



# A Lexical History of the State-Level Concept and Issues for Today

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The views, judgments, and conclusions in this report are the sole representations of the author and do not necessarily represent either the official position or policy or bear the endorsement of the VCDNP.

Cover image: Overview of the 1383rd Board of Governors Meeting. IAEA Headquarters, Vienna, Austria, 15 September 2014. Photo Credit: Dean Calma/IAEA.

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# Abstract

The nuclear safeguards implemented by the International Atomic Energy Agency (IAEA), and the legal and institutional frameworks that support them, have undergone significant evolution since the IAEA's founding in 1957. Sometimes that evolution occurred in periods of relative calm, such as the adoption of the new model for small quantities protocols in 2005. Other times, safeguards evolved amidst a context of tension. An example of a tense evolution is the State-level concept (SLC) for safeguards, which became the focus of heated disagreement in 2012, when some IAEA Member States expressed discontent with the SLC and the IAEA Secretariat's communications about it. This sparked several years of back-and-forth on the SLC, including several reports by the Director General and extensive consultations between the Secretariat and the Member States. Despite these efforts, the SLC remains the subject of debate today.

This paper attempts to tell the story of the SLC, the development of safeguards at the State level and the history of safeguards more broadly through the lens of safeguards language and how it has evolved as a response to different stimuli. The paper also contains analysis of the most significant points of disagreement on the SLC and outstanding issues today. The hope is that this telling of the SLC story will demonstrate in a neutral way how the SLC came into being and, by telling the story in lexical terms, remove some of the toxic elements of the debate, including challenges to the IAEA's objectivity.

Key words: non-proliferation; safeguards; IAEA; State-level concept; integrated safeguards; Programme 93+2; open-source information.

# Introduction

The International Atomic Energy Agency (IAEA) has been implementing nuclear safeguards in States for more than five decades. During that time, the world has changed significantly. The bipolar world order into which the IAEA was born no longer exists, the pace of technological change has exponentially increased and many assumptions about safeguards, once taken as common fact, have been questioned and some turned on their heads.

As an international guardian that works to ensure peaceful nuclear technology remains peaceful, the IAEA with its safeguards system is one of the most important elements of the nuclear non-proliferation regime and underpins the credibility of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). Safeguards have evolved within the legal and institutional frameworks established by the IAEA Statute, the IAEA's policymaking organs and the roles requested of them by the States Parties to the NPT and nuclear-weapon-free-zone treaties<sup>1</sup>, and as "a function of states' security needs, and states' perceptions of the risks thereto."<sup>2</sup>

Some stages of that evolution took place in an atmosphere of relative calm, when innovators saw things that could be improved and were able to enact those changes. In other cases, the IAEA responded to a shock to the system. Some evolutions in the safeguards system drew critical attention of some IAEA Member States. Possibly no greater example of this exists in the twenty-first century than the State-level concept (SLC).

Discussions around the SLC became tense following disagreements that came to light in 2012. This paper attempts to demonstrate how the SLC and "State-as-a-whole" language entered the safeguards lexicon through a study of safeguards terminology, how it has changed and in response to what events. It then examines the period from 2012 to 2014, when the SLC discussion was at its peak, offers an analysis of the key issues raised during that debate and provides brief conclusions for today.

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<sup>1</sup> Tom Coppen, "Developing IAEA Safeguards: An Institutional Perspective on the State-level Concept," *Journal of Conflict and Security Law*, 29 April 2015. Available at: <https://academic.oup.com/jcsl/article-abstract/20/2/169/842065?redirectedFrom=fulltext>.

<sup>2</sup> Laura Rockwood, "Safeguards and Nonproliferation: The First Half-Century from a Legal Perspective," *Journal of Nuclear Materials Management*, Institute for Nuclear Materials Management (hereafter "INMM"), 2007.

# A Lexical History of Safeguards at the State Level

## Before the State Level

After the IAEA was founded in 1957, the safeguards it implemented were primarily based on what later became known as item-specific safeguards agreements. These agreements were concluded at the request of the State, usually at the insistence of a supplier State as a condition of supply, and covered only the material, equipment and facilities identified in the individual agreements.

One of the first safeguards documents (INFCIRC/26)<sup>3</sup> was designed for the application of safeguards to small reactors and was approved by the IAEA's Board of Governors (hereafter "the Board") in 1961.<sup>4</sup> The Board approved a revision of this document in 1964 to include large reactors.<sup>5</sup>

<sup>3</sup> International Atomic Energy Agency (hereafter "IAEA"), "The Agency's Safeguards," INFCIRC/26, 1961. Available at: <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1961/infcirc26.pdf>.

<sup>4</sup> Laura Rockwood, "Legal Framework for IAEA Safeguards", IAEA, page 11. Available at: [https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1608\\_web.pdf](https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1608_web.pdf).

<sup>5</sup> IAEA, "The Agency's Safeguards, Extension of the system to large reactor facilities," 1964. Available at: <https://www.iaea.org/sites/default/files/infcirc26a1.pdf>.

*The first meeting of the IAEA Board of Governors, 1957. Photo Credit: IAEA.*



By 1968, the Board had approved a completely redesigned safeguards document that included principles and procedures for reprocessing plants, conversion facilities and fuel fabrication facilities, as well as nuclear material contained within them (INFCIRC/66/Rev.2).<sup>6</sup>

Following the entry into force of the NPT in 1970, a new safeguards standard was born. Article III of the NPT obligates all non-nuclear-weapon States, as defined by the Treaty, to accept IAEA safeguards on “all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.”<sup>7</sup> This was later described as “full-scope safeguards”<sup>8</sup> in the IAEA context, and was subsequently termed “comprehensive safeguards.” In 1972, the Board approved INFCIRC/153, which constitutes the basis on which comprehensive safeguards agreements (CSAs) are still concluded today.<sup>9</sup>

In 1975, Director General Sigvard Eklund established the Standing Advisory Group on Safeguards Implementation (SAGSI) to provide advice on the technical aspects of safeguards.<sup>10</sup> One of SAGSI’s first tasks was to make recommendations in an annual report on the effectiveness of safeguards implementation.<sup>11</sup>

Director General Eklund submitted the first Safeguards Implementation Report (SIR) to the Board in 1977, covering safeguards implemented in the calendar year 1976.<sup>12</sup>

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<sup>6</sup> IAEA, “The Agency’s Safeguards System,” INFCIRC/66, 1965. <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1965/infcirc66.pdf>;

IAEA, “The Agency’s Safeguards System (1965, as provisionally extended in 1966),” INFCIRC/66/Rev. 1, 1967. Available at: <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1965/infcirc66r1.pdf>;

IAEA, “The Agency’s Safeguards System (1965, as provisionally extended in 1966 and 1968),” INFCIRC/66/Rev. 2, 1968. Available at: <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1965/infcirc66r2.pdf>.

<sup>7</sup> Treaty on the Non-Proliferation of Nuclear Weapons, 1970, Article III. Available at: <https://www.un.org/disarmament/wmd/nuclear/npt/text>.

<sup>8</sup> References to “full-scope safeguards” go back at least as far as 1976. See GC(XX)/OR.194, paragraph 54. Available at: [https://www.iaea.org/sites/default/files/gc/gc20or-184\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc20or-184_en.pdf).

<sup>9</sup> IAEA, “The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons,” INFCIRC/153 (Corrected), 1972. Available at: <https://www.iaea.org/sites/default/files/publications/documents/infcircs/1972/infcirc153.pdf>.

<sup>10</sup> IAEA, “The Annual Report for 1975,” page 37, paragraph 126, 1976. Available at: [https://www.iaea.org/sites/default/files/gc/gc20-565\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc20-565_en.pdf).

<sup>11</sup> IAEA, “The Annual Report for 1976,” page 40, paragraph 158, 1977. Available at: <https://www.iaea.org/gc-archives/gc/gc21>.

<sup>12</sup> IAEA, “The Annual Report for 1977,” page 38, paragraph 170, 1978. Available at: [https://www.iaea.org/sites/default/files/gc/gc22-597\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc22-597_en.pdf).



The safeguards conclusion contained in that report was that “in none of the 40 States in which the Agency carried out inspections during 1976 was there any diversion of a significant quantity<sup>13</sup> of safeguarded nuclear material, and the Secretariat was also confident that there was no diversion at all of such material in these States.”<sup>14</sup>

In this statement, the phrase “safeguarded nuclear material” refers to what is now called “declared nuclear material,” distinguishing it from nuclear material that the state has not declared and is thus not known to the IAEA. Once the existence and location of nuclear material required to be safeguarded was declared to the IAEA, the State would provide access to IAEA inspectors to the location and to key measurement points at that location.

During the first two decades of CSA implementation, the IAEA focused on nuclear material at declared facilities, in other words, at the “facility level.” There are two interpretations of this practice. One is that the focus of the facility level on nuclear material was more a practical than a legal matter.<sup>15</sup> The other is that facility-level safeguards carried with them an inherent conceptual focus on declared facilities and nuclear material and that INFCIRC/153 was applied according to that focus.<sup>16</sup> In either case, safeguards implementation during this period, in practice, focused primarily on facilities and activities declared to the IAEA by the State.<sup>17</sup>

Each year, the SIR would include a determination that there had been no indication that safeguarded nuclear material was diverted from peaceful uses, as reflected in the publicly available Safeguards Statement. This formulation was also included in the IAEA’s Annual Reports.<sup>18</sup> The Safeguards Statement was nearly identical from year to year, differing only semantically until the 1990s. For example, the Safeguards Statement for 1990 as contained in the Annual Report published in 1991 reads as follows:

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<sup>13</sup> A significant quantity of nuclear material refers to “the approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive device cannot be excluded. Significant quantities take into account unavoidable losses due to conversion and manufacturing processes and should not be confused with critical masses.” A significant quantity is 8 kilograms for plutonium and 25 kilograms for high-enriched uranium. See “IAEA Safeguards Glossary,” 2001 Edition, page 23. Available at: [https://www.iaea.org/sites/default/files/iaea\\_safeguards\\_glossary.pdf](https://www.iaea.org/sites/default/files/iaea_safeguards_glossary.pdf).

<sup>14</sup> IAEA (1978). The Annual Report for 1977.

<sup>15</sup> Laura Rockwood, “The IAEA’s State-Level Concept and the Law of Unintended Consequences,” Arms Control Association, 2014. Available at: <https://www.armscontrol.org/act/2014-08/iaea%E2%80%99s-state-level-concept-law-unintended-consequences>.

<sup>16</sup> Interview with Valeri Bytchkov via Zoom on 1 September 2020. Mr. Bytchkov expanded on this point: “A CSA consists of two parts: part I contains the principal provisions, and part II contains the procedures to implement the provisions of part I. While part I contains the necessary provisions for implementing the [SLC], the procedures of part II are built on the facility-level concept inherited from INFCIRC/66. The [verification activities] are focused on a facility/[material balance area] and a safeguards conclusion is drawn at the facility level. That’s why we had to develop an additional legal instrument, the Model [Additional Protocol], to add State-level verifications. Implementation of APs triggered the development of a new verification concept, the SLC.”

<sup>17</sup> One exception to this was that the IAEA carried (and still carries) out activities at research reactors to verify that no undeclared irradiation was occurring.

<sup>18</sup> Though the SIRs have often leaked into the public domain, the document itself is designated as “Restricted Distribution” and is therefore only available to the Member States.



*Inspectors visit the ruins of a facility used to produce highly enriched uranium for Iraq's nuclear weapons program. Photo Credit: Action Team 1991-1998/IAEA.*

In carrying out the safeguards obligations of the Agency in 1990, the Secretariat, as in previous years, did not detect any event which would indicate the diversion of a significant amount of safeguarded nuclear material — or the misuse of facilities, equipment or non-nuclear material subject to safeguards — for the manufacture of any nuclear weapon, or for any other military purpose, or for the manufacture of any other nuclear explosive device, or for purposes unknown. [...] It is considered reasonable to conclude that the nuclear material under Agency safeguards in 1990 remained in peaceful nuclear activities or was otherwise adequately accounted for.<sup>19</sup>

The following year, this paragraph, which had been much unchanged since 1979, contained new language relating to the recent discovery of Iraq's clandestine nuclear weapons programme.

Inspection activities carried out pursuant to United Nations Security Council Resolution 687 revealed that Iraq had not complied with the obligations under its safeguards agreement to declare certain nuclear activities and place all relevant nuclear material under safeguards. [...] It has been recognized that, owing to limitations in the information available to the Agency and in the existing safeguards practices, non-compliance with agreements could occur without detection by the Agency, particularly at non-declared facilities. The Agency has, as a matter of urgency, examined these limitations and measures to strengthen the safeguards system have been proposed.<sup>20</sup>

<sup>19</sup> IAEA, "The Annual Report for 1990," page 106, 1991. Available at: [https://www.iaea.org/sites/default/files/gc/gc35-953\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc35-953_en.pdf).

<sup>20</sup> IAEA, "The Annual Report for 1991," page 111, 1992. Available at: [https://www.iaea.org/sites/default/files/gc/gc36-1004\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc36-1004_en.pdf).

Among the undeclared activities that Iraq had tried to conceal were electromagnetic isotope separation, gas centrifuge enrichment, laser and chemical uranium enrichment and laboratory-scale plutonium separation.<sup>21</sup> It was estimated that, had Iraq's nuclear activities continued to run undetected, its nuclear programme could have produced a nuclear weapon by autumn 1993.<sup>22</sup>

The shock of the discovery of Iraq's clandestine nuclear weapons programme was exacerbated by the IAEA's further discovery of anomalies in declarations provided by the Democratic People's Republic of Korea (DPRK) in 1992.<sup>23</sup> In the aftermath of these two events, the IAEA began a profound reassessment of how it thought about safeguards. It was no longer considered enough to verify the correctness of a State's declarations, i.e., that they were accurate, but it would also seek to determine that the declarations were complete, meaning that all nuclear material in the State that should be declared has in fact been declared.

This shift in priority was reflected in a resolution adopted by the General Conference in 1991, which requested that the Director General verify the completeness of South Africa's nuclear inventory.<sup>24</sup> This was further solidified in the safeguards lexicon in the Safeguards Statement for 1992, published in 1993:

In pursuit of the Agency's task to verify the correctness and assess the completeness of State declarations, inspections were carried out, inter alia, in the Democratic People's Republic of Korea (DPRK) and in South Africa. In the case of the DPRK, it was concluded that the Agency could not confirm the correctness and completeness of the DPRK's initial report, and for this reason the Agency subsequently requested access to additional information and sites.<sup>25</sup>

It is important to note that the IAEA always had the authority to verify both the correctness and completeness of States' declarations under CSAs. Its historical focus on correctness was not a matter of policy, but rather a matter of practice. INFCIRC/153 provides that safeguards will be applied to "all" source or special fissionable material in "all" peaceful nuclear activities within a State, under its jurisdiction or carried out under its control anywhere, meaning that the State's declaration is both correct and complete.

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<sup>21</sup> Suzanna van Moyland, "The IAEA's Programme 93+2", Verification Matters, Verification Technology Information Centre, 1997. Available at: [http://www.vertic.org/media/Archived\\_Publications/Matters/Verification\\_Matters\\_No10.pdf](http://www.vertic.org/media/Archived_Publications/Matters/Verification_Matters_No10.pdf).

<sup>22</sup> Ibid.

<sup>23</sup> Though the DPRK became a State Party to the NPT in 1985, it did not bring its CSA into force until 1992. Verification of the DPRK's initial nuclear material and facility declarations indicated that the DPRK had reprocessed more fuel than it had declared. Additionally, American satellite imagery pointed to the existence of an nuclear waste storage facility where waste from the DPRK's reprocessing campaigns were believed to have been.

<sup>24</sup> IAEA. "South Africa's Nuclear Capabilities" GC(XXXV)/RES/567, paragraph 2, 1991. Available at: [https://www.iaea.org/sites/default/files/gc/gc35res-567\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc35res-567_en.pdf).

<sup>25</sup> IAEA, "The Annual Report for 1992," page 135, 1993. Available at: [https://www.iaea.org/sites/default/files/gc/gc37-1060\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc37-1060_en.pdf).

However, INFCIRC/153 does not explicitly define the procedures to verify completeness, other than the special inspection provision, which had only been formally invoked on three occasions prior to 1992 and all of which on declared locations.<sup>26, 27</sup>

Valery Bytchkov compares the IAEA's right and obligation under INFCIRC/153 to ensure the completeness of States' declarations to a "sleeping genie" which was "woken up" by the discovery of Iraq's clandestine nuclear weapons programme.<sup>28</sup> In an attempt to put this legal debate to bed, the Board affirmed in February 1992 that the scope of INFCIRC/153 was not limited to verification of the non-diversion of declared material, but also applied to undeclared nuclear material.<sup>29</sup>

With the cases of Iraq, South Africa and the DPRK in the backdrop, on 1 October 1993, the General Conference requested that the Director General re-examine the safeguards system with a view to improving its effectiveness and efficiency.<sup>30</sup>

In December 1993, this effort was formalised as Programme 93+2, during which the Secretariat determined that there were measures that could be implemented with the existing authority of INFCIRC/153 (called Part I measures) and others which would benefit from "complementary authority to be granted" (Part II measures).<sup>31, 32</sup> The former were approved by the Board in June 1995, while the latter became the Model Additional Protocol, approved by the Board in May 1997.<sup>33</sup>

The Model Additional Protocol grants the IAEA a number of safeguards measures that strengthen the IAEA's ability to verify the correctness and completeness of a State's nuclear declarations, including more information about and inspector access to the State's entire nuclear fuel cycle and streamlined administrative procedures.<sup>34</sup>

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<sup>26</sup> Valery Bytchkov, "IAEA Safeguards System: Conceptual Evolution," Center for Energy and Security Studies, 2013. Available at: <https://www.pircenter.org/media/content/files/12/13842376760.pdf>.

<sup>27</sup> In principle, ad hoc inspections as defined by INFCIRC/153, paragraph 71, can also be used to verify the completeness of States' declarations.

<sup>28</sup> Ibid.

<sup>29</sup> Laura Rockwood, "Legal Framework for IAEA Safeguards," IAEA.

<sup>30</sup> IAEA, "Strengthening the effectiveness and improving the efficiency of the safeguard system" GC(XXXVII)/RES/619, paragraph 4, 1993. Available at: [https://www.iaea.org/sites/default/files/gc/gc37res-619\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc37res-619_en.pdf).

<sup>31</sup> Laura Rockwood, "Safeguards and Nonproliferation: The First Half-Century from a Legal Perspective," INMM, 2007.

<sup>32</sup> In the June 1995 meeting of the Board, the Secretariat submitted a report by the Director General (GOV/2807) for consideration, which included a comprehensive proposal for measures to strengthen safeguards in two parts. Part I were the measures that, in the Secretariat's view, could be implemented using existing legal authority and Part II measures would require additional authority. In the report, the Director General "recommended that the Board take note of the Director General's plan to implement at an early date the measures described in Part 1" and urged CSA States "to co-operate with the Secretariat to facilitate such implementation." The Board accepted that recommendation, allowing the Secretariat to put Part I measures in motion. Available at: [https://www.iaea.org/sites/default/files/gc/gc39-17\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc39-17_en.pdf).

<sup>33</sup> IAEA, "Model Protocol Additional to the Agreement(s) between State(s) and the International Atomic Energy Agency for the Application of Safeguards," INFCIRC/540 (Corr.). Available at: <https://www.iaea.org/sites/default/files/infirc540c.pdf>.

<sup>34</sup> Richard Hooper, "The System of Strengthened Safeguards" IAEA, IAEA Bulletin 39/4/1997. Available at: <https://www.iaea.org/sites/default/files/39403452630.PDF>.

## Strengthening Safeguards: Optimisation and Customisation

Work began almost immediately on the integration of safeguards measures and activities under CSAs and additional protocols (APs) in order to achieve maximum efficiency in implementing them, including avoiding unnecessary costs stemming from redundancies. Following its November 1997 meeting, SAGSI advised that integrating safeguards measures be given priority within the Secretariat.

SAGSI advises that [...] it would be helpful to define, without delay, candidate proposals for integrated safeguards systems that embody all ideas including far-reaching changes in the way of implementing safeguards. Candidate proposals should cover the spectrum of State-as-a-whole and generic facility-type approaches that take account of all safeguards measures available to the Agency.<sup>35</sup>

The following year, in 1998, the General Conference echoed this sentiment, requesting that the Secretariat continue to conceptualise and develop an integrated and cost-effective safeguards system.<sup>36</sup> In 1999, the General Conference requested the Secretariat to intensify its efforts to develop an integrated safeguards system.<sup>37</sup>

As Member States continued to praise and encourage the Secretariat's efforts in the form of General Conference resolutions, the Secretariat continued to work towards the establishment of a conceptual framework for integrated safeguards that would be acceptable to the Board. Concurrent with the Secretariat's work on a conceptual framework, it began to apply integrated safeguards in Australia in 2001.<sup>38</sup> In 2000, Jill Cooley, the Director of the Division of Concepts and Planning in the Department of Safeguards, described the development of integrated safeguards as follows.

The concept being developed involves a State-level approach, which combines integrated safeguards approaches for specific facility types that take into account a State's nuclear fuel cycle, the implementation of measures of its additional protocol, and other State-specific features. [...] The term "integrated safeguards" is defined as the optimum combination of all safeguards measures available to the Agency under comprehensive safeguards agreements and additional protocols which achieves the maximum effectiveness and efficiency within available resources in fulfilling the Agency's right and obligation in paragraph 2 of INFCIRC/153.<sup>39</sup>

<sup>35</sup> IAEA, "Report to the Director General on the Forty-Fifth Series of SAGSI Meetings, 10 – 14 November 1997," page 20, IAEA, 1997. Available at: [https://inis.iaea.org/collection/NCLCollectionStore/\\_Public/29/028/29028252.pdf?r=1&r=1](https://inis.iaea.org/collection/NCLCollectionStore/_Public/29/028/29028252.pdf?r=1&r=1).

<sup>36</sup> IAEA, "Strengthening the Effectiveness and Improving the Efficiency of the Safeguards System and Application of the Model Protocol" GC(42)/RES/17, 1998. Available at: [https://www.iaea.org/sites/default/files/gc/gc42res-17\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc42res-17_en.pdf).

<sup>37</sup> IAEA, "Strengthening the effectiveness and improving the efficiency of the safeguards system and application of the model protocol" GC(43)/RES/17, 1999. Available at: [https://www.iaea.org/sites/default/files/gc/gc43res-17\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc43res-17_en.pdf).

<sup>38</sup> John Carlson, et al, "Integrated Safeguards: Australia's Views and Experience," 2001. Available at: [https://www.dfat.gov.au/sites/default/files/intsafeguards\\_aust\\_viewexp.pdf](https://www.dfat.gov.au/sites/default/files/intsafeguards_aust_viewexp.pdf).

<sup>39</sup> While this was the language used in the 2002 Conceptual Framework, the Secretariat later revised this definition to "an optimized combination," rather than "the optimum combination." The reason for

In March 2002, the Secretariat presented to the Board a “Conceptual Framework for Integrated Safeguards” (GOV/2002/8). This document was the result of several years of extensive consultation with the IAEA Member States, as well as numerous informational documents to inform the Board of the Secretariat’s progress. The Board was invited to take note of the conceptual framework, to take note that the Director General would proceed with the implementation of integrated safeguards based on the framework and request the Director General “to proceed further with such implementation as additional protocols enter into force and the Secretariat is able to draw the safeguards conclusions essential to such implementation.”<sup>40, 41</sup> The Board took each of those actions as recommended.<sup>42</sup>

In September 2002, the General Conference welcomed the completion of the document and requested the Secretariat “to implement integrated safeguards on a priority basis [...]; recognizing that elements of the conceptual framework will be further developed or refined in the light of experience, further evaluation and technological development.”<sup>43</sup>

One difficulty in this respect was the harmonizing of facility-level objectives with the State-level objectives inherent to the new concept.<sup>44</sup> In other words, the process of optimizing safeguards measures was partially dependant on a culture shift within the IAEA, moving from a facility-level mindset to a State-level mindset – a transition to which some in the Secretariat adapted more easily than for others.<sup>45</sup> During this transition, the terms “integrated safeguards” and “State-level approach” entered into the lexicon of safeguards, often used interchangeably. For example:

- IAEA presentations on safeguards in the twenty-first century delivered to the Korea Atomic Energy Research Institute in 1999 refer to a “State level approach” as a main element to the development of integrated safeguards and as a “process and decision-making methodology for optimum combination of safeguards measures”<sup>46</sup>
- The press release, in which the IAEA announced implementation in Australia, refers to a “State-level integrated safeguards approach,” combining the two terms.<sup>47</sup>

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the change was a realization that there is no one optimum combination of measures. Rather safeguards objectives for different States in different circumstances may require different measures to fulfil those objectives. For more information, see Jill Cooley, “IAEA Development of Integrated Safeguards,” pages 1 and 3, INMM, 2000.

<sup>40</sup> IAEA Archives, “The Conceptual Framework for Integrated Safeguards” (GOV/2002/08), paragraph 52.

<sup>41</sup> In the parlance of the IAEA, when the Board “takes note” of a document, such as the 2002 Conceptual Framework for Integrated Safeguards, it is usually taken to mean that the document is approved by the Board.

<sup>42</sup> IAEA Archives, “Record of the One Thousand and Forty-Fifth Meeting” of the Board of Governors (GOV/OR.1045), paragraphs 16 and 17.

<sup>43</sup> IAEA, “Strengthening the effectiveness and improving the efficiency of the safeguards system and application of the Model Additional Protocol” GC(46)/RES/12, 2002. Available at: [https://www.iaea.org/sites/default/files/gc/gc46res-12\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc46res-12_en.pdf).

<sup>44</sup> Valery Bytchkov, “IAEA Safeguards System: Conceptual Evolution,” Center for Energy and Security Studies.

<sup>45</sup> Tom Coppen, “Developing IAEA Safeguards: An Institutional Perspective on the State-level Concept,” *Journal of Conflict and Security Law*.

<sup>46</sup> Olli Heinonen and Anita Nilsson, “IAEA Safeguards for the 21<sup>st</sup> Century,” pages 166 and 273, IAEA, 1999. Emphasis retained from original text. Available at: [https://inis.iaea.org/collection/NCLCollectionStore/\\_Public/30/058/30058306.pdf?r=1&r=1](https://inis.iaea.org/collection/NCLCollectionStore/_Public/30/058/30058306.pdf?r=1&r=1).

<sup>47</sup> IAEA, “IAEA Board Reviews Record of Safeguards Implementation,” 2001. Available at: <https://www.iaea.org/newscenter/pressreleases/iaea-board-reviews-record-safeguards-implementation>.

- When presented to the Board, the Conceptual Framework for Integrated Safeguards (GOV/2002/8) included the “design of a State level approach” as one element of integrated safeguards.<sup>48, 49</sup>

With the advent of the Model Additional Protocol and integrated safeguards, the IAEA began drawing more structured yearly conclusions about each State: (1) whether there was any indication of diversion of declared nuclear material from peaceful activities during that year, a conclusion that the IAEA had always drawn; and (2) whether there was any indication of the presence of undeclared nuclear material and activities during that year.

While the IAEA has made such determinations about States with both CSAs and APs in force since States began implementing APs, it was first referred to as “the broader conclusion” in the Safeguards Statement for 2003.<sup>50</sup> The broader conclusion is the result of the Secretariat’s determination that there are no indications of the diversion of declared nuclear material, nor indications of undeclared nuclear material or activities. The latter determination requires a comprehensive evaluation based on all safeguards-relevant information available to the IAEA about the State (something which has been done for all States with CSAs since the mid-1990s), performance of complementary access<sup>51</sup> under the State’s AP as needed and the resolution of anomalies, discrepancies or inconsistencies.

Drawing the broader conclusion for a State for the first time can take between four and ten years, and in rare cases even longer.<sup>52</sup> In principle, the broader conclusion must be reaffirmed (or not) for a State each year, but there has been only one case in which a State’s broader conclusion was not reaffirmed after it had been drawn the first time.<sup>53</sup>

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<sup>48</sup> IAEA, “The Conceptual Framework for Integrated Safeguards, Report by the Director General” GOV/2002/8, 2002. IAEA, “Background on IAEA Board of Governors’ Approval of Framework for Integrated Safeguards,” 18 March 2002. Available at: <https://www.iaea.org/newscenter/news/background-iaea-board-governors-approval-framework-integrated-safeguards>.

<sup>49</sup> In order for a State to have integrated safeguards implemented, it must satisfy the following conditions: (1) The State must have a CSA and an AP in force, and it must be in good standing with regard to the requirements of each; and (2) the IAEA must have concluded after a yearly State evaluation process that there has been no diversion of declared material and that there are no indications of undeclared material. The IAEA can draw this conclusion after the State goes through a State evaluation process that includes complementary access and the provision of further information under the State’s AP, as necessary. The IAEA must have received satisfactory answers to any inquiries and must have resolved any inconsistencies. See Jill Cooley, “IAEA Development of Integrated Safeguards.”

<sup>50</sup> IAEA, “The Safeguards Statement for 2003,” 2004, at: <https://www.iaea.org/sites/default/files/es2003.pdf>.

<sup>51</sup> Complementary access is an additional verification tool afforded to the IAEA under the Model Additional Protocol, so named because the access provided complements the access already available to the IAEA under CSAs. See the IAEA Safeguards Glossary, page 91: [https://www.iaea.org/sites/default/files/iaea\\_safeguards\\_glossary.pdf](https://www.iaea.org/sites/default/files/iaea_safeguards_glossary.pdf).

<sup>52</sup> Mark Hibbs, “Arriving at an IAEA Broader Conclusion for Iran,” Carnegie Endowment for International Peace, 2016. Available at: <https://carnegieendowment.org/2016/09/22/arriving-at-iaea-broader-conclusion-for-iran-pub-64665>.

<sup>53</sup> The IAEA was unable to draw the broader conclusion for Libya for 2019. Kelsey Davenport, “IAEA Nuclear Oversight Grew in 2019,” Arms Control Association, June 2020. Available at: <https://www.armscontrol.org/act/2020-06/news/iaea-nuclear-oversight-grew-2019>.

Many of the documents that describe integrated safeguards during their early development emphasize the departure from the facility-based approach, which some had regarded as too mechanistic. Under integrated safeguards, the IAEA would not just optimise and harmonise the efforts undertaken with CSAs and APs, but also take into account all relevant information about a State as a whole when planning and conducting safeguards activities, as well as when drawing safeguards conclusions. So-called “State-specific features and characteristics” were taken into account for countries under integrated safeguards.<sup>54</sup> Later, this phrase was shortened simply to “State-specific factors.”

The SIR for 2004 referred to the overarching State-as-a-whole idea for the first time as the “State-level concept.” This distinguished the generic State-as-a-whole notion from the individual State-level approaches that the IAEA was developing for States with the broader conclusion.<sup>55</sup>

<sup>54</sup> Referenced in the Conceptual Framework for Integrated Safeguards (GOV/2002/8). A general-distribution background report details that “the new emphasis on the State level approach to safeguards implementation means that, for any individual State with a comprehensive safeguards agreement and an additional protocol in force, the Agency will be able to design a safeguards approach and implementation plan tailor made for a State. It will do so by drawing upon the elements in the blueprint and by taking into account technical State-specific features and characteristics such as the types of nuclear facilities present in the State, the specific design features of a particular plant, the State’s future fuel cycle-related development plans, and whether or not the State has its own nuclear safeguards inspectorate which can work with IAEA safeguards inspectors in implementing safeguards in that particular State or region.” See: “Background on IAEA Board of Governors’ Approval of Framework for Integrated Safeguards,” IAEA, 18 March 2002. Available at: <https://www.iaea.org/newscenter/news/background-iaea-board-governors-approval-framework-integrated-safeguards>.

<sup>55</sup> Before this point, the Secretariat had been talking about a “State-level approach to safeguards implementation” as a concept and individual “State-level safeguards approaches” which were actual documents. See Jill Cooley, “The Evolution of Safeguards,” in Nuclear Non-proliferation and Arms Control

IAEA Board of Governors meeting. IAEA, Vienna, Austria. 19 March 2002

From left to right: IAEA Director General Mohamed ElBaradei, Max Hughes, Governor from Australia, Chairperson of the IAEA’s Board of Governors for 2001 – 2002 and Kwaku Aning, Secretary, Policy Making Organs.

Photo Credit: Dean Calma / IAEA





Since 2004, official IAEA documents used all three terms: the State-level concept, State-level approach and integrated safeguards.<sup>56</sup> Based on the documents reviewed for this study, these terms can be defined as follows:

- The “State-level concept” (SLC) refers to “the general notion of implementing safeguards in a manner that considers a State’s nuclear and nuclear-related activities and capabilities as a whole, within the scope of the safeguards agreement”<sup>57</sup>
- The term “integrated safeguards” describes the process of optimising and harmonising the tools available to the IAEA under a CSA and an AP for a State with a broader conclusion; they are defined as “an optimized combination of all safeguards measures available to the Agency under comprehensive safeguards agreements and additional protocols. Integrated safeguards may be implemented for States for which the Agency has drawn the broader conclusion. Integrated safeguards are aimed at optimizing the effectiveness and efficiency of safeguards implementation for those States.”<sup>58</sup>
- The term “State-level approach” (SLA) refers to a “customized approach to implementing safeguards for an individual State. An SLA is detailed in an internal document developed by the Secretariat.”<sup>59</sup> “It consists of safeguards objectives for a State as well as applicable safeguards measures, to be implemented by the Agency in the field and at Headquarters, to address those objectives.”<sup>60</sup>

Also, in the mid-2000s, the term “information-driven” safeguards began to appear in IAEA documents. This term has its roots in the expanding role of information evaluation during the late 1990s and early-2000s.<sup>61, 62</sup> References to information-driven safeguards go back at least to 2001, when Director General Mohamed ElBaradei referred to the promise of integrated safeguards “to usher in a smart, information driven, non-discriminatory system that is designed to draw comprehensive conclusions regarding compliance by a State with its non-proliferation obligations.”<sup>63</sup>

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Verification (Irmgard Niemeyer et al.).

<sup>56</sup> The use of the phrase ‘state-level approach’ has evolved over the years. In the first 10 years of implementation, the term ‘state-level approach’ seemed to apply to specific approaches for specific states in some cases and, in others, to the general practice of taking all available safeguards-related information into account when drawing safeguards conclusions. The former meaning has generally been accepted as the definition of ‘state-level approach’ today and is the natural progression from integrated safeguards. The latter has become distinguished as the State-level Concept.

<sup>57</sup> IAEA Archives, “Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level” (GOV/2014/41), paragraph 216.

<sup>58</sup> IAEA Archives, “Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level” (GOV/2014/41), paragraph 207.

<sup>59</sup> The SLA is not shared with the State. When developing an SLA, the IAEA Secretariat consults with the State to the planned implementation of in-field safeguards measures, such as the possibility of deploying inter alia remote monitoring in the State.

<sup>60</sup> IAEA Archives, “Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level” (GOV/2014/41), paragraph 217.

<sup>61</sup> Livio Costantini and John Hill, “Information Collection Strategies to Support Strengthened Safeguards,” IAEA, 2001. Available at: <https://www-pub.iaea.org/MTCD/publications/PDF/SS-2001/PDF%20files/Session%2013/Paper%2013-05.pdf>.

<sup>62</sup> Pierre Goldschmidt, “Present Status and Future of International Safeguards,” IAEA, 12 February 2003.

<sup>63</sup> Mohamed ElBaradei, “Some Major Challenges: Nuclear Non-Proliferation, Nuclear Arms Control and Nuclear Terrorism,” IAEA, 29 October 2001. Available at: [https://inis.iaea.org/collection/NCLCollectionStore/\\_Public/32/065/32065598.pdf?r=1](https://inis.iaea.org/collection/NCLCollectionStore/_Public/32/065/32065598.pdf?r=1).

Rather than a separate concept or legal instrument altogether, the term information-driven safeguards was meant to describe the way in which safeguards approaches were evolving within the existing framework.<sup>64</sup> Whereas the IAEA's technical evaluations prior to 1991 acted purely as a balance sheet between State declarations and inspector activities, the evaluation process now was explicitly focused on taking into account all available safeguards-relevant information available about a State as a whole.

The 2001 General Conference blessed this information-driven practice a month before Director General ElBaradei's speech, when the safeguards resolution agreed upon by the Member States welcomed safeguards conclusions drawn for 2000 based on "all of the information acquired in implementing safeguards agreements and all other information available to the Agency."<sup>65</sup>

However, the term "information-driven safeguards" is no longer used, due to the misperceptions to which it led, including that safeguards conclusions would be unduly influenced by factors not relevant to safeguards or not fully verified by the IAEA. This misperception, in particular as it relates to information-driven safeguards and to the SLC, is detailed below in this paper, in the section on "Unpacking Key Issues."

In short, this tension may have been influenced by the fact that the value of information evaluation, including third-party and open-source information, increased dramatically in during the late 1990s and early 2000s.<sup>66</sup> This includes, in particular, satellite imagery, which was a major source of the information that contributed to the discovery of Iraq's clandestine nuclear weapons programme. Third-party and open-source information include a wide range of data, including trade data provided to the IAEA and technical publications. There has never been a legal barrier<sup>67</sup> to the IAEA using third-party or open-source information, but, in the early 2000s, the IAEA actively began to consider how it might make better use of the expanding availability of open-source information to complement other information.

To maintain the objective nature of safeguards conclusions based on this influx of information, the IAEA developed a number of analytical tools, during and directly after Programme 93+2, designed to standardize what might otherwise be perceived as subjective judgements.

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<sup>64</sup> Interview via Zoom with John Carlson via Zoom, 19 August 2020. The term "information-driven safeguards" was discussed in SAGSI as an alternative to the term "risk-informed" safeguards. In the context of nuclear safety, "risk-informed" is a well understood term, but the fear was that in the more political field of safeguards the term might be perceived as implying subjective judgements. The intention underlying the "information-driven safeguards" was that the IAEA needed to: (1) identify the kind of information required to enable the detection of undeclared activities; (2) develop a methodology for acquiring and assessing such information; and (3) develop a method for evaluating the effectiveness of the IAEA's safeguards activities and conclusions. Thus, information-driven safeguards were to be a proactive system.

<sup>65</sup> IAEA, "Strengthening the Effectiveness and Improving the Efficiency of the Safeguards System and Application of the Model Additional Protocol" GC(45)/RES/13, 2001. Available at: [https://www.iaea.org/sites/default/files/gc/gc45res-13\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc45res-13_en.pdf).

<sup>66</sup> Pierre Goldschmidt, "Present Status and Future of International Safeguards," IAEA, 12 February 2003.

<sup>67</sup> Not only is there no legal barrier to this, the IAEA Statute (Article VIII) provides that Member States "should make available such information as would, in the judgment of the member, be helpful for the Agency."

Among these tools are the IAEA's physical model and the process of acquisition path analysis.<sup>68</sup> Acquisition paths were developed "to identify all known pathways that would be involved for a State to acquire weapons-usable material and subsequent weaponization." The physical model describes and characterizes the technologies and processes represented at all levels of the acquisition path, acting as a key or reference to the acquisition path methodology.<sup>69</sup>

Acquisition path analysis using the physical model fed into the State evaluation process, born out of the 1990s effort to strengthen safeguards, and was led by State Evaluation Groups (SEGs).<sup>70</sup> The State evaluation process continued to evolve throughout the 2000s as detailed below.

In this regard it is important to note that all of these processes were developing concurrently, from the development of APA to integrated safeguards. The 2002 General Conference recognized that elements of integrated safeguards, while separate from the State evaluation process but nevertheless coexistent, would be further developed in light of "experience, further evaluation and technological development."<sup>71</sup>

Against this backdrop, the development of SLAs for States under integrated safeguards (based on the 2002 Conceptual Framework) continued throughout the 2000s and into the early 2010s. As more SLAs were developed, the language describing them became more standardised in IAEA documents. However, many continued to use the terms SLC, i.e. the overall idea, and SLAs, the tailor-made plans, interchangeably.

During the 2010 IAEA Safeguards Symposium, Deputy Director General and Head of the Department of Safeguards (DDG-SG) Herman Nackaerts called for an enhanced focus on the State level, including more customised, objectives-driven approaches for safeguards.<sup>72</sup>

Let me turn now to how we see the Agency's conceptual approach evolving. It is true to say that prevailing safeguards concepts and approaches were largely developed some twenty or more years ago and are still very much prescriptive and criteria driven. It is clear to us within the Agency, and has been for some time, that we need to further develop our conceptual approach to safeguards implementation: an approach that makes better use of all information available to the Agency in defining State-specific approaches and associated verification activities.<sup>73</sup>

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<sup>68</sup> IAEA, "Strengthening the Effectiveness and Improving the Efficiency of the Safeguards System" GOV/2784, page 28, paragraph 58, 21 February 1995 (as contained in GC(39)/17). Available at: [https://www.iaea.org/sites/default/files/gc/gc39-17\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc39-17_en.pdf).

<sup>69</sup> Z. Liu and S. Morsy, "Development of the Physical Model," IAEA, 2007. Available at: <https://www-pub.iaea.org/MTCD/publications/PDF/ss-2001/PDF%20files/Session%2013/Paper%2013-07.pdf>.

<sup>70</sup> Eva Gyane, "Information-Driven Safeguards: A Country Officer's Perspective," IAEA, 2010. Available at: [https://inis.iaea.org/collection/NCLCollectionStore/\\_Public/42/081/42081482.pdf?r=1](https://inis.iaea.org/collection/NCLCollectionStore/_Public/42/081/42081482.pdf?r=1).

<sup>71</sup> IAEA, "Strengthening the effectiveness and improving the efficiency of the safeguards system and application of the Model Additional Protocol" GC(46)/RES/12, 2002. Available at: [https://www.iaea.org/sites/default/files/gc/gc46res-12\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc46res-12_en.pdf).

<sup>72</sup> Herman Nackaerts, "Statement at Symposium on International Safeguards: Preparing for Future Verification Challenges," IAEA, 2010. Available at: <https://www.iaea.org/newscenter/statements/statement-symposium-international-safeguards-preparing-future-verification-challenges-0>.

<sup>73</sup> *Ibid.*



Opening day of the Symposium on International Safeguards. Preparing for Future Verification Challenges. IAEA, Vienna, Austria, 1 November 2010. Mr. Herman Nackaerts, IAEA Deputy Director General, Department of Safeguards delivers his opening statement at the start of the symposium. Photo Credit: Dean Calma/IAEA

While the likely intent of his speech was to raise awareness about the SLC, and how SLAs were developed, it had the unintended effect of messaging to the Member States that this was a new practice, rather than the logical evolution of an existing one.<sup>74, 75</sup>

A great deal of publications emerged during 2010–2012 on the continued development of SLAs for States under integrated safeguards, and eventually for States not under integrated safeguards.<sup>76, 77</sup> Many of these publications were presented to meetings of the Institute for Nuclear Materials Management and the European Safeguards Research & Development Association and other professional groups. Developments in this respect were also referenced in the SIR and the Director General’s reports to the General Conference.<sup>78</sup> Also during this period, SEGs were established for all States with safeguards agreements in force (as opposed to only those with SLAs) and Country Officers were established to lead each SEG.

In 2010, the NPT Review Conference welcomed the IAEA’s work in the conceptualization and development SLAs and “in the implementation of State-level integrated safeguards approaches, which result in an information-driven system of verification that is more comprehensive, as well as more flexible and effective.”<sup>79</sup>

<sup>74</sup> Interviews with experts who were involved in the Vienna diplomatic community at this time, in person on 17 August 2020 and via Zoom on 20 August 2020.

<sup>75</sup> Craig Everton, “In defence of the evolution of IAEA Safeguards,” VERTIC, 2015. Available at: <http://www.vertic.org/media/assets/VI%202015/VI%20Chapter%203.pdf>.

<sup>76</sup> While an SLA for a State that has received the broader conclusion and is under integrated safeguards can be more optimized than for a State without those conditions, the idea that the SLC would be applicable to all States with safeguards agreements in force goes back to the SIR for 2009. See Valery Bytchkov and Jill N. Cooley “IAEA Safeguards System: Implementing the State-Level Concept,” *The Future of IAEA Safeguards: Rebuilding the Vienna Spirit through Russian-U.S. Expert Dialogue*, 17 November 2020. Available at: [https://media.nti.org/documents/IAEA\\_Safeguards\\_System-Implementing\\_the\\_State-Level\\_Concept.pdf](https://media.nti.org/documents/IAEA_Safeguards_System-Implementing_the_State-Level_Concept.pdf).

<sup>77</sup> SLAs were first concluded for States under integrated safeguards more as a practical matter rather than as a matter of policy. For more information, see Jill Cooley, Bruce Moran and Herman Nackaerts, “Moving Towards a Safeguards System that is Fully Information Driven,” INMM, 2011.

<sup>78</sup> While information about the developments on the SLC was abundant in this period, it bears mentioning that the SIR, while a very comprehensive document, is also very large. Many diplomatic missions in Vienna do not have a large number of staff members. As a result, one person may be covering the desk of a multitude of issues and may not have the bandwidth to fully digest a large, technical safeguards document as the SIR. This is compounded by the rotation policy of many diplomatic missions, resulting in many diplomats being put the IAEA desk with little-to-no experience in IAEA issues.

<sup>79</sup> NPT/CONF.2010/50, page 5, paragraph 20. Available at: [https://undocs.org/NPT/CONF.2010/50%20\(VOL.I\)](https://undocs.org/NPT/CONF.2010/50%20(VOL.I)).

It was around this time that the term “information-driven safeguards” began to draw criticism from a small group of Member States, purportedly because of the perceived connotation that safeguards would be passively driven by intelligence information.<sup>80</sup> The term (a brainchild of SAGSI) was actually meant to be a neutral way of expressing that the IAEA would better take into account all information available to it, especially from active, in-field activities. This is, after all, also information. While the experience of Iraq demonstrated that third-party information can be useful in the planning and implementation of safeguards activities, information provided by the State in the form of nuclear material accounting and the IAEA’s own verification activities would remain the primary basis for drawing safeguards conclusions.

Regardless, the term “information driven” was no longer used in IAEA documents after 2011. Indeed, the IAEA now carefully defines safeguards-relevant information as “information relevant for the implementation of Agency safeguards and which contributes to the drawing of soundly based safeguards conclusions. It is collected, evaluated and used by the Agency in exercising its rights and fulfilling its obligations under safeguards agreements.”<sup>81</sup>

## Tension in the Board

There were no serious challenges to the SLC, integrated safeguards or the implementation of individual SLAs until the June 2012 Board meeting, usually reserved to discuss the SIR, when some Member States began to question the SLC. These States expressed the view that the difference between the SLC and integrated safeguards was not clear, nor was it clear for which States the IAEA was already implementing the SLC.<sup>82</sup>

Some noted a “tone of suspicion and distrust” directed at the Secretariat.<sup>83</sup> In particular, the Russian delegation accused the Secretariat of “taking a selective approach to the implementation of General Conference resolutions” and taking decisions about safeguards approaches “behind closed doors.”<sup>84</sup>

It was not immediately clear why the SLC, first named as such in the SIR in 2004, was drawing such strong criticism eight years later. From interviews conducted with former members of the IAEA Secretariat, SAGSI and Member State delegations, this tension in the Board appears to have been caused by a confluence of factors.<sup>85</sup>

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<sup>80</sup> Interview via Zoom with John Carlson via Zoom, 19 August 2020.

<sup>81</sup> IAEA Archives, “Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level” (GOV/2014/41), page 38, paragraph 133.

<sup>82</sup> Mark Hibbs, “The Plan for IAEA Safeguards,” Carnegie Endowment for International Peace, 2012. Available at: <https://carnegieendowment.org/2012/11/20/plan-for-iaea-safeguards-pub-50075>.

<sup>83</sup> Laura Rockwood, “The IAEA’s State-Level Concept and the Law of Unintended Consequences,” Arms Control Association.

<sup>84</sup> IAEA, Committee of the Whole, “Record of the Fourth Meeting” GC(56)/COM.5/OR.4, paragraphs 24 and 40, 2012. Available at: [https://www.iaea.org/sites/default/files/gc/gc56com5or-4\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc56com5or-4_en.pdf).

<sup>85</sup> In-person interview with a former diplomat who was present in Board meetings and technical briefings regarding the SLC, 17 August 2020.

First, the perception that safeguards under the SLC would be driven primarily by biased, third-party information (or that the IAEA may not corroborate such information) was growing among certain delegations. With the Board's designation of Syria as non-compliant with its safeguards obligations in recent memory<sup>86</sup> (based in large part on intelligence information provided by the United States), it became clear that some Member States were unaware of or uncomfortable with the IAEA's use of third-party information.<sup>87</sup> In reality, the IAEA confirms the veracity and credibility of third-party information to determine whether it requires action or not.

Second, it is possible that the SIR for 2010 (presented in 2011) discussed the SLC in more vague terms, simply as developing approaches. When the SIR for 2011 (presented at the June 2012 Board meeting) included more specific operational details about the SLC, such as the use of "State-specific factors" and State evaluation groups, it may have compounded the perception born of DDG-SG Nackaerts' 2010 speech that the SLC was a new practice. A sudden introduction of internal procedures for implementing the SLC—which the Board had not been consulted about—could easily have caused confusion great enough for what followed.

This does not mean that the Secretariat was making decisions "behind closed doors." What may be true about the SLC is that its development had not been communicated to the Member States in such a way that they had sufficient understanding and awareness about the SLC, despite the information that was available in the SIRs, annual reports by the Director General and in other documents, such as the Medium Term Strategy for 2012-2017.<sup>88</sup>

<sup>86</sup> IAEA, "Implementation of the NPT safeguards agreement in the Syrian Arab Republic," resolution adopted by the Board of Governors, 9 June 2011. Available at: <https://www.iaea.org/sites/default/files/gov2011-41.pdf>.

<sup>87</sup> Mark Hibbs, "The IAEA and Syria: A New Paradigm for Noncompliance?," Carnegie Endowment for International Peace, 2011. Available at: <https://carnegieendowment.org/2011/06/17/iaea-and-syria-new-paradigm-for-noncompliance-pub-44691>.

<sup>88</sup> IAEA, Medium Term Strategy 2012-2017. Available at: [https://www.iaea.org/sites/default/files/mts2012\\_2017.pdf](https://www.iaea.org/sites/default/files/mts2012_2017.pdf).

*Closing session of the 57th IAEA General Conference. M-Building, IAEA Headquarters, Vienna, Austria. 20 September 2013.  
Photo Credit: Dean Calma / IAEA*



The June 2012 Board meeting and the General Conference that September were highly contentious.<sup>89</sup> The primary flash points of disagreement were the prospect of the politicisation or subjectification of safeguards conclusions, confusion about the definitions of terms (such as what constitutes safeguards-relevant information) and the involvement of the Board in developing safeguards concepts.<sup>90</sup> These and other sticking points will be discussed in the next section.

Following the June 2012 Board meeting, and further discussion during the September 2012 Board meeting, the General Conference “requested” that the Director General “report to the Board of Governors on the conceptualization and development of the State-level concept for safeguards.”<sup>91</sup>

In August 2013, Director General Yukiya Amano presented a report to the Board entitled “Conceptualization and Development of Safeguards Implementation at the State Level.”<sup>92</sup> The reaction was vitriolic, both with regard to the substance of the report and to the SLC itself.<sup>93</sup>

A lack of understanding on the definitions of terms, in particular whether there was a difference between integrated safeguards and the SLC, remained prominent. According to those present during this Board meeting, one senior official would explain that there was a difference in these terms, while another would claim that they were the same.

Terms contained in the 2013 report such as “State-specific factors” and “acquisition pathways” that some purported never to have seen before were treated as new by some and old practice by others. The concern that political factors might begin to affect the IAEA’s safeguards conclusions became a leading narrative among the States vocally opposed to the SLC. Some other States expressed concern that the IAEA was using the SLC as a “back door” to using measures under APs in States that had not concluded one, or that SLAs at that time were still concluded only for States under integrated safeguards. Compounding these concerns was a perception by some that certain Member States were given the opportunity to engage in consultations about the SLC while others were not.

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<sup>89</sup> The atmospherics of these contentious meetings are well documented elsewhere, and will not be discussed in detail here. See: Laura Rockwood, “The IAEA’s State-Level Concept and the Law of Unintended Consequences,” Arms Control Association, 2014.

Mark Hibbs, “The Plan for IAEA Safeguards,” Carnegie Endowment for International Peace, 2012.

Mark Hibbs, “IAEA Safeguards Development and Russia’s National Interest,” Carnegie Endowment for International Peace, 2014. Available at: <https://carnegieendowment.org/2014/11/22/iaea-safeguards-development-and-russia-s-national-interest-pub-57429>.

Craig Everton, “In defence of the evolution of IAEA safeguards,” VERTIC, 2015.

<sup>90</sup> Laura Rockwood, “The IAEA’s State-Level Concept and the Law of Unintended Consequences,” Arms Control Association, 2014.

<sup>91</sup> IAEA, “Strengthening the effectiveness and improving the efficiency of the safeguards system and application of the Model Additional Protocol” GC(56)/RES/13, 2012. Available at: [https://www.iaea.org/sites/default/files/gc/gc56res-13\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc56res-13_en.pdf).

<sup>92</sup> IAEA, “The Conceptualization and Development of Safeguards Implementation at the State Level” GOV/2013/38, 12 August 2013.

<sup>93</sup> IAEA, Committee of the Whole, “Record of the Seventh Meeting” GC(57)/COM.5/OR.7. Available at: [https://www.iaea.org/sites/default/files/gc/gc57com5or-7\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc57com5or-7_en.pdf).

Following what one former diplomat referred to as “the big fight,” the General Conference took note of the report, but also noted that the Director General “will produce” (rather than the somewhat softer “request” from the previous year) a supplementary document “for consideration and action” by the Board.<sup>94</sup>

In October 2013, Tero Varjoranta took over as the DDG-SG and spent much of the next year in consultation with all interested Member States, pursuant to the safeguards resolution at the 2013 General Conference. According to former IAEA officials and Vienna-based diplomats, that year of consultations was a mutually beneficial experience.

The IAEA circulated a Note Verbale to the Member States, requesting them to provide the Secretariat with questions they had about the SLC. The Secretariat compiled this list and structured a series of technical consultations thematically, based on the questions provided by Member States. This process gave the IAEA an opportunity to understand in detail what the Member States understood and what they did not, and to better understand their concerns. The Member States in turn were able to ask probing questions of the Secretariat to satisfy many of the concerns raised in 2012–2013.

This process highlighted the critical importance of consultation and engagement by the Secretariat with the Member States and likely changed the tide of the SLC debate. Although a technical evolution of safeguards implementation (as opposed to a change in legal authority, like the Model Additional Protocol) does not require Board approval, the Secretariat ultimately works at the service of all the Member States.

The result of these consultations was another, much longer supplementary document that the Director General presented to the Board ahead of the 2014 General Conference, which was well received, including by some of the more vocally critical Member States. Undoubtedly, the many open-ended technical meetings and other consultations in the lead up to its preparation contributed significantly to its good reception. Prior to 2013, SLAs for States under integrated safeguards had been developed based on the 2002 Conceptual Framework. Since then, new SLAs have been developed, and existing SLAs updated, on the basis of the 2013 conceptualization document and the 2014 supplementary document.<sup>95</sup>

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<sup>94</sup> IAEA, “Strengthening the Effectiveness and Improving the Efficiency of Agency Safeguards” GC(57)/RES/13, 20 September 2020. Available at: [https://www.iaea.org/sites/default/files/gc/gc57res-13\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc57res-13_en.pdf).

<sup>95</sup> Safeguards objectives under an SLA consist of both generic objectives, inherent to a state’s safeguards agreement, and technical objectives, which are established for a State based on APA. Based on the technical objectives, the Secretariat establishes safeguards measures for the State to address the technical objectives. When planning and conducting the safeguards measures to satisfy the technical objectives, the Secretariat considers six State-specific factors. Safeguards conclusions are based on the fulfilment of the generic and technical objectives. SLAs for States are designed and managed by State Evaluation Groups and implemented through annual implementation plans.



In 2016, the Secretariat finished updating the SLAs for the 53 States already under integrated safeguards and began developing them for other States, with 11 new SLAs developed that year.<sup>96</sup> In 2017, SLAs were developed for 62 States, including 29 States with a CSA and AP that did not have a broader conclusion and another 28 States with a CSA that did not have an AP.<sup>97</sup> This represents the largest increase in SLAs in one year to date. By the end of 2019, the 131 States for which SLAs had been developed held 97% of all safeguarded nuclear material by significant quantity in States with CSAs.<sup>98</sup>

<sup>96</sup> IAEA, “Safeguards Statement for 2016,” 2017. Available at: [https://www.iaea.org/sites/default/files/statement\\_sir\\_2016.pdf](https://www.iaea.org/sites/default/files/statement_sir_2016.pdf).

<sup>97</sup> IAEA, “Safeguards Statement for 2017,” 2018. Available at: <https://www.iaea.org/sites/default/files/18/06/statement-sir-2017.pdf>.

<sup>98</sup> IAEA, “Safeguards Statement for 2019,” 2020. Available at: <https://www.iaea.org/sites/default/files/20/06/statement-sir-2019.pdf>.

*IAEA Member States were given a comprehensive overview of safeguards activities and process as they toured and learned various technical and scientific services at the Agency headquarters in Vienna, Austria. 27 March 2019.*

*Photo Credit: Dean Calma / IAEA*



# Unpacking Key Issues

Since 2012, several issues have continued to come up in the SLC debate. In addition to the origins of the SLC itself, Member States have expressed concerns about: how the SLC and SLAs are related to the rest of the safeguards legal framework, including how an SLA is developed for a State; what constitutes “safeguards-relevant information,” the IAEA’s authority to utilize it and how safeguards-relevant information might influence the drawing of safeguards conclusions; and the meaning of “State-specific factors” and their application. This section details these issues.

## A “Roadmap” of Safeguards

One source of frustration with SLAs, cited in interviews with former diplomats that sat on the Board between 2012 and 2014, is that the “roadmap” of safeguards—from a CSA, proceeding with the implementation of an SLA, the implementation of an AP (as applicable), the drawing of a broader conclusion and the implementation of integrated safeguards—was unclear.

In addition, many Member State representatives complained that the relationship between integrated safeguards and the SLC was not clear, given that the IAEA had been implementing SLAs for already a decade by that point. In fact, several experts interviewed for this study remarked that SLC should have subsumed integrated safeguards.<sup>99</sup> In this regard, one should view integrated safeguards as the first evolution of State-level safeguards, implemented in practice through individual SLAs.

However, all of these terms continue to be used and the Secretariat continues to distinguish between them. One expert expressed the view that, at this point, combining them would cause more confusion than it would dispel, both within the Secretariat and among the Member States.

The following process represents a general roadmap for safeguards today:

- [1] A State concludes a comprehensive safeguards agreement.
- [2] Based on the procedures outlined in the 2013 conceptualization document and the 2014 supplementary document, an IAEA SEG will develop a State-level approach for that State as the result of a comprehensive State evaluation based on all safeguards-relevant information available to the IAEA about the State’s nuclear and nuclear-related activities.<sup>100</sup>
- [3] If that State has also concluded an additional protocol and it is in force, the Secretariat will:
  - a. factor information available under the State’s AP into its comprehensive State evaluation;
  - b. perform complementary access under the State’s AP as needed; and
  - c. address as relevant all anomalies, discrepancies or inconsistencies.

<sup>99</sup> Interview with experts familiar with the evolution of the State-level Concept, over Zoom on 19 and 20 August.

<sup>100</sup> This refers to new States rather than those with existing safeguards agreements for whom the Secretariat has not yet developed an SLA.

- [4] Once the above three activities have been conducted, the Secretariat can draw the broader conclusion that “all nuclear material remained in peaceful activities” for that State.
- [5] Integrated safeguards “may be implemented for States for which the Agency has drawn the broader conclusion.”<sup>101</sup>
- [6] As a State moves along this path, its SLA will be updated to reflect the safeguards measures available to the IAEA and the optimized combination thereof is used to plan, implement and evaluate safeguards activities.

## Safeguards-Relevant Information

Under the SLC, the IAEA uses all safeguards-relevant information available to it in drawing safeguards conclusions. This, as noted in earlier sections, is not a new practice, nor is it one of which the Member States should have been unaware. In 2001, the General Conference welcomed safeguards conclusions drawn for 2000 based on “all of the information acquired in implementing safeguards agreements and all other information available to the Agency.”<sup>102</sup>

Since Programme 93+2, the IAEA has looked at three types of safeguards-relevant information: (1) information provided by the State; (2) information from safeguards activities conducted by the IAEA, both in the field and at headquarters; and (3) other relevant information, i.e. open-source and third-party information.<sup>103</sup> The IAEA has maintained that the first two categories of information make up the vast majority of what is considered for safeguards implementation and evaluation. The IAEA has also maintained that any information from open sources or third parties is thoroughly vetted and corroborated before acted upon.

During the tensions that arose in 2012, several Member States expressed concern that “safeguards-relevant information” was not a clear enough term and could politicise the safeguards process.<sup>104</sup> It later became clear that, despite the instructions that Member States built into the 2013 safeguards resolution<sup>105</sup> and the assurances the IAEA had given on the SLC during the consultations in 2014, certain Member States were still not convinced.

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<sup>101</sup> IAEA, “State-level Safeguards Approaches for States under Integrated Safeguards – Experience Gained and Lessons Learned” (GOV/2018/20), 2018.

<sup>102</sup> IAEA, “Strengthening the Effectiveness and Improving the Efficiency of the Safeguards System and Application of the Model Additional Protocol” GC(45)/RES/13, 2001.

<sup>103</sup> IAEA Archives, “Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level” (GOV/2014/41), paragraph 135.

<sup>104</sup> IAEA, Committee of the Whole, “Record of the Second Meeting” (GC(56)/COM.5/OR.2), paragraph 31, 2012. Available at: [https://www.iaea.org/sites/default/files/gc/gc56or-2\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc56or-2_en.pdf).

<sup>105</sup> The 2013 safeguards resolution (GC(57)/RES/13), negotiated directly after the Director General presented the 2013 conceptualization document, contained language stressing that safeguards should remain non-discriminatory and emphasizing the distinction between obligatory and voluntary safeguards measures (both provisions new in the safeguards resolution). The safeguards resolution for the next year (GC(58)/RES/14) included more such language, notably that the SLC “does not, and will not, entail the introduction of any additional rights or obligations,” nor does it “involve any modification in the interpretation of existing rights and obligations.”

At the 2014 Symposium on International Safeguards, Head of Delegation and Governor for Russia on the Board Grigory Berdennikov expressed the view that the IAEA seemed to expect Member States to “simply trust the Secretariat’s choice of information” and whether or not it is valid when it has third-party or open-source origins.<sup>106</sup> Ambassador Berdennikov further expressed concern that the Secretariat could “turn into a supranational structure tasked to collect and analyse intelligence information.”<sup>107</sup>

Reflecting upon the IAEA’s track record, the prospect that the IAEA either could not be trusted to verify third-party information or would actively work to contravene its mandate in favour of one State’s national interest is unfounded. During the early 2000s, when the United States used falsified information as justification for the invasion of Iraq, the IAEA quickly concluded that the information was “not authentic.”<sup>108</sup>

In addition, for an allegation to be actionable, regardless of the source of the information on which it is based, it must be location-specific and inspectors must be able to access that location to ensure the veracity of the information. Allegations alone do not meet the burden of proof for non-compliance with safeguards obligations. Director General Amano put this in more concrete terms during a speech at the Washington-based Center for Strategic and International Studies.

Third-party information is a very small part of the information available to the Agency, but it can play an important role in identifying issues that we may need to address. We know from experience that, sometimes, information provided to the Agency can be simply wrong. At times, we find it to be accurate and credible. The use of third-party information has enabled the Agency to take follow-up actions with several countries to address issues related to the correctness and completeness of their declarations.

<sup>106</sup> Statement by Grigory Berdennikov, Head of Delegation of the Russian Federation and Ambassador-At-Large, Symposium on International Safeguards: Linking Strategy, Implementation and People, 20-24 October 2014. Available at: [https://www.dotatomicreportersdotcom.files.wordpress.com/2014/10/russian-statement-at-the-iaea-safeguards-symposium\\_20oct2014.pdf](https://www.dotatomicreportersdotcom.files.wordpress.com/2014/10/russian-statement-at-the-iaea-safeguards-symposium_20oct2014.pdf).

<sup>107</sup> *Ibid.*

<sup>108</sup> Mohamed ElBaradei, “The Age of Deception,” Bloomsbury, 2011.

*IAEA Director General Yukiya Amano delivers his statement “Challenges in Nuclear Verification” at the Center for Strategic and International Studies during his official visit to Washington DC, USA. 5 April 2019. Photo Credit: Edgard Perez Alvan / IAEA.*



In line with established safeguards practices, all safeguards-relevant information, including third party information, is reviewed very critically, carefully evaluated, and followed up with the State concerned, if necessary. We do not take any information at face value. No single piece of information is used without having been thoroughly analysed. If we assess that the information is broadly credible, we take action such as requesting clarification from the State, or seeking access to information or locations. If information is not credible, we do not take action.<sup>109</sup>

## State-Specific Factors

Another point of contention around the SLC was the explanation offered by the Secretariat in 2013 of State-specific factors and the perceived risk that some of these factors could be applied in a discriminatory fashion. State-specific factors are meant “to identify issues that could affect the effectiveness or efficiency of safeguard implementation” for a given State.<sup>110</sup> The IAEA defines these as “six objective safeguards-relevant factors that are particular to a State which are used by the Secretariat in the development of a State-level safeguards approach and in the planning, conduct and evaluation of safeguards activities for that State.”

The factors identified in the 2013 report to the Board on the SLC and its 2014 supplementary document are as follows:

- [1] The type of safeguards agreement in force for the State and the nature of the safeguards conclusion drawn by the Agency;
- [2] The nuclear fuel cycle and related technical capabilities of the State;
- [3] The technical capabilities of the State or regional system of accounting for and control of nuclear material (SSAC/RSAC);
- [4] The ability of the Agency to implement certain safeguards measures in the State;
- [5] The nature and scope of cooperation between the State and the Agency in the implementation of safeguards; and
- [6] The Agency’s experience in implementing safeguards in the State.<sup>111</sup>

The use of State-specific factors is not new in safeguards, although different phrasing has been used over the years to describe “issues that could affect the effectiveness and efficiency of safeguards implementation.”<sup>112</sup> Notably, “safeguards-relevant features and characteristics of a State” were already identified in the 2002 Conceptual Framework for Integrated Safeguards, including early reference to the factors identified in the 2013 Conceptualization document and the 2014 Supplementary document.<sup>113</sup>

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<sup>109</sup> Yukiya Amano, “Challenges in Nuclear Verification,” remarked delivered at the Center for Strategic and International Studies, 5 April 2019. Available at: <https://www.iaea.org/newscenter/statements/challenges-in-nuclear-verification>.

<sup>110</sup> Jill Cooley and Bruce Moran, “Assessment and Use of State-Specific Factors in the Implementation of Safeguards,” INMM, 2018. Available at: <https://www.osti.gov/servlets/purl/1464623>.

<sup>111</sup> *Ibid.*

<sup>112</sup> *Ibid.*

<sup>113</sup> IAEA Archives, “The Conceptual Framework for Integrated Safeguards” (GOV/2002/08).

One can trace the origins of State-specific factors back to INFCIRC/153, the basis for CSAs, which notes that the frequency and intensity of inspections should be based, among other things, on the characteristics of a State's fuel cycle.<sup>114</sup> This provision, however, was largely unacknowledged until the 1990s.

Before the early 2010s, safeguards measures were largely planned, implemented and evaluated based on the Safeguards Criteria, regarded by many safeguards inspectors as the "checklist" to use when determining how different facility types should be safeguarded.

The 1991–1995 Safeguards Criteria evolved from the earlier SIR Evaluation Criteria (developed in the 1970s) and were first used in 1991.<sup>115</sup> The Safeguards Criteria are comprised of 13 chapters dedicated to different facility types and locations outside facilities.<sup>116</sup> Each chapter contains 17 criteria applicable to a different type of nuclear facility, based on the paths through which nuclear material could be diverted or covertly produced and how long it may take a country to apply that material to weapons production. As new technical measures became available, such as environmental sampling, a standing group on the Safeguards Criteria would update them. However, following the period of 2012–2014, the Secretariat began to move away from the uniform use of the Safeguards Criteria for evaluating safeguards implementation.<sup>117</sup>

As the IAEA gained more experience in implementing SLAs, the focus gradually shifted from strict, mechanistic implementation of activities mandated for specific facility types in the Safeguards Criteria to the fulfilment of the technical objectives established for that State.<sup>118</sup> The Safeguards Criteria are still used today, but their focus remains the activities to be conducted rather than objectives to be fulfilled, and have not been updated in years.<sup>119</sup>

The perceived deficiency was that, under the Safeguards Criteria, safeguards were uniformly implemented across all countries for a given facility type, whereas an SLA's technical objectives may differ from country to country, depending on its nuclear fuel cycle and nuclear-related capabilities. In other words, safeguards implementation in the past was more focused on completing specified activities, rather than fulfilling the technical objectives that the activities were meant to address.<sup>120</sup>

For States under integrated safeguards, the Safeguards Criteria serve as the starting point for the design of its SLA, whereas they still serve as performance indicators for States not under integrated safeguards.

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<sup>114</sup> IAEA, "The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons," INFCIRC/153 (Corrected), paragraph 81(c).

<sup>115</sup> James Larrimore, "Experience with the IAEA Safeguards Criteria 1991-1995," IAEA, 1994.

<sup>116</sup> James Larrimore, "The IAEA Safeguards Criteria: Historical Perspective on Moving to More Information Driven Safeguards," INMM, 2011.

<sup>117</sup> Interview with experts familiar with the evolution of the State-level Concept, over Zoom on 20 August and over email on 20 November.

<sup>118</sup> IAEA Archives, "Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level" (GOV/2014/41).

<sup>119</sup> Interviews with experts familiar with the evolution of the State-level Concept, over Zoom on 20 August 2020 and via email on 20 November.

<sup>120</sup> IAEA Archives, "Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level" (GOV/2014/41), paragraph 59.

This should not suggest, however, that the IAEA's experience in evaluating safeguards implementation through the Safeguards Criteria is lost. Rather, the move from the Safeguards Criteria to the current system (using APA and State-specific factors to inform the technical objectives and safeguards measures to meet those objectives in the annual performance plan of a State's SLA) should be viewed as an evolution as opposed to a dramatic shift from past practice. Here enter the State-specific factors as important considerations for a State's SLA and its annual implementation plan.

Concerns that State-specific factors be applied in a subjective fashion, resulting in biased safeguards conclusions for a country, are at the heart of the SLC debate. Three of the factors [1] the type of safeguards agreement implemented for a country, [2] the extent of a country's fuel cycle and related technical capabilities, and [4] the ability of the IAEA to implement safeguards for a country, have been relatively uncontroversial, though they were certainly discussed by the Board at length.<sup>121</sup>

The remaining three State-specific factors have drawn debate, as discussed below.

[3] The technical capabilities of the State or regional system of accounting for and control of nuclear material (SSAC/RSAC)

Some States have expressed the view that this factor may be inherently discriminatory towards developing countries, as those may be the least likely to have an advanced SSAC/RSAC.<sup>122</sup> For example, based on language in the 2013 document, one State on the verge of implementing integrated safeguards, was concerned that it may not only forfeit integrated safeguards but that it may also lose its broader conclusion, should the IAEA determine that the technical capabilities of its SSAC were insufficient. Not only was this not the case, the IAEA has its own interest in ensuring the technical capability of SSACs.

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<sup>121</sup> For example, Russia wanted to know what methods the Agency would use to obtain information pursuant to the second factor, e.g. the technical capabilities related to a State's nuclear fuel cycle. In the case of the fourth factor, the Secretariat needed to explain that whether or not the IAEA can rely on remote monitoring for safeguards depends on whether it is legal to do so within a given State.

<sup>122</sup> In-person interview with a former diplomat who was present in Board meetings and technical briefings regarding the SLC, 17 August 2020.

*General Conference delegates listening to an overview of the many ways in which the IAEA can support them in improving the conditions for the implementation of nuclear safeguards. Photo: Y. Yustantiana/IAEA*



The roots of this factor can be traced back to INFCIRC/153, paragraph 81(b), which states that one criteria for determining the number, intensity, duration, timing and mode of inspections would be “the effectiveness of the State’s accounting and control system, including the extent to which the operators of facilities are functionally independent of the State’s accounting and control system.”<sup>123</sup>

The IAEA has provided support to Member States in the development and operation of SSACs since at least the 1980s, when it published a set of guidelines on the subject.<sup>124</sup> As safeguards continued to evolve in the 2000s, the IAEA began to offer the IAEA SSAC Advisory Services (ISSASs) to “provide guidance on establishing the necessary regulatory, technical and administrative measures at the State and facility level appropriate to the Member State’s circumstances.”<sup>125</sup> The first ISSAS mission took place in 2004.<sup>126</sup>

The IAEA has also recently launched a new initiative to help strengthen SSACs called the Comprehensive Capacity-Building Initiative for SSACs and SRAs, or COMPASS.<sup>127</sup>

Far from threatening a State’s broader conclusion or its standing with the IAEA in general, this factor was meant to ease the burden on the State. If the technical capabilities of the SSAC were effective, the IAEA could have greater confidence that the reports provided by the SSAC were complete, and the IAEA could thus reduce the resources spent on that State.<sup>128</sup>

However, if an SSAC were not sufficiently competent, the necessary effort by the IAEA to draw safeguards conclusions would increase. In this scenario, if the IAEA could not make up for this SSAC’s deficiency in a particular year due to its own resource constraints, it is theoretically conceivable that the IAEA might not be able to draw (or reaffirm) a broader conclusion. However, it would be in the IAEA’s interest to remedy this situation (in part through ISSAS missions and other technical assistance) so that it did not become an ongoing issue in later years. As such, this would be unlikely to result in a continuous disadvantage to a State.<sup>129</sup>

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<sup>123</sup> IAEA, “The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons,” INFCIRC/153 (Corrected), paragraph 81(b).

<sup>124</sup> “Guidelines for States’ Systems of Accounting for and Control of Nuclear Material” (IAEA/SG/INF/2), IAEA, 1980. Available at: [https://www-pub.iaea.org/MTCD/publications/PDF/iaea\\_sg\\_inf\\_2\\_web.pdf](https://www-pub.iaea.org/MTCD/publications/PDF/iaea_sg_inf_2_web.pdf).

<sup>125</sup> IAEA, “ISSAS guidelines,” a reference report for IAEA SSAC advisory service, November 2005. Available at: [https://www-pub.iaea.org/MTCD/Publications/PDF/svs\\_013\\_web.pdf](https://www-pub.iaea.org/MTCD/Publications/PDF/svs_013_web.pdf).

<sup>126</sup> IAEA, “Annual Report 2005,” page 77, 2006. Available at: [https://www.iaea.org/sites/default/files/anrep2005\\_full.pdf](https://www.iaea.org/sites/default/files/anrep2005_full.pdf).

<sup>127</sup> According to the IAEA website, through COMPASS “the IAEA works with the State to identify the main areas where additional assistance would be beneficial and then to develop a customized assistance package. COMPASS offers State-specific support in the areas of outreach; national training; software and equipment; legal and regulatory; and human resources.” See IAEA, “COMPASS – IAEA Comprehensive Capacity-Building Initiative for SSACs and SRAs.” Available at: <https://www.iaea.org/topics/assistance-for-states/compass>.

<sup>128</sup> Interviews with experts familiar with the evolution of the State-level Concept, in person on 21 October 2020.

<sup>129</sup> Interviews with experts familiar with the evolution of the State-level Concept, via email on 24 November 2020.



However, the more likely reason this factor became a point of contention is the lack of understanding of and insufficient communication about the relationship between SLAs and integrated safeguards, particularly during the early 2010s. As detailed above, integrated safeguards and SLAs are not mutually exclusive, but rather mutually reinforcing parts of the safeguards system. Moreover, none of the State-specific factors are minimum requirements that a State must meet in order for its broader conclusion to be reaffirmed or for integrated safeguards to be implemented. Rather, the consideration of State-specific factors helps determine the planning, conduct and evaluation of safeguards activities for that State.<sup>130</sup>

[5] The nature and scope of cooperation between the State and the Agency in the implementation of safeguards

Several States expressed concern that cooperation is difficult to quantify, making this factor susceptible to subjective judgements about a State's nuclear intentions. While this is a fair critique, cooperation between the IAEA and States has a legal basis for all States with CSAs. Paragraph 3 of INFCIRC/153, upon which CSAs are based, contains a provision that "the Agency and the State shall co-operate to facilitate the implementation of the safeguards."<sup>131</sup> What should the IAEA's recourse be in cases where a State does not cooperate effectively?

As a result of the Member States' request that the Secretariat provide further information about this State-specific factor, the Secretariat clarified that it would be considered based on: (1) the timeliness and completeness of State's reports; (2) the State's facilitation of inspector access; (3) the State's responsiveness in addressing anomalies and questions; (4) the State's acceptance of inspectors' designations and the issuance of visas; and (5) the State's granting inspectors and IAEA equipment and materials the privileges and immunities required by the State's safeguards agreement.<sup>132</sup>

While this State-specific factor may not have been clearly explained to the Board in 2013, the explanation provided by the IAEA includes metrics that can easily be quantified by time stamps. In other words, one may not be able to measure cooperation in the abstract, but one can measure whether a State reports in a timely fashion, how quickly the State responds to inquiries and whether or not an inspector is issued a visa. The IAEA has provided, in the view of this author, a quantifiable justification for using "the nature and scope of cooperation" as a consideration in developing annual implementation plans.

As Jill Cooley observed in 2018, deficiencies "in State cooperation do not change the potential paths for acquiring nuclear material suitable for a nuclear explosive by a State, and thus do not change the safeguards objectives, or the priorities of these objectives."<sup>133</sup>

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<sup>130</sup> IAEA Archives, "Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level" (GOV/2014/41), paragraph 218.

<sup>131</sup> IAEA, "The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons," INFCIRC/153 (Corrected), paragraph 3.

<sup>132</sup> IAEA Archives, "Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level" (GOV/2014/41), paragraph 37.

<sup>133</sup> Jill Cooley, "Assessment and Use of State-Specific Factors in the Implementation of Safeguards,"

[6] The Agency's experience in implementing safeguards in the State

As with the previous State-specific factor, the explanation of the Agency's experience in implementing safeguards in the State may not have been sufficiently clear to Member States. In response to the concerns about this factor's quantifiability, the IAEA offered a number of quantifiable examples, including: (1) conditions in a State that affect safeguards implementation; (2) the State's record in meeting safeguards obligations; (3) events of potential safeguards non-compliance; and (4) a State's history of going beyond safeguards requirements to improve transparency.<sup>134</sup>

Although admittedly more qualitative in nature than other factors, these are specific considerations that may affect the effectiveness or efficiency of safeguards implementation. In 2019, the IAEA was unable to draw a broader conclusion for a State (Libya) that previously had received it.<sup>135</sup> This State was at that time and continues to be in an unstable security situation as its civil war continues. The IAEA could not conclude for Libya that "all nuclear material remained in peaceful uses" because the IAEA could not obtain access to all locations under safeguards in Libya.<sup>136</sup>

This example demonstrates that, if the IAEA knows that the security situation in a country will not allow inspectors to visit all of the relevant sites in the country, it must consider this when considering safeguards implementation for the following year.

The IAEA can and should continue to answer to Member States about how it can best ensure that its judgements are objective. However, the IAEA must be able to draw on its experience in a State while considering the technical objectives and safeguards measures for that State in a given year.

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<sup>134</sup> *Ibid.*

<sup>135</sup> See IAEA, "Safeguards Statement for 2018," 2019. Available at: <https://www.iaea.org/sites/default/files/19/06/statement-sir-2018.pdf>.

See also IAEA, "Safeguards Statement for 2019," 2020. Available at: <https://www.iaea.org/sites/default/files/20/06/statement-sir-2019.pdf>.

<sup>136</sup> Kelsey Davenport, "IAEA Nuclear Oversight Grew in 2019," Arms Control Association, June 2020.

*The first IAEA General Conference held at the Konzerthaus in Vienna from 1 to 23 October 1957, with the participation of diplomats and scientists from 57 nations. Photo: IAEA*



# Conclusion

In the history of the IAEA, Member State involvement in the evolution of safeguards has been critical. There was extensive negotiation by Member States on the structure and content of what would become INFCIRC/153, the basis for CSAs. Director General Sigvard Eklund's establishment of SAGSI in 1975 was another way to ensure Member States' participation in how safeguards would evolve. The 1991–1995 Safeguards Criteria were developed in informal consultation with Member States.

Later, Programme 93+2 benefitted from the participation of Member States in deciding how the IAEA would codify the new legal instrument: the Model Additional Protocol. The IAEA also consulted with Member States extensively when developing the 2002 Conceptual Framework for Integrated Safeguards.

As IAEA safeguards continued to evolve, there were consistent efforts, including through the SIRs, reports by the Director General to the General Conference and countless papers published, such as at the quadrennial Safeguards Symposiums and meetings of the Institute for Nuclear Materials Management and the European Safeguards Research & Development Association. These initiatives were intended to keep the Member States and other stakeholders apprised of the continuing development in safeguards.

However, it is clear that the IAEA's explanation of State-specific factors and other aspects of the SLC did not have their intended effect, and was met with surprise by some Member States when presented in 2013. Herein lies a lesson for the IAEA. It is not a lesson inherently related to safeguards, but rather to communication: take the Member States with you always, especially the Vienna-based diplomats who are most often the lifeline between the IAEA and national capitals.

The IAEA Secretariat works at the service of all the Member States, so the consultations conducted and the updates given on safeguards and other work critical to the IAEA must be as explicit, transparent and frequent as possible. Moreover, the Secretariat must regularly take stock of Member States' views not only to ensure that it is acting objectively, equitably and non-discriminatorily, but also to ensure that it is seen to be acting objectively, equitably and non-discriminatorily by all Member States. Failure to do so opens the actions of the Secretariat to undue vilification for reasons unrelated the substance of the work itself.

It is also clear that the practices enshrined under the SLC are nothing new. The language used to describe the SLC has been present in IAEA documents since the 1990s and, through Board and General Conference decisions and resolutions, the Member States have repeatedly encouraged the further development of SLAs since the early 2000s.

Moreover, in the words of the late Director General Yukiya Amano, a "clear division of responsibility between the IAEA and Member States has traditionally been respected. We are responsible for the technical work of implementing safeguards. Member States make any policy decisions they may consider necessary, based on the factual and impartial reports which we provide."<sup>137</sup>

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<sup>137</sup> Yukiya Amano, "Challenges in Nuclear Verification," remarked delivered at the Center for Strategic and International Studies.

Since 2014, the IAEA has actively engaged with Member States on the development of the SLC, including its continued evolution. Consultations with Member States resulted in a third report in 2018 by the Director General on experience gained and lessons learned from implementing SLAs. In 2019, Massimo Aparo (DDG SG) and Therese Renis (Director of the Division of Concepts and Planning) published a paper documenting how the IAEA is capitalizing on those lessons.

The lessons include: “further elaborating processes and procedures for conducting APA and developing SLAs; reinforcing the consistent and collaborative functioning of State evaluation groups (SEGs); reinforcing internal governance to ensure consistency and non-discrimination, and developing tools to streamline processes and record results.”<sup>138</sup>

In the same vein, the IAEA started a two-year project in 2019 aimed at “improving the development of SLAs using a structured approach which includes: further developing and testing internal procedures for analysing acquisition paths; standardizing the formulation and prioritization of technical objectives; and developing and testing performance targets. These enhanced procedures were tested internally for several States.”<sup>139</sup>

Given the experience with the SLC in the 2010s, the IAEA should continue to keep the Member States informed and involved in the development of safeguards concepts. As terms change in the safeguards lexicon, the IAEA must be prepared to explain these changes to Member States in real time in order to avoid the chaos that characterized the 2012 and 2013 Board meetings. At the same time, Member States should understand that safeguards must evolve in order to remain effective and efficient, as they were mandated to be by the Statute the Member States themselves negotiated.

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<sup>138</sup> Massimo Aparo and Therese Renis, “Implementation of Safeguards at the State level – Developments Based on Recent Experience,” INMM, 2019. Available at: [https://resources.inmm.org/system/files/annual\\_meeting\\_proceedings/2019/a232\\_1.pdf](https://resources.inmm.org/system/files/annual_meeting_proceedings/2019/a232_1.pdf).

<sup>139</sup> IAEA, “Strengthening the Effectiveness and Improving the Efficiency of Agency Safeguards,” 11 August 2020. Available at: <https://www.iaea.org/sites/default/files/gc/gc64-13.pdf>.

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Noah Mayhew joined the VCDNP in July 2018 as a Research Associate, focusing on nuclear non-proliferation, IAEA safeguards and nuclear verification, arms control, US-Russian relations, and the peaceful uses of nuclear science and technology. Some of his previous contributions to nuclear discourse have been published by Stiftung Entwicklung und Frieden, the Nonproliferation Review, and the Swedish Radiation Safety Authority. Mr. Mayhew has also contributed to an ongoing Vienna Center project on the nexus between the peaceful uses of nuclear science and technology and nuclear security.

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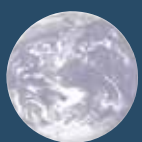
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