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Andrés, Gabriel Eugenio
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THE INTERNATIONAL ATOMIC ENERGY AGENCY'S SAFEGUARDS SYSTEM*

GABRIEL EUGENIO ANDRÉS**

ABSTRACT

Entrusted with the responsibility of establishing and administering the international safeguards system with the purpose of ensuring that nuclear energy would not be used for furthering military purposes, the International Atomic Energy Agency (hereinafter "IAEA" or "the Agency") is a key piece of the international system for the maintenance of world peace and security. Despite the initial enthusiasm surrounding the foundation of the IAEA in the 1950s, it required several years for the Agency's safeguards to be accepted and applied in a broad manner. Since the beginning the safeguards system evolved along the progress of nuclear technology and most importantly in light of the development of the geopolitical context and the commitment showed by the international community in critical circumstances. Hence, in the same manner the discovery of the Iraqi clandestine nuclear

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** Professor of Public International Law, Universidad Católica de Córdoba (Argentina); A&P Consultants on International Legal Affairs (Buenos Aires, Argentina); Lawyer (Universidad Católica de Córdoba, Argentina); Master in International Law (University of Sydney, Australia); Master in Business Administration (Universidad Católica de Córdoba, Argentina). Contact: gandres@aypconsultores.com I am deeply grateful to David Jones, P.Eng. (retired officer of the IAEA) for his constant support and invaluable contribution and guidance in this work.

weapons programme after the 1990-1991 Gulf War posed a serious challenge to the safeguards system, the IAEA is currently dealing with two most serious international conflicts involving States arguably with nuclear ambitions, namely: the Democratic People's Republic of Korea (hereinafter "North Korea" or "DPRK") and the Islamic Republic of Iran (hereinafter "Iran"). Besides, the events of 11 September 2001 changed the system of international relations radically and posed a serious challenge to the same foundations of the world legal order in which the IAEA is a significant actor. The present article aims to provide the reader with a clear idea of the role and work of the IAEA and its safeguards system in the field of nuclear non-proliferation verification as well as the current challenges to the international safeguards regime. It is thus hoped that the concepts developed in this work may contribute to a better understanding and analysis of international conflicts involving present or potential nuclear proliferation threats.

Key words author: IAEA; nuclear safeguards; nuclear verification; non-proliferation; NPT; nuclear-weapon-free zones; safeguards agreements.

Key words plus: IAEA; nuclear safeguards; nuclear verification; non-proliferation; NPT; nuclear-weapon-free zones; safeguards agreements.

EL SISTEMA DE SALVAGUARDIAS DEL ORGANISMO INTERNACIONAL DE ENERGÍA ATÓMICA

RESUMEN

Habiéndole sido encomendada la responsabilidad de establecer y administrar el sistema internacional de salvaguardias con el

fin de asegurar que la energía nuclear no fuera usada con fines militares, el Organismo Internacional de Energía Atómica (en adelante "OIEA" o "la Agencia") constituye un elemento clave del sistema internacional para el mantenimiento de la paz y la seguridad mundiales. A pesar del entusiasmo inicial motivado por la creación del OIEA, tuvieron que pasar varios años para que el sistema de salvaguardias de la Agencia fuera aceptado y aplicado de manera amplia. Desde el principio el sistema de salvaguardias evolucionó a la par que el progreso de la tecnología nuclear y, lo que es más importante, a la luz del desarrollo del contexto geopolítico y del compromiso mostrado por la comunidad internacional en circunstancias críticas. Así, de la misma manera en que el descubrimiento del programa nuclear clandestino iraquí después de la Guerra del Golfo de 1990-1991 dejó graves desafíos para el sistema de salvaguardias, el OIEA está actualmente enfrentando dos conflictos internacionales muy serios que involucran a Estados con presuntas ambiciones nucleares: la República Popular Democrática de Corea (en adelante "Corea del Norte" o "RPDC") y la República Islámica de Irán (en adelante "Irán"). Además, los eventos del 11 de septiembre de 2001 cambiaron radicalmente el sistema de relaciones internacionales y constituyeron un grave desafío para los mismos fundamentos del orden jurídico mundial, en el cual el OIEA es un actor relevante. El presente artículo pretende brindar al lector una clara noción del rol y labor del OIEA y de su sistema de salvaguardias en el ámbito de la verificación de no proliferación nuclear, así como de los desafíos actuales al régimen de salvaguardias internacionales. Se espera con ello que los conceptos desarrollados en este trabajo puedan contribuir a una mejor comprensión de los conflictos internacionales que involucren amenazas actuales o potenciales de proliferación nuclear.

Palabras clave autor: *OIEA; salvaguardias nucleares; verificación nuclear; no proliferación; Tratado de No*

Proliferación Nuclear; zonas libres de armas nucleares; acuerdos de salvaguardias.

Palabras clave descriptor: *control de armas nucleares; zonas libres de armas nucleares; armas atómicas (derecho internacional).*

Summary: I. The Nature and the Role of the IAE.- II. The Purpose of Agency Safeguards.- III. The Legal Framework of the Agency's Safeguards System.- A. The IAEA Statute.- B. The Treaty on the Non-Proliferation of Nuclear Weapons.- C. Regional and Bilateral Non-Proliferation Commitments.- D. Safeguards Agreements.- 1. Comprehensive Safeguards Agreements.- 2. The Additional Protocol to a CSA.- 3. Item-Specific Safeguards Agreements.- 4. Voluntary Offer Safeguards Agreements and Other Safeguards Instruments.- IV. Implementing Safeguards Measures.- V. Enforcing Compliance with Safeguards Obligations.- VI. Challenges to the IAEA's Safeguards System.- Conclusion.- Bibliography.

I. THE NATURE AND ROLE OF THE IAEA

Being the final outcome of the "Atoms for Peace" initiative proposed by the United States' (hereinafter "US") President Dwight D. Eisenhower¹, the IAEA was set up in 1957² as an independent intergovernmental organization for universal³ scientific and technical cooperation in the nuclear field⁴. Thus, the Agency was

1 Speech addressed by the US President Eisenhower on 8 December 1953 to the 470th Plenary Meeting of the United Nations (hereinafter "UN") General Assembly, text available at http://www.iaea.org/About/history_speech.html

2 The IAEA was established by Article I of its Statute, 276 UNTS 3. The Statute of the International Atomic Energy Agency (hereinafter, "the Statute" or "IAEA Statute") was approved on 23 October 1956 and came into force on 29 July 1957.

3 Regional organizations in the field of atomic energy have also been created. E.g. the European Atomic Energy Community (hereinafter "EURATOM") in the European Union (hereinafter "EU").

4 The IAEA is not a UN specialized agency within the meaning and scope of Articles

ascribed with the mission of promoting and spreading the benefits arising from the peaceful uses of nuclear energy throughout the world⁵ with “due consideration for the needs of the under-developed areas of the world”⁶.

In view of the dual nature of atomic energy (i.e. for peaceful and military uses), the IAEA's founders expressly provided that in pursuing the above mentioned objective the Agency should ensure that its assistance would not be used for furthering military purposes⁷. Nuclear science and technology developed at fast rates during the first part of the twentieth century and the first handmade atomic explosion by the US in 1945 gave it a major impulse⁸. The bombing of the Japanese cities of Hiroshima and Nagasaki shortly after the first nuclear test⁹ made public to the whole world both the

57 and 63 of the UN Charter. In fact, the Agency has neither signed an agreement with the UN Economic and Social Council (hereinafter “ECOSOC”) nor is required to report to that body the same way specialized agencies are requested to do. This may be explained by the fact that the IAEA's mandate goes beyond the mere pursuance of economic and development objectives since its activities are intimately linked to peace and security concerns. In consequence, although the IAEA is part of the UN legal system (this is reflected for instance in Article III.B.1 of the Statute), it is an autonomous organization and reports annually to the General Assembly and to the Security Council whenever in connection with its activities it finds that international peace and security are endangered. Its relationship with the UN is regulated by the Agreement Governing the Relationship Between the United Nations and the International Atomic Energy Agency, IAEA Doc. INFCIRC/11, 1959.

5 IAEA Statute, Article II, 276 UNTS 3.

6 IAEA Statute, Article III.A.2, 276 UNTS 3.

7 IAEA Statute, Article II, 276 UNTS 3. In fact, nuclear cooperation within the IAEA's framework is based on three main pillars, namely: safeguards and verification, safety and security, and science and technology. It must be noted that the present article will address the safeguards and verification function only. For a brief description of the other IAEA's functions, see Article III of the IAEA Statute and the Agency's website, available at www.iaea.org For a broader view of the said functions, see David Fisher, *History of the International Atomic Energy Agency: The First Forty Years* (International Atomic Energy Agency, Vienna, 1997).

8 On 16 July 1945 in Alamogordo, New Mexico, for the first time the US successfully exploded a nuclear weapon. The test was conducted as part of the Manhattan Project secretly led by the US in collaboration with the British government and exiled European scientists during World War II.

9 The cities of Hiroshima and Nagasaki were bombed on 6 and 9 August 1945 respectively.

so far unknown power of atomic energy and the fatal consequences that its military use posed to mankind. Given the break of the alliance built among the major powers during (and because of) World War II and the beginning of the Cold War, it was reasonable to believe that the domain of the atomic technology (both its military and peaceful dimensions) by the US would spark similar nuclear projects by its competing powers (particularly the Union of Soviet Socialist Republics - hereinafter "USSR") which in the end may lead to a worldwide nuclear arms race. In view of this context, it was conceived that through the promotion of international cooperation in the peaceful uses of atomic energy the IAEA would make sure that nuclear energy and technology would not be diverted to military purposes. This vision was based on the later proven false premise that the international share of nuclear materials and technology for civil purposes through an international organization endorsed with an international system of control and verification would discourage and inhibit States from pursuing nuclear weapons¹⁰. Accordingly, the Agency assumed the responsibility of establishing and administering an international system of nuclear safeguards with the main purpose of ensuring that atomic energy would not be diverted to military purposes¹¹.

The IAEA was intended to be 'a receiver, distributor, broker and safeguarder of nuclear materials'¹² and a "nuclear clearance house", carrying out at the same time a function of accountancy in respect to nuclear material and technology and performing a role of international guarantor of their peaceful use¹³. In this sense, and despite some deficiencies appointed to the safeguards system, the IAEA is the key international organization responsible for verifying States' compliance with the non-proliferation

10 For further information on the background and history of the IAEA, see Fisher, *supra*, note 7; Lothar Wedekind, Ed., *Then and Now: The IAEA Turns Forty*, 39/3 *IAEA Bulletin*, 1997.

11 IAEA Statute, Article III.A.5, 276 UNTS 3.

12 Fisher, *supra*, note 7, 35.

13 For a critical appraisal of the effective performance of this role, see Paul C. Szasz, *IAEA Safeguards for NPT*, 5(3) *RECIEL*, 239-240 (1996); Fisher, *supra*, note 7.

commitments undertaken in the several international agreements to which they are parties. Playing this role, the Agency becomes a key component of the international system of peace and security. Hence, it is in the high interest of the international community to ensure the success and the efficient work of the international nuclear safeguards system.

II. THE PURPOSE OF AGENCY SAFEGUARDS

Agency safeguards¹⁴ are a central element of the nuclear non-proliferation regime¹⁵ and the IAEA's mission of verifying that nuclear energy is used solely for peaceful purposes. Safeguards are means applied by the IAEA for verifying that States comply with the nuclear non-proliferation commitments they assumed on international agreements. Consequently, both the legal obligation to be subject to safeguards as well as the nature and scope of the measures to apply stem from and are dependent on the international instruments to which the State involved is a party. In any case, safeguards measures aim to ensure that nuclear material¹⁶ in peaceful nuclear activities placed under the IAEA safeguards regime will not be diverted to military purposes (particularly to developing nuclear weapons or other nuclear explosive devices). Put simply in words of the IAEA Director General, Dr. Mohamed ElBaradei: "through the process of independent verification, [safeguards] enable the IAEA to provide credible assurance that

14 The present article is confined to the IAEA's safeguards system; nuclear safeguards established and administered by other international organizations with analogous purposes (e.g. EU safeguards applied by EURATOM) are not part of this analysis.

15 IAEA Department of Safeguards, IAEA *Safeguards: Staying Ahead of the Game*, 5 (International Atomic Energy Agency, Vienna, 2007).

16 By "nuclear material" is meant any source or any special fissionable material as defined in Article XX of the IAEA Statute (i.e. material potentially suitable for manufacturing nuclear weapons, including uranium-233, uranium-235 and plutonium-239). See, for instance, The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, para. 1, IAEA Doc. INFCIRC/153 (Corrected), 1972.

States are keeping to their nuclear non-proliferation commitments - or to ‘sound the alarm’ if they are not doing so”¹⁷. Now, what are the non-proliferation undertakings which entail the supervisory monitoring machinery of the IAEA? Answering this question involves an overview of the legal framework on which Agency safeguards are based and applied. This task is addressed next.

III. THE LEGAL FRAMEWORK OF THE AGENCY’S SAFEGUARDS SYSTEM

A. THE IAEA STATUTE

On top of the safeguards regime is the IAEA Statute which confers the Agency with the mandate of establishing and administering the safeguards system¹⁸. Pursuant to Article III.A.5 of the Statute, the Agency is authorized to apply safeguards in two sets of circumstances, namely: when the Agency makes available nuclear material, services, equipment, facilities and/or information, and when the application of safeguards has been requested by the parties to any bilateral or multilateral agreement or unilaterally by any State. It is important to note that the statutory powers conferred on the Agency are not self-enforcing¹⁹ and the consent of the State expressed in another international instrument is a legal requirement for the application of safeguards measures; i.e. mere membership to the IAEA is not enough for a State to be subject to safeguards²⁰. The first case referred to *supra* was drafted on the premise that the main bulk of international nuclear assistance would be channelled through the so-called “Agency projects”²¹. Indeed, Article XI of the Statute makes the provision of an Agency-sponsored project conditional on the adoption of an agreement between the IAEA and

17 IAEA Department of Safeguards, *supra*, note 15, 5.

18 IAEA Statute, Article III.A.5, 276 UNTS 3.

19 Fisher, *supra*, note 7, 456.

20 In fact, the IAEA *itself is not* a non-proliferation regime, since the Statute does neither prohibit its members from developing nuclear weapons nor impose on them full-scope safeguards. See Szasz, *supra*, note 13, 244.

21 IAEA Statute, Article XI, 276 UNTS 3.

the State interested in nuclear assistance. Such an agreement shall include (among other issues) an undertaking by the said member forswearing the use of the Agency's assistance for military purposes while binding the project to safeguards measures²². As regards the second case, the Statute envisaged that safeguards may be applied to parties to an international agreement binding them to IAEA verification. This is the case of the non-proliferation treaties²³ and the bilateral nuclear cooperation agreements²⁴. States may also freely and unilaterally decide to abide to Agency safeguards²⁵. Finally, Article XII of the Statute sets out the fundamental framework for implementing safeguard measures.

B. THE TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

Of key relevance for the consolidation of the Agency's safeguards system and for carrying out nuclear verification worldwide has been the adoption of non-proliferation treaties under which their parties have undertaken the fundamental commitment not to acquire or otherwise manufacture nuclear weapons or other nuclear explosive devices. Besides, instead of providing their own autonomous safeguards system, non-proliferation regimes rely on the IAEA safeguards system for verifying that States parties to such treaties comply with their substantive undertakings. By this, non-proliferation instruments have made a major contribution to strengthen the Agency's safeguards system and have given a major impulse to the spread of safeguards throughout the world.

Now, horizontal non-proliferation may be based on universal, regional or bilateral commitments. The Treaty on the Non-Proliferation of Nuclear Weapons - also known as the Non-Proliferation Treaty (hereinafter "NPT")²⁶ - is the universal non-proliferation

22 IAEA Statute, Article XI.F.4, 276 UNTS 3.

23 Described *infra*.

24 Referred to *infra*.

25 Referred to *infra*.

26 729 UNTS 161. The NPT opened for signature in 1968 and came into force in 1970; in accordance with Article X.2 of the Treaty a conference of the parties took

instrument and without a doubt the cornerstone of the entire nuclear non-proliferation regime²⁷. It is also the fundamental legal source for implementing IAEA safeguards measures.

The commitments arisen from the Treaty are based on the formal acknowledgement of two different kinds of parties. On the one hand, there are the nuclear-weapon States (hereinafter “NWS”)²⁸ which have neither been banned from possessing and manufacturing nuclear weapons nor are legally subject to safeguards measures²⁹. On the other hand, the rest of the parties to the Treaty are the so-called Non-Nuclear-Weapon States (hereinafter “NNWS”)³⁰ which expressly renounce nuclear proliferation³¹. Moreover, NNWS have

place in 1995 and decided to extend the NPT indefinitely. As of October 2007, 189 States are parties to the NPT; only four nations are not signatories of the Treaty, namely: India, Israel, North Korea and Pakistan. For a view of the parties to the NPT, see <http://disarmament2.un.org/TreatyStatus.nsf>

- 27 International Atomic Energy Agency, *IAEA Safeguards Glossary 2001 Edition*, 1 (International Nuclear Verification Series No. 3, International Atomic Energy Agency, Vienna, 2002, IAEA/NVS/3/CD).
- 28 Pursuant to Article IX.3 of the NPT, NWS are those States which have “manufactured and exploded a nuclear weapon or other explosive device prior to 1 January, 1967”, namely: the US, the Russian Federation, the UK, France and the Peoples’ Republic of China (hereinafter “PRC”).
- 29 The main obligations imposed on NWS are embodied in Article I of the NPT, pursuant to which NWS undertook “not to *transfer* to any recipient whatsoever nuclear weapons or other nuclear explosive devices...; and not in any case to *assist, encourage or induce* any non-nuclear-weapon State to manufacture or otherwise acquire” [emphasis added] such weapons or devices. Most importantly for the Agency’s safeguards system, NWS (as any other party to the NPT) are bound to make *any transfer* of nuclear material for peaceful purposes to *any non-nuclear-weapon State* (party to the NPT or not) conditional on the application of safeguards to the concerned material (NPT, Article III.2). The only non-proliferation requirement of the NWS is the loosely defined commitment to “*pursue negotiations in good faith* on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament” [emphasis added] (NPT, Article VI).
- 30 The NNWS are defined *contrario sensu*, i.e. NNWS are those States excluded from the scope of the definition of NWS provided for in Article IX.3 of the NPT.
- 31 Pursuant to Article II of the NPT, NNWS undertook not to receive, manufacture or acquire nuclear weapons and other nuclear explosive devices and not to receive any assistance in the manufacture of such devices. Naturally, the sharp different legal status between the NWS and the NNWS represents an intrinsic inequality, which was however recognized in view of the superior value ascribed to the benefits that non-proliferation of nuclear weapons would have on international

undertaken the obligation to subject “all source or special fissionable material in all peaceful nuclear activities within [their] territory, under [their] jurisdiction, or carried out under [their] control anywhere”³² to Agency safeguards, for the exclusive purpose of verifying compliance with the non-proliferation commitments laid down in the Treaty. With this view NNWS shall negotiate and conclude an agreement with the IAEA in accordance with its Statute and the international safeguards system³³. Although the IAEA is not a party to the NPT, it became the instrument for verifying that NNWS are living up to their non-proliferation commitments. On the other hand, the NPT acknowledged the “inalienable right” of all the parties (i.e. both NWS and NNWS) to “develop research, production and use of nuclear energy for peaceful purposes without discrimination”³⁴ and in conformity with the commitments they undertook in the Treaty. In full harmony with this provision, the NPT aims to promote cooperation among its parties in the field of peaceful use of nuclear energy³⁵.

It is also important to stress out that withdrawal from the NPT is surprisingly a relatively easy task (especially when bearing in mind the high values underlying the Treaty). Indeed, any party may withdraw from the NPT whenever it decides that “extraordinary events, related to the subject matter of [the] Treaty, have jeopardized the supreme interests of its country”³⁶ by merely giving notice to the rest of the parties and to the UN Security Council three months in advance³⁷. This is a most controversial provision, given

peace and security.

32 NPT, Article III.1, 729 UNTS 161.

33 NPT, Article III.1, 729 UNTS 161. Pursuant to Article III.4, NNWS shall enter into negotiations with the IAEA no later than the date of deposit of their instrument of accession; such agreements shall enter into force within eighteen months from the start of the negotiations.

34 NPT, Article IV.1, 729 UNTS 161.

35 See NPT, Article IV.2 and Article V, 729 UNTS 161.

36 NPT, Article X.1, 729 UNTS 161.

37 NPT, Article X.1, 729 UNTS 161. Withdrawing from the NPT is expressly acknowledged as an exercise of the national sovereignty of the withdrawing party and as such, a unilateral act of the State (not subject to the consent of the other parties or any international body).

the implications that withdrawal of a high number of parties or of a “critical” party or parties³⁸ may have on the non-proliferation regime and on the same international system of peace and security. The NPT drafters were well aware of this fact as they made sure that notice of withdrawal shall be made to the UN Security Council, i.e. to the UN body conferred with the primary responsibility for the maintenance of international peace and security³⁹. This was the case when North Korea withdrew from the NPT in 2003 bringing much concern to the international community and drawing the attention of the Council⁴⁰.

C. REGIONAL AND BILATERAL NON-PROLIFERATION COMMITMENTS

The NPT leaves open to the parties the possibility of concluding regional treaties aiming at assuring “the total absence of nuclear weapons in their respective territories”⁴¹. Thus, several regional non-proliferation treaties have been adopted⁴² with a view to denuclearize their respective regions through the establishment

38 For instance, NNWS which the international community suspects have nuclear weapons and arise serious concerns regarding the threat they pose to international peace and security.

39 See UN Charter, Article 24. A much debated question is if the Security Council may determine pursuant to Article 39 of the Charter that withdrawal from the NPT constitutes a threat to the peace, and if it is entitled to impose sanctions under Articles 41 and 42 on a withdrawing State. See Mohamed ElBaradei, *On Compliance with Nuclear Non-Proliferation Obligations*, 27(1) *Security Dialogue*, 22-23 (1996). The role of the Security Council in enforcing compliance with safeguards obligations will be addressed below.

40 North Korea withdrew from the NPT in 2003 after a failed withdrawal attempt in 1993. However, it is the only State ever to withdraw from the NPT.

41 NPT, Article VII, 729 UNTS 161.

42 The Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (known also as “the Tlatelolco Treaty”), 634 UNTS 326, entered into force in 1969; the South Pacific Nuclear Free Zone Treaty (known also as “the Rarotonga Treaty”), 1445 UNTS 177, entered into force in 1986; the Southeast Asia Nuclear Weapon-Free Zone Treaty (known also as “the Bangkok Treaty”), UNTS 33873, entered into force in 1997; and the African Nuclear-Weapon-Free Zone Treaty (known also as “the Pelindaba Treaty”), UN Doc. A/50/426, opened for signature in 1996 and not yet in force; the Central Asian Nuclear-Weapon-Free Zone Treaty, opened for signature in 2006 and not yet in force.

of so-called “nuclear-weapon-free zones” (hereinafter “NWFZ”). These instruments rely on the IAEA’s safeguards system for verifying full compliance with their obligations. Hence, treaties of this kind represent a further and rich source of Agency safeguards.

Another significant source of IAEA safeguards is found in bilateral nuclear cooperation agreements providing and regulating inter-state transfers of nuclear material, technology and/or assistance for peaceful purposes, which commonly entrust the IAEA for verifying that the transferred nuclear material will not be diverted to military purposes⁴³.

D. SAFEGUARDS AGREEMENTS

As mentioned previously, universal, regional and bilateral non-proliferation treaties are most commonly not accompanied with own independent safeguards systems and their parties accept to be subject to Agency safeguards in accordance with the Statute⁴⁴. Consequently, each party to the NPT and to the other relevant instruments is required to conclude an agreement with the IAEA with the purpose of regulating the effective implementation of safeguards in their sovereign territories or territories under their

43 Carlton Stoiber, Alec Baer, Norbert Pelzer & Wolfram Tonhauser, *Handbook on Nuclear Law*, 122 (International Atomic Energy Agency, Vienna, 2003). In fact, shortly after the foundation of the IAEA and strongly influenced by the Cold War, nuclear States preferred to circumvent the IAEA (and its “Agency projects”) choosing the bilateral way for international cooperation in the nuclear field. Most bilateral nuclear cooperation agreements embody the undertaking not to use nuclear assistance for furthering military purposes (particularly nuclear weapons) and make the provision of assistance conditional on the application of IAEA safeguards. This was the most common source of Agency safeguards in the 1950s and mid 1960s, i.e. before the adoption of the NPT spread the application of full-scope safeguards. For a broader view of the historical development of the IAEA’s safeguards system, see Fisher, *supra*, note 7, 243-324.

44 It should be pointed out that, alongside the international safeguards commitments, many States maintain their own regime of supervision of their nuclear activities and have their own State inspectors who carry out national safeguards obligations parallel to Agency personnel.

jurisdiction⁴⁵. These are the so-called “safeguards agreements” (also known as “safeguards implementation agreements”) concluded between a State or a group of States (in certain cases a regional or bilateral body) and the IAEA⁴⁶. Safeguards agreements with the Agency are also concluded by recipients of Agency projects and by NWS voluntarily accepting to safeguard some of their nuclear material. There are different types of safeguards agreements depending on the treaty on which they are negotiated. It is important to stress that the scope and depth of the safeguards measures to be applied and the efficiency of the Agency’s verification activities will depend in each case on the particular kind of safeguards agreement and whether there is an additional protocol⁴⁷ in force.

1. COMPREHENSIVE SAFEGUARDS AGREEMENTS

Safeguards instruments concluded by a NNWS party to the NPT or by a party to a NWFZ treaty are known as “comprehensive” or “full-scope” safeguards agreements (hereinafter “CSAs”)⁴⁸, since they subject to safeguards “*all* source or special fissionable material in *all* peaceful nuclear activities within [the] territory [of the State], under its jurisdiction or carried out under its control anywhere” [emphasis added]⁴⁹. What is more, the IAEA is entitled to assess

45 Note paragraphs 1 and 4 of Article III of the NPT described *supra*.

46 International Atomic Energy Agency, *supra*, note 27, 8.

47 Explained

48 Interestingly, since the obligation to be subject to full-scope safeguards flows directly from an international treaty independent of the IAEA Statute (e.g. the NPT or the Tlatelolco Treaty) which parties may not necessary be the same as those to the Statute, the Agency may in fact be applying safeguards to States which are non-members of the IAEA. Conversely, since there is no obligation under the IAEA Statute to enter into the NPT or any other non-proliferation treaty, some IAEA members (e.g. India, Israel and Pakistan) are not subject to the comprehensive safeguards required by those treaties (although they are subject to safeguards of the “item-specific safeguards agreement” type, explained *infra*). For a view of the current status of CSAs in force, see http://www.iaea.org/OurWork/SV/Safeguards/sir_table.pdf

49 IAEA Doc. INFCIRC/153 (Corrected), 1972, para. 1. However, nuclear material used for non-explosive military purposes (e.g. in nuclear submarines and ships) are exempted from the safeguards regime. Indeed, in full harmony with Article

both the “correctness” and the “completeness” of the reports made by a State party to a CSA regarding the type and quantity of the nuclear material under its jurisdiction. In other words, the “scope of a CSA is not limited to nuclear material *actually declared* by a State, but includes any nuclear material that *should have been declared* to the IAEA” [emphasis added]⁵⁰. CSAs are negotiated and concluded in light of the “Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons”⁵¹, an IAEA document approved by the Board of Governors⁵² whose structure and content must be adopted in CSAs.

2. THE ADDITIONAL PROTOCOL TO A CSA

Although safeguards implemented under CSAs are called “comprehensive” (as explained *supra*), CSAs do not empower the IAEA with the degree of access rights and information-gathering capability necessary for giving credible and effective assurances that the State concerned is declaring *all* its nuclear material and activities. This was acknowledged as a most serious loophole in the IAEA’s safeguards system and was raised as a consequence of the unveiling of the Iraqi clandestine nuclear weapons programme in the aftermath of the 1990-1991 Gulf War⁵³. By the time of the war Iraq had been carried out a peaceful nuclear programme which was placed under comprehensive safeguards and was subject to continuous monitoring by the IAEA⁵⁴. However, in parallel with these legal and safeguarded

III.1 of the NPT, paragraph 1 of the cited document provides that safeguards will be implemented with “the exclusive purpose of verifying that such material is not diverted to *nuclear weapons or other nuclear explosive devices*” [emphasis added].

50 International Atomic Energy Agency, *supra*, note 27, 8.

51 IAEA Doc. INFCIRC/153 (Corrected), 1972.

52 See the IAEA Statute, Article VI, 276 UNTS 3.

53 For a broader view of the implications of the discovery of the Iraqi clandestine nuclear weapons programme for the IAEA’s safeguards system, see Fisher, *supra*, note 7, 273-287.

54 Iraq became a party to the NPT in 1969 and concluded a CSA with the IAEA in 1972.

nuclear activities the Iraqi government had been conducting a secret nuclear-weapons programme in breach of its CSA. In fact, IAEA inspectors were able to discover the clandestine nuclear weapons programme only because of the broad verification powers which were part of the mandate that the UN Security Council conferred to the Agency for searching weapons of mass destruction (hereinafter “WMD”) in Iraq⁵⁵. Thus, while comprehensive safeguards applied in Iraq had been able to ensure that *declared* nuclear material was not being diverted from peaceful purposes, they were incapable of detecting that *undeclared* material was being used for developing nuclear weapons. This case exposed the deficiencies of full-scope safeguards regarding *undeclared* nuclear material and activities. As a consequence of the Iraqi case, the IAEA focused on examining different means for strengthening the effectiveness and improving the efficiency of the safeguards system⁵⁶. Several measures were identified for strengthening the system; while some of them were authorized by the existing legal framework (i.e. IAEA Doc. INFCIRC/153 (Corrected), 1972) others (e.g. environmental sampling) required the adoption of a new legal basis. As a result, the IAEA Board of Governors approved in 1997 the “Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards”⁵⁷ (hereinafter “the Model Additional Protocol” or “the Model Protocol”). Parties to the NPT and to other non-proliferation treaties may (but are not obliged to) conclude with the Agency a protocol additional (hereinafter “additional protocol” or “protocol”) to their CSA in force which will be negotiated in light of the Model Protocol approved by the Board⁵⁸. Under additional protocols, Agency inspectors have expanded access

55 See UN Security Council Resolution 687 (1991), S/Res/687, and concurrent Resolutions. For a broader view of the IAEA verification activities in Iraq under the mandate of the UN Security Council, visit the website of the IAEA Iraq Nuclear Verification Office, available at <http://www.iaea.org/OurWork/SV/Invo/index.html>

56 The IAEA efforts to strengthen the safeguards system in the aftermath of the 1990-1991 Gulf War are known as the “Programme 93 + 2”.

57 IAEA Doc. INFCIRC/540 (Corrected), 1997.

58 For a view of the current status of additional protocols in force, see http://www.iaea.org/OurWork/SV/Safeguards/sir_table.pdf

rights to information and sites when conducting in-field inspections; procedures for designating inspectors are simplified; information provided in State declarations is broader (comprising the whole nuclear fuel cycle of the State concerned⁵⁹); environmental sampling is expressly envisaged; and other strengthening measures aimed at endorsing the IAEA with more inquisitive powers are provided. By making the timely detection of undeclared nuclear material more likely, strengthened safeguards measures applied pursuant to an additional protocol to a CSA constitute a major contribution to the maintenance of international peace and security. In fact, “[i]t is only for States with both a comprehensive safeguards agreement and an additional protocol in force that the Agency has the verification tools it needs to provide credible assurance of the absence of undeclared nuclear material and activities”⁶⁰. Safeguards measures carried out pursuant to a CSA and an additional protocol are known as “Integrated Safeguards”. “The term ‘integrated safeguards’... refers to the optimum combination of all safeguards measures available to the Agency under comprehensive safeguards agreements and additional protocols, which achieves maximum effectiveness and efficiency within available resources”⁶¹. In case of conflict between the provisions of a CSA and those of an additional protocol, the provisions of the protocol prevail⁶².

3. ITEM-SPECIFIC SAFEGUARDS AGREEMENTS

Unlike a CSA, an “item-specific safeguards agreement” covers neither all the nuclear material nor all the nuclear activities within a State, but applies only to those nuclear items which have been expressly specified in the agreement. These instruments, known also as “INFCIRC/66/Rev.2-type agreements” (named after the IAEA document pursuant to

59 I.e. from uranium mining, research and development, to nuclear waste.

60 International Atomic Energy Agency, *The Safeguards System of the International Atomic Energy Agency*, 2, available at http://www.iaea.org/OurWork/SV/Safeguards/safeg_system.pdf

61 International Atomic Energy Agency, *supra*, note 60, 14.

62 IAEA Doc. INFCIRC/540 (Corrected), 1997, Article 1.

which they are negotiated⁶³), were very common before the adoption of the NPT made the conclusion of CSAs mandatory to all NNWS parties. As a consequence of the spread of CSAs worldwide only few States are still parties to item-specific safeguards agreements⁶⁴, namely those countries that are not parties to the NPT and do not have a CSA in force: India, Israel and Pakistan.

4. VOLUNTARY OFFER SAFEGUARDS AGREEMENTS AND OTHER SAFEGUARDS INSTRUMENTS

All NWS parties to the NPT⁶⁵ have concluded “voluntary offer safeguards agreements” with the IAEA placing some of their nuclear material under international safeguards. As seen *supra*, the NPT does neither ban NWS from manufacturing or possessing nuclear weapons nor impose on them safeguards commitments. It follows that the conclusion of safeguards agreements by NWS has been the outcome of free and unilateral decisions taken by such States most probably because of political concerns⁶⁶. As a consequence, unlike the safeguards instruments described previously, there is no model to be followed when negotiating voluntary offer safeguards agreements, and the scope of the measures to be applied as well as the items placed under safeguards varies from case to case.

The Agency’s safeguards legal framework is finally made up of many other international instruments and IAEA documents, such as the “Small Quantities Protocol”, the “Cooperation Protocol” and the “Subsidiary Arrangement”. The analysis of these documents is beyond the purpose and scope of the present article⁶⁷.

63 The Agency’s Safeguards System (1965, as Provisionally Extended in 1966 and 1968), IAEA Doc. INFCIRC/66/Rev.2, 1968.

64 Pursuant to paragraph 24 of the IAEA Doc. INFCIRC/153 (Corrected), item-specific safeguards agreements shall be suspended while a CSA is in force.

65 I.e. the US, the Russian Federation, the UK, France and the PRC.

66 It is argued that by concluding voluntary offer safeguards agreements with the Agency, NWS aim “to allay concerns that the application of IAEA safeguards could lead to commercial disadvantages for the nuclear industries of non-nuclear-weapon States”. International Atomic Energy Agency, *IAEA Safeguards Glossary 2001 Edition, op.cit.*, page 9.

67 For further information on this issue, see Stoiber et al., *supra*, note 43; International

IV. IMPLEMENTING SAFEGUARDS MEASURES

The implementation of safeguards measures begins with the establishment and administration of a system of accounting for and control of the nuclear items which have been placed under safeguards pursuant to the particular kind of agreement that the State concerned has in force with the Agency⁶⁸. Accountancy is basically compounded by different sorts of declarations (or reports) made by the national authorities to the IAEA in accordance with their corresponding safeguards obligations⁶⁹. Declarations are based on records of material kept by the State⁷⁰ and convey to the Agency safeguards-relevant information, such as the design of nuclear facilities as well as the type, quantities and flows of nuclear material subject to safeguards.

On the other hand, the Agency has been ascribed with the task of verifying the findings of State reports with the purpose of drawing up independent conclusions regarding States' compliance with their safeguards obligations⁷¹. Independent verification becomes essential for drawing a credible conclusion that a State is not diverting safeguarded material from peaceful uses and is not conducting a clandestine nuclear weapons programme. To this end, the IAEA carries out a number of measures for controlling the correctness and completeness of State declarations, i.e. for making sure that accountancy reports are accurate and include all nuclear items required to be declared pursuant to the safeguards agreement in force. In this sense, inspections carried out in the field by IAEA inspectors⁷² are the most effective measures.

Atomic Energy Agency, *supra*, note 27; and visit the IAEA website available at www.iaea.org

68 E.g. IAEA Doc. INFCIRC/153 (Corrected), 1972, paras. 7, 29 *et seq.*

69 See IAEA Statute, Article XII.A.4, 276 UNTS 3. In the same line, see IAEA Doc. INFCIRC/153 (Corrected), 1972, paras. 59-69.

70 See IAEA Statute, Article XII.A.3, 276 UNTS 3. In the same line, see IAEA Doc. INFCIRC/153 (Corrected), 1972, para. 61.

71 E.g., IAEA Doc. INFCIRC/153 (Corrected), 1972, para. 7.

72 See IAEA Statute, Article XII.A.6 and C, 276 UNTS 3. In the same line, see IAEA Doc. INFCIRC/153 (Corrected), 1972, paras. 70-89.

Inspections involve a number of in-field verification activities, such as reviewing accounting and operating records in light of national reports, measuring nuclear material, conducting environmental sampling as well as checking containment (e.g. seals on nuclear material containers) and surveillance devices (e.g. cameras in key areas of nuclear locations). Besides inspections and other in-field activities, the IAEA makes use of a vast array of information which may be obtained from open sources⁷³ or solicited from States and international organizations. Governments may also provide information on an unsolicited basis⁷⁴.

It is important to recall that the material and locations subject to monitoring as well as the scope and depth of the safeguards measures to be applied and, consequently, their effectiveness in providing credible assurances regarding a State's compliance with its safeguards commitments, depend in each case on the particular type of safeguards agreement in force. Thus, although IAEA verification activities are performed in States subject to any kind of safeguards agreement, a special emphasis to such measures is given in States bound by both a CSA and an additional protocol⁷⁵.

V. ENFORCING COMPLIANCE WITH SAFEGUARDS OBLIGATIONS

Enforcing compliance with international obligations becomes most problematic in international law due to the particular features of the system⁷⁶. The international legal system is characterized by horizontal

73 E.g. scientific publications, news media, commercial satellite images, etc.

74 E.g. national intelligence information. However, the Agency performs a critical analysis of the information provided by States in an unsolicited manner before acting on its basis, with a view to ensure the objectiveness and credibility of such information. See International Atomic Energy Agency, *supra*, note 60, 10.

75 As said before, additional protocols to CSA are the only instruments that provide the IAEA with the necessary tools for drawing a complete picture of a State's nuclear programme enabling the Agency to reach a credible conclusion that a State is keeping to its non-proliferation commitments.

76 For further information on this topic, see ElBaradei, *supra*, note 39, 17-26; James F. Keeley, *Compliance and the Non-proliferation Treaty: Developments in Safeguards and Supply Controls*, in Canadian Council on International Law & The Markland Group, Eds., *Treaty Compliance: Some Concerns and Remedies*,

relations among sovereign States and the absence of central legislative and enforcement mechanisms. Unlike national regimes where there is a clear distinction between the State (entrusted with the mission of laying down and ensuring compliance with the law) and the citizens (passive subjects of the law), in international law there is no such separation and the border line between the active and passive subjects of the international rules becomes blurred. In such a context, States are highly reluctant to set up international monitoring schemes and independent enforcement bodies⁷⁷. As a consequence, collective enforcement measures applied effectively pursuant to a defined international legal framework in case of breach of international obligations is an exception in the current state of international law.

When bearing in mind this reality, the IAEA and its safeguards system represent in one sense a major step in the development of international law and international relations. In fact, States parties to the NPT and to NWFZ have freely accepted to be subject to international control in a most strategic and highly critical area of their national sovereignty: nuclear development. Although international monitoring is not a novelty of the IAEA's safeguards regime⁷⁸, nuclear energy is so intimately linked to the fundamental interests of a State (particularly security and defence as well as economic and social development) that the free acceptance of international supervision into matters that affect so deeply national sovereignty, make the Agency's safeguards system unique and highly valuable. This fact shows that the international community is well aware of the serious implications that the breach of non-proliferation commitments has for the international legal system and, most importantly, for the maintenance of international peace and security.

21-34 (Kluwer Law International, London-The Hague-Boston, 1998).

77 As the IAEA's Director General, Mohamed ElBaradei, expressed, "[t]his is essentially because the states end up interchangeably being both defendant and judge, with frequently conflicting judgements and divergent interests". ElBaradei, Mohamed, *op.cit.*, page 17.

78 For instance, international supervision is a key element of the universal and regional systems for the protection of human rights.

However, from another point of view, the IAEA *itself* has not been endorsed with efficient legal tools for enforcing compliance with safeguards obligations and for taking punitive action against non-complying States⁷⁹. In fact, the powers entrusted in this matter to the Agency are very limited: In case the Agency finds that a country is in breach of its safeguards obligations, it may suspend or terminate any technical assistance that it may be providing to that State and may withdraw any material and equipment made available to it as part of an Agency project⁸⁰. However, it is highly unlikely that States with nuclear weapons ambitions would ever resign to such goals only because of the threat to be subject to this sanction⁸¹. The suspension of “any non-complying [IAEA] member from the exercise of the privileges and rights of membership”⁸² also proved to be an inadequate means for enforcing compliance with safeguards obligations. The inefficiency of these sanctions became clear when the suspension of all IAEA non-medical technical assistance to North Korea in June 1994⁸³ was not only incapable of bringing that country into compliance with its safeguards commitments but was also followed by the DPRK’s decision to withdraw its membership from the Agency⁸⁴.

Nonetheless, the described shortages in enforcing safeguards obligations are somehow consistent with the nature of the IAEA (i.e. an essentially technical organization based on international cooperation) and with the high goals affected by and values involved in non-proliferation matters (i.e. international peace and security). That is to say, the primary responsibility for the

79 Fisher, *supra*, note 7, 458.

80 IAEA Statute, Article XII.A.7 and C, 276 UNTS 3.

81 For a brief reference to the false premises on which the IAEA’s safeguards system was founded, which may help to explain why this enforcement mechanism has not been effective, see Szasz, *supra*, note 13, 239.

82 IAEA Statute, Article XII.C, 276 UNTS 3.

83 This decision was taken after the IAEA Board of Governors concluded that the DPRK was in non-compliance with its CSA.

84 The DPRK gave notice of its withdrawal from the Agency on 13 June 1994. For further information of the North Korean nuclear case, visit the following IAEA website <http://www.iaea.org/NewsCenter/Focus/IaeaDprk/index.shtml>

maintenance of international peace and security has been conferred by the international community on a political body, namely: the UN Security Council⁸⁵. For accomplishing this mission the Council was granted with broad enforcement powers⁸⁶ comprising coercive measures of military⁸⁷ and non-military kinds⁸⁸. In full accordance with the structure of the contemporary international legal system, the IAEA Statute provides that non-compliance cases and any question falling under the competence of the UN Security Council shall be reported to the Council⁸⁹. It was thus acknowledged that the Security Council is the only body endorsed with the legal instruments for enforcing compliance with IAEA safeguards obligations in the most efficient manner and that in the end the Agency will always depend on the Council for effective remedies. “[H]ence it is in the Board’s report to the Council and the consequent action that the Council takes that one must look for effective enforcement and possible sanctions”⁹⁰. Unfortunately, the political nature of the Council (reflected particularly in the veto right of its permanent members) has been in some instances an obstacle when action of the Council was essential for enforcing compliance with safeguards agreements⁹¹. The end of the Cold War in the early 1990s was called a breakthrough to the action of the Security Council and a major impulse to the active role of that body in the actions against Iraq after the invasion of Kuwait in 1990. In this context one may understand the statement made by the Security Council’s President on behalf of the Council’s members that the “proliferation of all weapons of mass destruction

85 UN Charter, Article 24.

86 See UN Charter, Articles 24(2), 39 and concurrent Articles.

87 UN Charter, Article 42.

88 UN Charter, Article 41.

89 IAEA Statute, Articles III.B.4 and XII.C, 276 UNTS 3. In the same line, see IAEA Doc. INFCIRC/153 (Corrected), 1972, para. 19. Cases of non-compliance shall be reported also to all IAEA members and to the UN General Assembly.

90 Fisher, *supra*, note 7, 458.

91 For a view of the role of the Security Council in enforcing IAEA safeguards obligations, see ElBaradei, *supra*, note 39, 22 to 24; Fisher, *supra*, note 7, 458-460.

constitutes a threat to international peace and security”⁹² and that, in respect to nuclear proliferation, the “members of the Council will take appropriate measures in the case of any violations notified to them by the IAEA”⁹³. However, despite the end of the Cold War, struggle for national interests among the permanent members of the Council still affect the collective action of the international community in matters of international peace and security (including breaches of non-proliferation commitments). “This is an inherent deficiency of any security system created by nation States, whose actions reflect changing perceptions of where their interests lie”⁹⁴. Unfortunately, when the collective system of international peace and security fails to address a perceived threat, some members of the international community may be tempted to recourse to unilateral means (which may even involve the use of armed force) thus putting the same international legal system under challenge. It now becomes clear the relevance of ensuring the effective action of the Security Council when the IAEA enforcement mechanism may fail.

VI. CHALLENGES TO THE IAEA’S SAFEGUARDS SYSTEM

Since its foundation in 1957 the IAEA and its safeguards system have been constantly facing threats and challenges of different kinds and degrees of complexity and seriousness⁹⁵. This is not surprising, given the particular features of the subject-matter under the Agency’s mandate and the sensitiveness it raises on national governments. In fact, this article has already stressed the indissoluble connection between nuclear energy and national

92 UN Security Council, Statement of the President of the Council, S/23500, concerning the responsibility of the Security Council in the maintenance of international peace and security, 31 January 1992.

93 UN Security Council, Statement of the President of the Council, S/23500, 31 January 1992.

94 Fisher, *supra*, note 7, 460.

95 As major landmarks, one may recall, for instance, the accident of Chernobyl in the Ukraine in 1986 and the unveiling of the Iraqi’s secret nuclear weapons programme in the early 1990s.

sovereignty (particularly, economic development and national security) as well as the implications of the dual nature of nuclear energy for world peace and security.

In addition, the international context (which is evolutionary by nature) is currently changing at rapid pace. Indeed, far from bringing a new era of world peace and stability the end of the Cold War came with new dilemmas and challenges to mankind. More recently, the 11 September 2001 terrorist attacks made clear to the world that threats to international peace and security may also come from non-state actors and that nuclear terrorism must not be ruled out. Globalization and the rapid evolution of technology may also facilitate illegal trafficking of nuclear material, technology and know-how, both to state and to non-state actors. States with arguably nuclear ambitions (e.g. Iran and North Korea) pose not only further difficult challenges to the IAEA's mandate regarding verification but also to the same international community. However, not all the challenges to the safeguards system are necessarily intrinsically negative or dangerous. Thus, the expected increase in demand of nuclear energy worldwide due to the steady growth of energy consumption, worries about energy security and multiple environmental concerns⁹⁶ may foster economic growth of both development and developing countries; however, it will also increase the Agency's workload and will put the existing verification resources (human, financial and technological) to a test.

Now, what would be the appropriate means for tackling these challenges? Dr. ElBaradei expressed that "[e]ffective verification must be supported by four essential elements: adequate legal authority; state-of-the-art technology; access to all relevant information; and sufficient human and financial resources"⁹⁷. First, as explained *supra*, it is only for States with a CSA and an additional protocol in force that the IAEA has the legal authority required

96 International Atomic Energy Agency, Statement to the Fifty-First Regular Session of the IAEA General Conference 2007 (Abridged Version) by the IAEA Director General Dr. Mohamed ElBaradei, 17 September 2007, available at <http://www.iaea.org/NewsCenter/Statements/2007/ebsp2007n014a.html>

97 International Atomic Energy Agency, *supra*, note 96.

for implementing safeguards measures in such a way as to provide credible assurance⁹⁸ about the peaceful nature of a State's nuclear programme as well as regarding the absence of undeclared nuclear facilities. It becomes thus essential for the Agency to promote the conclusion and ratification of additional protocols to CSAs by the vast majority of States. The IAEA's Director General recently emphasized the relevance of this matter to the General Conference in the following way:

“Just over half of the 162 States with safeguards agreements now have additional protocols in force... But I would not call this satisfactory progress. *More than 100 States have yet to conclude additional protocols, and 31 States party to the NPT have not even brought into force their required comprehensive safeguards agreements with the Agency* [emphasis added]. I repeat that without safeguards agreements, the Agency cannot provide any assurance about a State's nuclear activities, and without the additional protocol, the Agency cannot provide credible assurance regarding the absence of undeclared nuclear material or activity. *I would therefore urge all States who have not done so to bring into force a comprehensive safeguards agreement and an additional protocol* [emphasis added]”⁹⁹.

Second, given the rapid progress of technology and the constant evolution of the challenges to nuclear verification, it becomes essential that the Agency keeps updated in the latest verification techniques, equipment and methods. Third, it is only with enough financial and human resources that the Agency will be able to respond to all these challenges in an effective manner¹⁰⁰.

98 See Jill Cooley, *Credible Assurance to the International Community*, Special Symposium for the IAEA 50th Anniversary, “Global Challenges for the Future of Nuclear Energy and the IAEA”, 11 April 2007, available at <http://www-pub.iaea.org/MTCD/Meetings/PDFplus/2007/cn161/Presentations/Presentation%20material/Cooley.pdf>

99 International Atomic Energy Agency, *supra*, note 96.

100 Financial and human resources are not perceived as an immediate major concern through 2009 in the 2008-2009 budget, being anticipated to remain at the same level as in 2007. However, it should be noted that five planned new facilities subject to safeguards should begin operation in the 2008-2009 period. These new facilities could entail an additional inspection related cost of €1.8 million. Over the next 10 years this amount of inspection effort should be required on the average each year to accommodate over 180 new facilities projected for this

Naturally, resources are dependent on the adequate funding from the Agency's Members. What is more, given the evolving nature of the international context, "it is clear that the IAEA must ensure that its safeguards system is not only *effective and efficient*, but also *adaptable*, in order to continue to be able to address emerging challenges in a timely fashion"¹⁰¹. It has been thus acknowledged that "efforts to strengthen the safeguards system must be an ongoing process"¹⁰².

In the end, the means for providing the Agency with the elements (legal, technological, financial and human) necessary for fulfilling its mandate in an effective and efficient manner depend on the degree of compromise of the international community towards the high goals underlying the non-proliferation regime and towards the verification mission entrusted to the IAEA in the nuclear field. Finally, as expressed *supra*, verification efforts would be futile without a uniform and straightforward response of the international community (specifically through the UN Security Council) when safeguards commitments are breached (particularly when such breaches affect international peace and security). It becomes thus clear that responses from the Agency are not enough for facing nuclear challenges and that widespread and unequivocal States' cooperation becomes a *sine quanon* condition for ensuring an

period, the majority being power reactors. Taking into account recent high prices for crude oil, many States plans for future investment in nuclear power reactors and their associated processes may be expected to be recalibrated upwards. Finding and maintaining the human resources for these projected increases may become a substantial challenge for the Agency, unless these requirements can be countered by more reliance on such technical methods as remote monitoring which diminish the necessity of human presence at a safeguarded facility.

- 101 International Atomic Energy Agency, Statement by the Deputy Director General, Head of the Department of Safeguards, Mr. Pierre Goldschmidt, "Major Challenges Currently Facing the International Nuclear Non-Proliferation Regime", 25 September 2003, available at http://www.iaea.org/NewsCenter/Statements/DDGs/2003/goldschmidt_mPCA2003.shtml
- 102 International Atomic Energy Agency, *Strengthening the Effectiveness and Improving the Efficiency of the Safeguards System Including Implementation of Additional Protocols, 2* (Report by the Director General to the IAEA's General Conference - Fifty-first regular session -, 23 July 2007, GC(51)/8).

effective and efficient international safeguards system in benefit of world peace and security.

CONCLUSION

As an intergovernmental organization for universal scientific and technical cooperation in the nuclear field, the IAEA was set up in the 1950s as a response of the international community to the new challenges posed by the dual nature of atomic energy. It was emphasized in this article that by establishing and administering the international safeguards system with the purpose of ensuring that nuclear energy will not be used for furthering military purposes, the Agency constitutes a key element of the contemporary UN legal system and performs a fundamental role in the maintenance of international peace and security. The Agency fulfils this mission through independent and impartial verification of States' compliance with the non-proliferation commitments they undertook in the NPT and in other international instruments.

Nuclear verification is carried out through the implementation of safeguards measures pursuant to the legal authority conferred in each case on the Agency. As a consequence, the material, locations and activities subject to international monitoring as well as the nature, scope and depth of the safeguards measures to be applied are dependent on the corresponding legal source and on the particular type of safeguards agreement in force between the IAEA and the State concerned. In this respect, two major remarks were made. First, the NPT must be seen as the cornerstone of the entire nuclear non-proliferation regime and the fundamental legal source of Agency safeguards. By this, and despite criticism regarding the legal inequality existing between NWS and NNWS, the NPT has made a major contribution to strengthen the Agency's safeguards system and to spread nuclear safeguards throughout the world. Second, the article made clear that it is only for States with a CSA and an additional protocol in force that the IAEA has the legal authority required for implementing safeguards measures in such a way as

to provide credible assurance about the peaceful nature of a State's nuclear programme.

It was also expressed that implementing safeguards has never been free of difficulties and challenges. Despite the initial enthusiasm surrounding the foundation of the IAEA, it required several years for Agency's safeguards to be accepted and applied in a broad manner. In fact, the IAEA's safeguards system has been constantly facing threats and challenges. It was argued that this fact was a natural consequence of the dual nature of nuclear energy and the sensitivity of national governments to international control over domestic nuclear affairs. The commitment and support of the international community towards the Agency has been always essential for overcoming all major challenges.

It was finally argued that enforcing compliance with nuclear safeguards obligations can become most problematic and, because of the limited enforcement powers conferred on the Agency, it will be ultimately dependent on the cohesion and commitment showed by the members of the UN Security Council. Unfortunately, the inactivity of the Council motivated by conflicting interests among its members (particularly its permanent members) in circumstances threatening international peace may represent a serious obstacle for enforcing safeguards obligations. Moreover, when collective action is not possible, some States may be tempted to resort to unilateral measures in breach of the international legal regime. On the other hand, this problematic question (which is common to many other areas of international law) does not affect the praiseworthy fact that States agreed voluntarily to abide to international supervision in a most critical area of their national sovereignty.

All this leads to conclude that it is in the high interest of all States to ensure the success and the efficient work of the international nuclear safeguards regime and that, in the end, the effectiveness of the system will rely fundamentally on the commitment and support of the international community.

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