An effective nuclear security infrastructure requires a multidisciplinary approach with: (i) legal and regulatory infrastructures with clearly defined responsibilities among different organizations and operators; (ii) human resource development; (iii) the establishment of procedures and coordination functions; and (iv) technical support for national infrastructures, recognizing that nuclear security arrangements within nuclear facilities/locations are different from those to be applied outside such facilities/locations to protect civil society from nuclear security events involving radioactive substances;
- Account should be taken of the synergies between safety, security and national accounting and control systems, integrating, where appropriate, relevant features of the national legal and regulatory systems;
- A sustainable nuclear security culture is needed in the management of activities involving nuclear or other radioactive material. As a result, nuclear security would be an enabling factor in the broader use of nuclear energy.

Lessons learned that apply at the regional level include the following:

- Regional cooperation and coordination agreements facilitate regional approaches to nuclear security;
- Subregional interaction regarding border crossing points may offer valuable options for effective and efficient border control.

Lessons learned that apply at the international level include the following:

- The existence of terrorist networks that operate internationally and the potential global consequences of a nuclear security event require a global response;
- This response must rest on a solid foundation of preparedness, appropriate sharing of knowledge, experience and coordination among States and international organizations based on a comprehensive set of established standards and guidance to provide common references;
- Vigilance must be maintained and security regarded as work in progress recognizing changing risk assessments.

Lessons learned that apply to the Agency's work include the following:

- Nuclear security is a long term effort and the Plan should adopt a long term perspective, identifying core activities while, at the same time, being kept under constant review to reflect changes in circumstances;
- Priority should be given to the production of nuclear security guidance to assist States and to human resource development support;
- Effective implementation of the Plan has to be based on systematic approaches using programmes designed to ensure sustainability of security improvements and to obtain strengthened capacities, building on regional and national infrastructures and capabilities;
- Strengthened coordination with other international organizations, initiatives and bilateral programmes is needed to avoid duplication of efforts or gaps.

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Design
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Photo Credits: IAEA

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Printed by the IAEA in Austria, September 2011

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