



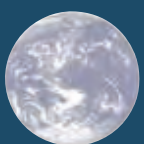
# Understanding States' Experiences in Safeguards: Challenges to and Opportunities for Entry into Force and Implementation

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Foreword by Laura Rockwood  
Introduction by John Carlson

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**VERTIC**

# **Understanding States' Experiences in Safeguards:**

## **Challenges to and Opportunities for Entry into Force and Implementation**

*Part I: Analysis and Recommendations*

*Part II: Member State Case Studies, Tables and Abbreviations*

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# Table of Contents

<b>Part I: Analysis and Recommendations</b> .....	1
Foreword by Laura Rockwood .....	3
Introduction by John Carlson: Defining the Goal .....	5
The NPT and Comprehensive Safeguards Agreements .....	6
Small Quantities Protocols .....	6
Additional Protocols .....	7
Outreach Efforts on Conclusion of CSAs and APs and Amendment of SQPs.....	8
<b>I. Executive Summary: Working Toward Solutions</b> .....	<b>11</b>
<b>II. Access to Peaceful Uses of Nuclear Energy, Science and Technology</b> .....	<b>15</b>
Leveraging Peaceful Uses for Action on Safeguards.....	15
Expanding Peaceful Uses in Step with Regulatory Capacity .....	16
Championing Peaceful Uses to Leverage Action on Safeguards and Regulatory Development.....	17
Recommendations .....	17
<b>III. Stressing Non-Proliferation Commitments</b> .....	<b>19</b>
Knowing is Half the Battle.....	19
Utilising Non-Proliferation Momentum.....	20
Convincing One’s Own Government.....	20
Recommendations .....	21
<b>IV. Leveraging Pre-existing National and Regional Structures</b> .....	<b>23</b>
Complementarity of Safeguards with Other Disciplines.....	23
Working on Several Fronts .....	24
Making Bureaucracy Work for You .....	25
Recommendations .....	26
<b>V. Raising Awareness at All Levels</b> .....	<b>29</b>
Considering Messaging .....	29
High-Level Engagement.....	30
Working-Level Engagement.....	30
Recommendations .....	31

<b>VI. Building Capacity for Implementation</b> .....	<b>33</b>
Training Across Related Disciplines.....	33
Being Geographically Sensitive.....	34
Building Staff Retention Into Training.....	35
Recommendations.....	35
<b>VII. Conclusion and Call to Action</b> .....	<b>37</b>
<b>PART II: THE EXPERIENCE OF MEMBER STATES</b> .....	<b>39</b>
<b>The Experience of Member States</b> .....	<b>41</b>
Benin.....	41
Cameroon .....	42
Ethiopia.....	43
Guinea-Bissau.....	44
Haiti .....	45
Lithuania.....	46
Malaysia .....	46
Maldives .....	47
Malta .....	48
Micronesia.....	49
Saint Lucia.....	50
State of Palestine.....	51
Sri Lanka.....	52
Sudan.....	53
United Arab Emirates .....	54
Yemen .....	55
Zimbabwe .....	56
<b>Tables</b> .....	<b>59</b>
Table 1: CSA States with Nuclear Facilities and APs .....	59
Table 2: CSA States with Nuclear Facilities and without APs .....	59
Table 3: CSA States with no Nuclear Facilities.....	60
Table 4: NPT NNWSs with no CSAs and no Nuclear Facilities.....	64
<b>List of Recommendations</b> .....	<b>65</b>
<b>List of Acronyms</b> .....	<b>69</b>

# **PART I: ANALYSIS AND RECOMMENDATIONS**



## *Foreword by Laura Rockwood*

At every annual General Conference of the International Atomic Energy Agency (IAEA) since 1991, the IAEA's Member States have addressed the need for strengthening IAEA safeguards. And every year since then – with a single exception when no resolution on safeguards was adopted – they have endorsed language expressing the conviction that IAEA safeguards can promote further confidence among States and thereby help to strengthen their collective security (GC(XXXV)/RES/559 (1991), which in turn, helps to create an environment conducive to nuclear cooperation (e.g. GC(66)/RES/10 (2022)).

The Member States have, since September 1997, also explicitly called for the conclusion by States of additional protocols (APs) based on the Model Additional Protocol (Model AP) unanimously approved by the Board of Governors in May 1997. And since 2006, they have called on all States with original small quantities protocols (SQPs) to either rescind or amend their respective SQPs as soon as their legal and constitutional requirements allow.

In response to a request in 2000 by the States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), and endorsed by the IAEA's General Conference, the IAEA Director General developed a plan of action for the IAEA Secretariat and its Member States to facilitate the entry into force of safeguards agreements and protocols, and has updated this plan regularly.<sup>1</sup> The General Conference has endorsed the efforts of Member States and the Agency Secretariat in implementing elements of the plan of action and has encouraged them to continue these efforts and to review the progress in this regard. It has also recommended that other Member States consider implementing elements of the plan of action, with the aim of facilitating the entry into force of comprehensive safeguards agreements (CSAs) and APs, and the amendment of operative SQPs.<sup>2</sup>

Of the States with outstanding CSAs, APs or modified/rescinded SQPs, it is possible to distinguish them from each other as falling into one of three categories: the unwilling, the unaware and the unable. In the category of the “unwilling” falls a small handful of States that, although well-informed and having the requisite resources, choose for political reasons not to take action, for example, on the conclusion of APs. The majority of States with outstanding CSAs, APs or SQPs, however, fall within the other two categories: they may be unaware of the value to them of effective safeguards or how to implement them, or they may be unable to take action on safeguards due to competing priorities and limited resources.

One of the most frequently asked questions by decision-makers in these latter two categories is “what’s in it for us?” What difference does it make if my country has little or no nuclear activity? There are two components to the answer, one related to individual national security and the other to collective global security.

Effective safeguards are in the interest of a State's *national* security. They increase a State's ability to control nuclear material and nuclear-related activities anywhere in the State, they improve the control of exports and help prevent and counteract illicit trafficking and they provide increased assurances to the world about the peaceful nature of the State's nuclear activities, however limited those activities may be.

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<sup>1</sup> The plan of action is available on the Agency's website at: <https://www.iaea.org/sites/default/files/21/09/sg-plan-of-action-2020-2021.pdf>. The most recent update is reflected in IAEA document GC(66)/13 (2022), p. 3, available at: <https://www.iaea.org/sites/default/files/gc/gc66-13.pdf>

<sup>2</sup> See, e.g., IAEA document GC(66)/RES/10, para. 18, available at: <https://www.iaea.org/sites/default/files/gc/gc66-res10.pdf>



Effective safeguards are also in the interest of *global* security. They help to prevent circumvention of non-proliferation undertakings by *other* States with CSAs, contributing to the establishment of international norms of non-proliferation, encouraging States with substantial nuclear activities to conclude APs, as well as contributing to overall transparency, which in turn builds trust and confidence.

A 2018 study undertaken by the VDCNP on “*Evaluation of the Impact of the Model Additional Protocol on Non-Nuclear-Weapon States with Comprehensive Safeguards Agreements*” offers a number of more concrete examples of the benefits to a State of effective safeguards, as articulated by the States themselves.<sup>3</sup> A common theme in the responses of the participants in that study, regardless of the scope and scale of nuclear activities of the State concerned, was the indispensability of an AP for a transparent nuclear programme. According to several participants, implementation of an AP enhanced the credibility of the whole safeguards system, which led to strengthened cooperation in the nuclear field.

Even the participating States with little or no nuclear activities cited advantages to concluding an AP, referring to economic benefits, strengthened national safeguards systems, increased cooperation with the IAEA, greater security and increased confidence of the international community in the peaceful nature of the State’s use of nuclear material, as well as the collateral benefit of better tracking of the locations of radioisotopes in industrial applications. In the words of one such State:

“[Implementation of the AP] significantly strengthened the [State’s] safeguards system, where it allowed for a broader scope of control and State regulation. Additionally, it strengthened the cooperation with the federal customs authority and customs administrations ... and cooperation with involved ministries and all chambers of commerce licensing any trade activities in the State.”

But, as noted in that study, and reiterated in the results of this recent study, that path is not always smooth sailing, especially if the State does not have the financial, human or technical resources to implement effective safeguards.

It is with a view to identifying the challenges to “taking action on safeguards”, as defined herein, and offering solutions to those challenges, that this joint project was undertaken by the VCDNP and VERTIC. The resulting report is intended to help further the review of steps already taken to assist States in the conclusion and implementation of CSAs, APs and, where appropriate, SQPs. Drawing on the first-hand experiences of State representatives, it identifies what has worked and where there may be gaps, offering constructive and actionable recommendations for achievement of the universalisation of effective and efficient safeguards.

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<sup>3</sup> Laura Rockwood, “Evaluation of the Impact of the Model Additional Protocol on Non-Nuclear Weapons States with Comprehensive Safeguards Agreements,” Swedish Radiation Safety Authority, 23 October 2018. Available at: <https://vcdnp.org/vcdnp-report-on-the-impact-of-the-model-additional-protocol-from-a-state-perspective/>.

## *Introduction by John Carlson: Defining the Goal*

This study addresses the steps States should take to promote the highest standard of IAEA safeguards, as well as ways to optimise the support provided by the IAEA, States and groups of States through outreach and capacity building that can help States to take these steps. It looks at the legal framework needed to support the most effective safeguards, and whether there is more that can be done in this regard. Specific issues discussed include:

- Concluding outstanding CSAs<sup>4</sup> as required by the NPT;<sup>5</sup>
- Why States that still have an original version of the IAEA's SQP should amend them to comport with the modified version or rescind them;<sup>6</sup> and
- Why States should conclude APs if they have not already done so.<sup>7</sup>

The IAEA safeguards system under the NPT has been developed to provide assurances that States are meeting their treaty commitment not to divert nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. The IAEA has the responsibility of independently verifying that these treaty commitments are met. However, safeguards should be seen as a collaborative partnership between the IAEA, States, regulators, facility operators and other national stakeholders to further shared objectives: preventing the spread of nuclear weapons, building international confidence and trust, and reinforcing international peace and security. Maximising the benefits of peaceful uses of nuclear energy, science and technology (hereafter "peaceful uses") is an integral part of this partnership.

Safeguards serve the national interests of States in two key ways: they enable each State to demonstrate to others that it is meeting its peaceful use commitments and they provide the State with confidence that others are doing the same. For safeguards to serve these interests and to achieve the broader international objectives outlined above, it is essential for the safeguards system to operate at the highest level of effectiveness. It follows that it is in the interest of every State to work for the universal acceptance and application of safeguards at the highest available standard.

Universalisation requires every State to do its part. For States with nuclear facilities, the need for this is obvious. But States without significant nuclear activities can also make an important contribution – they can help establish the highest safeguards standard as a matter of international practice.

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<sup>4</sup> International Atomic Energy Agency (hereafter "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/infircs/1972/infirc153.pdf>.

<sup>5</sup> Treaty on the Non-Proliferation of Nuclear Weapons, 1970. Available at: <https://www.un.org/disarmament/wmd/nuclear/npt/text>.

<sup>6</sup> The standard text for SQPs, both the 1974 text and the 2005 modified text, is contained in the annexes IAEA guidance document "Safeguards Implementation Guide for States with Small Quantities Protocols," pg. 93 and 95, IAEA, 2013. Available at: [https://www-pub.iaea.org/MTCD/publications/PDF/svs22\\_web.pdf](https://www-pub.iaea.org/MTCD/publications/PDF/svs22_web.pdf).

<sup>7</sup> IAEA, "Model Protocol Additional to the Agreement(s) between States and the International Atomic Energy Agency for the Application of Safeguards," INFCIRC/540 (Corrected), 1997. Available at: <https://www.iaea.org/sites/default/files/infirc540.pdf>.

## The NPT and Comprehensive Safeguards Agreements

The fundamental commitment not to divert nuclear energy and nuclear material to nuclear weapons or other nuclear explosive devices is given through the NPT. Non-nuclear-weapon States (NNWSs) party to the NPT undertake to accept IAEA safeguards on all their nuclear material to verify this commitment. To this end, NNWSs are required to conclude safeguards agreements with the IAEA, in accordance with the IAEA Statute and the Agency's safeguards system.

The concept introduced by the NPT of applying safeguards to all of a State's nuclear material was described in the early days as "full-scope safeguards". Today, this is referred to as "comprehensive safeguards". Following the entry into force of the NPT, the IAEA and its Member States developed a document outlining the structure and content for CSAs, issued in 1972 as IAEA document INFCIRC/153 (Corrected).

The NPT requires a NNWS to negotiate a CSA and bring it into force within 18 months of becoming party to the treaty. Currently there are 180 States with CSAs,<sup>8</sup> 63 of which have nuclear facilities – see Table 1. There are currently five NNWS parties to the NPT that have yet to conclude a CSA – see Table 4. Since this is a treaty obligation, and safeguards cannot be applied without a safeguards agreement, the outstanding CSAs should be concluded without further delay. The IAEA, States and groups of States should do whatever they can to assist in achieving this.

## Small Quantities Protocols

In 1974, recognising that many States had little or no nuclear material, but wished to facilitate the conclusion and implementation of the requisite CSAs, the IAEA introduced a model SQP for such States. The 1974 SQP suspends most of the detailed procedures of a CSA for as long as the State concerned continues to qualify for the SQP.

To qualify for an SQP at that time, a State had to have less than specified quantities of nuclear material and no nuclear material in a nuclear facility.<sup>9</sup>

Modified SQPs. As part of actions taken to strengthen the IAEA's safeguards system (discussed below), it was realised that the original (1974) version of the SQP had a significant weakness, namely, the SQP's suspension of routine safeguards procedures undercut the IAEA's ability to verify whether a State continued to meet the qualifications for an SQP. Accordingly, the IAEA's Board of Governors decided in 2005 to modify the eligibility criteria and revise the model SQP so that: (a) the SQP would no longer be available to a State with an existing or planned nuclear facility; (b) the State would be required to provide initial reports on nuclear material and to provide early design information on any planned nuclear facility; and (c) the IAEA could perform inspections.<sup>10</sup> The Board of Governors also agreed that that Member States with operative SQPs based on the old model be requested to amend them to the new text if they still qualified or to rescind them if they did not.<sup>11</sup>

<sup>8</sup> IAEA, "Conclusion of Safeguards Agreements, Additional Protocols and Small Quantities Protocols," status as of 31 December 2022. Available at: <https://www.iaea.org/sites/default/files/20/01/sg-agreements-comprehensive-status.pdf>.

<sup>9</sup> Laura Rockwood, "Legal Framework for IAEA Safeguards," IAEA, 2013. Available at: <https://www.iaea.org/sites/default/files/16/12/legalframeworkforsafeguards.pdf>.

<sup>10</sup> Noah Mayhew, "How States Benefit from Amending or Rescinding Small Quantities Protocols," *Governing the Atom Brief Series*, VCDNP, 8 June 2022. Available at: <https://vcdnp.org/sqp-brief-first-edition/>.

<sup>11</sup> IAEA, "Strengthening Safeguards Implementation in States with Small Quantities Protocols," GOV/2005/33, 2005.

All SQPs concluded since December 2005 have been based on the modified (strengthened) version. The IAEA has continued to request States with the original form of an SQP either to amend their SQPs in line with the revised version (should they continue to be eligible to do so) or to rescind them.

Currently there are 98 SQPs in force – see Table 3. Not every State with a CSA but no nuclear facility has opted for an SQP. There are 19 States that may qualify for an SQP but never applied for, or have already rescinded, their SQPs.

Of the 98 SQPs currently in force, 75 are in the modified version, either because the States concerned agreed to amend their existing SQPs, or because the SQPs were concluded after the IAEA Board's adoption of the modified version. Twenty-three SQPs remain in the 1974 version.

Since it is now more than 17 years since the IAEA determined that the original version of the SQP was inadequate for the strengthened safeguards system, it is imperative for States that still have old SQPs to either amend or rescind them. Other States that are able to assist them in this effort should be encouraged to do so.

In some cases, States with old SQPs have concluded APs (see below) – currently there are four such States. An AP certainly improves the IAEA's verification capabilities, but it is still better to amend or rescind an old SQP rather than rely on the AP to compensate for the 1974 SQP's deficiencies.

## **Additional Protocols**

The Model AP arose as part of the major effort to strengthen the IAEA safeguards system following the discovery of Iraq's undeclared nuclear programme in 1991. This effort focused especially on the means needed to identify and investigate possible undeclared nuclear activities. New safeguards approaches and techniques have been developed, including wider information reporting requirements, broader access rights for inspectors, the collection and analysis of a broader range of information, and the use of satellite imagery and environmental analysis. The Model AP was developed collaboratively by the IAEA and Member States as a complement to CSAs. It is a voluntary measure that provides the IAEA with the additional legal authority needed for some of the new safeguards measures.

The Model AP was approved by the IAEA's Board of Governors in 1997 (IAEA document INFCIRC/540 (Corrected)). Since then, APs concluded on the basis of the model have become firmly established as the contemporary safeguards standard, having been brought into force or signed by 92% (58) of the 63 CSA States with nuclear facilities, and 81% (145) of all CSA States – see Tables 1 to 3.

The IAEA has emphasised many times that, for a State without an AP in force, it is unable to draw the conclusion that all nuclear material remains in peaceful activities. As the purpose of safeguards under the NPT is to verify whether all nuclear material in a State remains in peaceful activities, the inability to draw such a conclusion has major implications for NPT compliance and the confidence the NPT is intended to provide.

There are five CSA States with nuclear facilities that have not commenced negotiation of an AP with the IAEA – see Table 2.B. This appears to be a political position taken by those States. In addition, Saudi Arabia, which has a nuclear facility nearing completion, remains without an AP, and also retains an original version SQP. High-level engagement is needed to persuade these

States that APs are actually in their own national interests as well as in the international interest in effective verification. There are four CSA States with nuclear facilities that have signed APs but not yet brought them into force – see Table 2.A. Other States should do whatever they can to encourage and assist these States to conclude and implement APs.

Looking at CSA States without nuclear facilities, there are 37 States without APs – see Table 3. Seven of these States have signed an AP, and one has had an AP approved by the IAEA Board. Here, too other States should do whatever they can to encourage and assist these States to bring into force and implement APs.

## **Outreach Efforts on Conclusion of CSAs and APs and Amendment of SQPs**

Outreach has been conducted over many years at various levels: by the IAEA, regional organisations and States, collaboratively and individually. These efforts have had good success, as seen by the steady decline in the number of States remaining outside the key safeguards instruments. However, much work remains to be done.

As is to be expected, the IAEA is the main provider of such outreach activity, with its current programme (2022/2023) including: bilateral consultations with relevant States in the African, Asian, Pacific and Caribbean regions; organisation of regional and national outreach events; and ongoing reminders to States. Details are given in the Agency’s “Plan of Action to Promote the Conclusion of Safeguards Agreements and Additional Protocols”.<sup>12</sup>

The IAEA’s activities include:

- High-level dialogue, involving the Director General and other senior officials;
- Consultations with State delegations, mostly in Vienna, Geneva and New York;
- National and regional seminars, held in a number of capitals;
- Training courses for State systems of accounting for and control of nuclear material (SSACs), held on a national, regional and interregional basis;
- SSAC Advisory Services, which evaluate the performance of SSACs and make recommendations; and
- An extensive range of guidance documents.<sup>13</sup>

Regional organisations and individual States, usually working in collaboration with the IAEA, have also made important contributions. These organisations have included: UNREC (UN Regional Centres for Peace and Disarmament) in Africa, Latin America and the Caribbean, and Asia and the Pacific; OPANAL (Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean); ECOWAS (Economic Community of West African States); ASEAN (Association of Southeast Asian

<sup>12</sup> IAEA, “Plan of Action to Promote the Conclusion of Safeguards Agreements and Additional Protocols.” Available at: <https://www.iaea.org/sites/default/files/22/10/sg-plan-of-action-1-july-2021-to-30-june-2022.pdf>.

<sup>13</sup> Some guidance documents related to this report include the following: IAEA, “Guidance for States Implementing Comprehensive Safeguards Agreements and Additional Protocols,” 2012. Available at: <https://www.iaea.org/publications/8842/guidance-for-states-implementing-comprehensive-safeguards-agreements-and-additional-protocols>.

Nations); and AFCONE (African Commission on Nuclear Energy). It is important to continue and build on these outreach efforts.

In addition to outreach encouraging and assisting States in the conclusion of the relevant instruments, it may be possible to arrange ongoing support for national safeguards activities through nuclear-weapon-free zone (NWFZ) treaty secretariats and other regional organisations. For example, peer review and peer support activities could be extremely helpful, complementing the more formal IAEA advisory services.

An important aspect of this work is preservation of institutional memory as to the challenges faced by individual national authorities and how they were resolved. Many States are likely to encounter similar situations, and there are obvious advantages in recording and sharing experiences that could be helpful to others.

The key point is that every State benefits from strong and effective nuclear safeguards. The IAEA has the central responsibility, but safeguards operate best as a collaborative partnership, with States supporting the IAEA and each other. An essential step to this end is for all States to conclude the instruments needed to achieve universalisation of strengthened safeguards – not only CSAs, but also APs and, for qualifying SQP States, the revised text for SQPs. Collaboration in helping States achieve universalisation can create opportunities for ongoing collaboration in safeguards implementation which, in turn, ensures that the safeguards system performs as effectively and efficiently as possible.



# I. Executive Summary: Working Toward Solutions

- In 2022, the Vienna Center for Disarmament and Non-Proliferation (VCDNP) together with the Verification Research, Training and Information Centre (VERTIC) embarked on a project with the aim of identifying the reasons that States take (or do not take) action on safeguards and what more can be done by the IAEA, States and groups of States both to promote further action on safeguards and to support States in this regard. The goal of the project was to provide actionable, Member State-driven recommendations for the IAEA, States and groups of States to these ends, and to preserve institutional memory about State decision-making on safeguards. This report is the result of that project. For the purpose of this report, the following definitions should be taken into account:
- To “take action on safeguards” is used collectively to refer to a State: bringing into force a CSA; signing, having approved by the IAEA Board of Governors or bringing into force an AP; and amending or rescinding an SQP (as applicable to the State concerned).
- “Safeguards instruments” refers to CSAs, APs and SQPs.
- “Entry into force” is used to include not only the entry into force of CSAs and APs, but also the amendment or rescission of SQPs based on the 1974 model text.
- “Implementation” refers to fulfilment by a State of its obligations, depending on the safeguards instruments in force for it, including but not limited to the operation of its SSAC and regulatory body.

As a first step in this project, the VCDNP and VERTIC conducted interviews with representatives from 17 States who had been directly involved in their government’s decision to take action on safeguards. Many, but not all, of the States were developing or least-developed countries (LDCs). The representatives had varied backgrounds. While many of the individuals interviewed during the project were from national regulatory bodies, they also included diplomats posted abroad, officials from ministries of foreign affairs, defence and energy, National Liaison Officers (NLOs), National Liaison Assistants (NLAs) and others.<sup>14</sup>

In January 2023, the VCDNP and VERTIC convened a workshop in Vienna, Austria, with 10 representatives from States that had taken action on safeguards in the preceding four years. This included many Member State representatives whom the project team had interviewed for the project. The workshop also included eminent safeguards experts. The aim of the workshop was both to generate actionable recommendations and to promote the exchange of experiences among Member States themselves. Drawing on the invaluable experience of the State representatives interviewed and present at the workshop, the VCDNP and VERTIC formulated recommendations under five themes related to key drivers that had led States to take action on safeguards. In some cases, the experiences reflected under each thematic section overlap with one another. That in itself could be a sixth theme – that the motivations that drive countries to take action on safeguards and the challenges that they face in this regard are inextricably interlinked, both across professional disciplines and in terms of capacity.

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<sup>14</sup> The National Liaison Officer (NLO) is the primary contact person between the IAEA and a Member State on matters relating to the IAEA, in particular technical cooperation. National Liaison Assistants (NLA) support the work of the NLO.



## The five themes can be summarised as follows:

<p><i>Peaceful Uses</i></p>	<p>The majority of States interviewed stressed that action taken on safeguards had been driven by the desire to expand access to the peaceful uses of nuclear energy, science and technology. As such, exploring further ways to responsibly leverage the nexus between peaceful uses and safety, security and safeguards would increase the impact of outreach and capacity building activities.</p>
<p><i>Non-Proliferation</i></p>	<p>As important for the majority of States interviewed was the desire to stress their commitment to the global non-proliferation regime, including obligations under the NPT, as well as their safeguards instruments. On one hand, several States interviewed said that in discussions with their respective governments on whether to take action on safeguards, successful arguments were characterised by the sentiment, “what do we have to hide?” Several interviewees emphasised their responsibilities to their regional neighbours as “countries in a global village”. On the other hand, the argument for action on safeguards in developing countries, especially LDCs that have little to no nuclear activities, and do not have or aspire to embark on nuclear power, becomes more difficult to make. Moreover, these States often require extensive capacity building, and additional financial and human resources, to implement safeguards effectively.</p>
<p><i>Leveraging</i></p>	<p>The value of leveraging pre-existing national committees established for purposes other than safeguards was an important theme. An example of this was a high-level committee established in Guinea-Bissau for the implementation of United Nations Security Council resolution 1540 (2004), but was later used to facilitate safeguards entry into force. Such committees are frequently characterised by direct and regular access to high-level officials by working-level diplomats or practitioners engaged in or responsible for related disciplines such as nuclear security or export controls. Also relevant to this theme was the discussion on how better to responsibly leverage access to peaceful uses to improve the safeguards capacity of the country or region concerned. Finally, ways in which countries can better leverage the role of and support from regional organisations was discussed.</p>
<p><i>Awareness</i></p>	<p>All of the States interviewed for the project emphasised the importance of awareness raising among all stakeholders within their governments. This includes high-level engagement, such as between heads of State, between a single head of State and the IAEA Director General, and with ministers of foreign affairs, energy, health and defence. The importance of awareness raising at the working level was equally emphasised, including among diplomats, government officials and regulators, particularly during international gatherings such as the annual IAEA General Conference. Interviewees also noted the importance of messaging in outreach that is tailored to the States concerned, conducted with knowledge of national bureaucratic processes and sensitive to the particular needs of the State.</p>

<b><i>Awareness Cont.</i></b>	This messaging should also bear in mind the ambitions of the State for development through both power and non-power applications of nuclear science and technology. Tailor-made answers to the question “what’s in it for us?” were cited as particularly important aspects of outreach strategy.
<b><i>Capacity</i></b>	The final theme identified by the project team was capacity building for effective implementation. Several State officials interviewed during the project emphasised that there was no sense in bringing into force a safeguards instrument if the State was unable to implement it. By the same token, efforts by the IAEA, States and groups of States to build capacity were cited in some cases as catalysts for the State concerned to take action on safeguards. Further consideration should be given to ensuring the sustainability of implementation once the safeguards instruments are in force.

Bringing into force a CSA or AP, or amending or rescinding an outdated SQP, can be difficult for a State in terms of securing approval from ministers or heads of State, drafting legislation, securing its passage through parliaments and building technical expertise. However, the human aspects of these challenges are often more compelling: engaging on safeguards with States that have little or no nuclear material or infrastructure and/or States that are located in politically unstable regions or are involved in conflicts not of their own making.

These themes comprise a kaleidoscope of factors that should be considered when conducting outreach and capacity building activities.



## II. Access to Peaceful Uses of Nuclear Energy, Science and Technology

Many IAEA Member States joined the Agency to benefit from the peaceful uses of nuclear energy, science and technology, largely through the IAEA's Technical Cooperation (TC) Programme, which facilitates the transfer of technology and know-how to its Member States. Though it is not a prerequisite to IAEA membership, it is understood that all States receiving technical assistance should establish a regulatory and legislative framework for the use of nuclear and other radioactive materials to ensure the protection of people and the environment. One aspect of such a framework, if the recipient State is a NNWS party to the NPT, is the conclusion of a CSA as required under the NPT.



Orange Industry in Western Cape, South Africa, Source: Miklos Gaspar / IAEA via Flickr

### Leveraging Peaceful Uses for Action on Safeguards

Many of the individuals interviewed for the study mentioned access to peaceful uses as a driver for their countries' taking action on safeguards, establishing a regulator and setting up an SSAC. This was not surprising as the countries in question were almost all developing countries with emerging economies and, by their own account, had joined the IAEA to benefit from peaceful uses.

When Benin's Minister of Health in 2016 requested the support of the IAEA to establish a radiotherapy facility for cancer treatment, the Department of Technical Cooperation encouraged Benin to put in place a regulatory body to enable the State to inspect and licence the radiotherapy centre and meet some basic safety standards before procuring equipment. This provided the incentive, lacking for more than 10 years, for Benin to promulgate its nuclear law, establish a regulator and bring into force its

CSA with an AP and an SQP in July 2019. All three instruments had been signed in 2005. However, the high-level political interest in bringing them into force was lacking before 2016.

On the part of Ethiopia, a representative of the regulator noted that Ethiopia's peaceful use programme had not grown since amending its SQP and bringing an AP into force. Ethiopia is considering embarking on nuclear power. While safeguards are prerequisites for developing a nuclear power programme, this is one of the 19 nuclear infrastructure issues requiring specific actions from States in their journey to nuclear power. The expectation that a country will assume safeguards obligations is often met with the expectation that these obligations will result in greater access to peaceful uses.

Leveraging peaceful uses for action on safeguards for countries that are not aspiring to nuclear power production can be challenging. Countries like Haiti and the Maldives lack the capacity to take action on safeguards or on peaceful uses. There is unlikely to be an incentive or a sustained commitment by legislators and policymakers to enact legislation and commit human and financial resources to the regulation of peaceful use activities when the country is not benefiting from nuclear applications in medicine, agriculture or the environment.

## **Expanding Peaceful Uses in Step with Regulatory Capacity**

Six of the countries interviewed for the project are designated by the United Nations as LDCs. These countries have limited peaceful use activities involving perhaps a handful of radioactive sources and little to no nuclear material.<sup>15</sup> With the exception of Ethiopia, none have expressed an interest in embarking on nuclear power. Nevertheless, these countries struggle with safeguards implementation, including setting up their SSACs, which requires human and financial resources. As their nuclear sector does not generate income for the government, it becomes difficult to invest in an independent regulator. The majority of developing countries in this study face many of the same challenges. These countries have expressed a need for more support to develop technical and human resource capacities in order to improve their ability to implement their safeguards commitments. Concomitantly, they also need technical support to develop a peaceful use programme to advance their development objectives in areas such as health and agriculture. It stands to reason that efforts should be made to enable countries to implement their safeguards commitments and strengthen their regulatory capacities in step with a growing peaceful use programme. This is particularly salient as the IAEA's resources are under increasing strain due to longstanding budgetary constraints, which have worsened as a result of the global financial crisis. This limits IAEA's ability to support growing demand for its services.

The establishment of a regulatory function within an existing ministry or department is common practice in many developing countries, including among those interviewed for this study. These countries also combine regulatory functions for nuclear safety, security and safeguards under one regulator to reduce the number of people required to execute these functions. This provides a practical interim solution to the lack of funding and capacity required to establish an independent regulator. This is an initial step that allows the regulator to develop as its peaceful use programme develops.

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<sup>15</sup> The nuclear material would likely be limited to depleted uranium metal which is used for shielding in medical radiation therapy and industrial radiography equipment. For more information, see: Juan Carlos Benitez Navarro and Irena Chatzis, "Seeing the Full Picture: IAEA to Develop Comprehensive Guidance for the Management of Depleted Uranium used in DSRS Shielding," IAEA, 28 August 2019. Available at: <https://www.iaea.org/newscenter/news/seeing-the-full-picture-iaea-to-develop-comprehensive-guidance-for-the-management-of-depleted-uranium-used-in-dsrs-shielding>.

## Championing Peaceful Uses to Leverage Action on Safeguards and Regulatory Development

A lack of awareness about the contribution peaceful uses can make to sustainable development not only impedes the expansion of peaceful uses but also bedevils safeguards implementation. The regulators interviewed agreed that negative perceptions related to “all things nuclear” makes their work harder. Some noted that these negative perceptions actually disincentivise action by politicians, who usually prioritise legislation that will benefit their public image. A champion for peaceful uses in the government, such as a Minister of Health as in the case of Benin, could prove to be a catalyst for action on safeguards.

To incentivise action on nuclear safety, security and safeguards, the international community emphasises the risks related to the use of nuclear and other radioactive material. The findings of this study demonstrate that the promotion of the benefits of peaceful uses to be an effective way to leverage action on safeguards, especially in countries that are not aspiring to nuclear power.

In its December 2021 report, the VCDNP Task Force on Peaceful Uses of Nuclear Science and Technology highlighted the need to raise awareness of the benefits of peaceful uses and recommended that delegations to high-level IAEA events related to nuclear applications and technical cooperation should include high-level policymakers and experts from a various ministries or departments in order to raise awareness about the benefits of peaceful nuclear uses and promote intragovernmental cooperation.<sup>16</sup> As discussed further in the report, several States benefited from diverse, high-level engagement at the IAEA’s General Conference. Involving all the relevant decision makers will improve awareness of the benefits of peaceful uses, which in turn strengthens political will to take action to create a safe, secure and safeguarded environment to sustain peaceful uses activities. However, as many countries lack the resources to send such diverse delegations to the General Conference, attention must be directed to ways in which participation in the General Conference – and other high-level events – is encouraged and supported financially.

### Recommendations

1. When engaging with countries who are not yet members of the IAEA or have little to no nuclear activities, the IAEA, States and groups of State should recall the challenges faced by these countries related to lack of capacity and high-level awareness of the benefits of peaceful uses. In this regard, the following outreach approaches could be considered. First, share experiences of other similarly situated States where regulatory functions are anchored in a relevant ministry (such as health or agriculture), and safety, security and safeguards are combined under one regulator. Second, facilitate national or regional events where peaceful uses and related IAEA initiatives, such as Rays of Hope (radiotherapy for cancer treatment), can be promoted to high-level policymakers.
2. More opportunities should be created to engage policymakers on health, agriculture and finance, including parliamentarians, on the benefits of peaceful uses and the States’ safeguards obligations. This allows decision-makers further occasion to engage directly with experts from the IAEA and build understanding of peaceful uses and safeguards.

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<sup>16</sup> Elena K. Sokova and Ingrid Kirsten, “VCDNP Task Force on Peaceful Uses of Nuclear Science and Technology: Report and Recommendations,” VCDNP, 15 December 2021. Available at: <https://vcdnp.org/pune-task-force-recs/>.

3. Strategies for safeguards outreach should take into account the extent to which the State uses nuclear and other radioactive material and take steps to support the State, such that the cost of implementing safeguards do not outweigh the benefits of peaceful uses, either in reality, or in perception.
4. Outreach and capacity-building efforts aiming to increase a State's regulatory capabilities should support an approach that is in step with and in proportion to its peaceful uses programme. In this regard, consideration should be given to the development of a graded "roadmap" approach to regulatory capacity building, perhaps with the support of research conducted by non-governmental organisations.

# III. Stressing Non-Proliferation Commitments

Another motivating factor for taking action on safeguards that States often cited was the desire to demonstrate their commitment to international non-proliferation norms. For some, high standards in nuclear governance, including but not limited to safeguards, are domestically considered prerequisites to responsible statehood and participation in the international system. For others, taking action on safeguards was motivated by the perceived need to demonstrate their non-proliferation commitments to other States, in some cases as a confidence-building measure to assuage concerns about proliferation and in others to be a “model State,” encouraging other States to follow suit.



IAEA Agency headquarters in Vienna, Austria, Source: Dean Calma / IAEA via Flickr

## Knowing Is Half the Battle

Most States interviewed for the study expressed the desire to demonstrate their commitment to the global non-proliferation regime. While the majority of States want to demonstrate their commitment to non-proliferation norms, they may be unaware of the value of strong safeguards for themselves or how to implement them, or may be unable to take action on safeguards due to capacity issues or domestic political conditions.



This is particularly true in cases where a new regulatory authority or other body responsible for safeguards implementation is established. In the case of Cameroon, for example, after its radiation authority was established in 2007, it began to consider which treaties and conventions the country should accede to. Following receipt of a letter from Director General Grossi and explanations at the General Conference on the simplified process of SQP amendment, Cameroon was able to amend its SQP in 2019. At this time, Cameroon already had an AP in force and was keen to demonstrate its non-proliferation commitments – it was simply unaware of the amendment process.

Awareness of mechanisms to strengthen safeguards and the ability to implement them also relate to understaffing in State or regional authorities (SRAs) responsible for safeguards implementation. For example, in the case of Saint Lucia there are only three people dealing with IAEA matters at the Ministry of Foreign Affairs, and this does not cover all nuclear-related matters. During their interview, a representative from Saint Lucia emphasised that, when there is very little human resource capacity in a country with no nuclear activities, safeguards are unlikely to be a priority. As such, it was noted that outreach should be frequent and conducted at various levels, as will be discussed in the later section on “Raising Awareness at All Levels”.

## **Utilising Non-Proliferation Momentum**

While safeguards are often thought of in a vacuum, State decision-making with regard to safeguards is often affected by decisions taken in relation to nuclear safety, nuclear security, nuclear infrastructure development, export controls and related fields. Several States interviewed for the study commented that when they were considering bringing their CSA or AP into force, or amending/rescinding their outdated SQP, they had taken similar decisions on other international instruments, such as the Convention on the Physical Protection of Nuclear Material (CPPNM) and its 2005 Amendment, the Convention on Nuclear Safety (CNS) and implementation of United Nations Security Council resolution (UNSCR) 1540 (2004).

Particularly for developing countries and LDCs, an internal review of national policies on non-proliferation often includes multiple topics in the nuclear field, rather than just safeguards. In many of these States, the team (or individual) working on safeguards for the country has also responsibilities for security, safety or radioactive source regulation. Those interviewed for the study remarked that it was effective to bring into force a number of treaties and conventions simultaneously. This is the approach that Palestine has taken, as it is considering the landscape of international instruments to which it should accede. In addition, utilising structures related to instruments already in force (such as a committee set up to coordinate the implementation of UNSCR 1540, as was the case with Guinea-Bissau), is an effective way to encourage action on safeguards. More on this is discussed in the below section on “Leveraging Pre-existing National and Regional Structures”.

## **Convincing One’s Own Government**

Often, States take action on safeguards as a result of the efforts of “safeguards champions” – individuals who are aware of the need to strengthen safeguards in their State and motivated to affect change in this regard. This was the case for Sudan, when a Sudanese diplomat learned that the country’s SQP was outdated and that the drawing of credible safeguards conclusions for States with such an SQP was becoming more challenging. The challenge this individual faced – as is the case in many countries – was convincing the national government that it is

in its interest to take action to strengthen safeguards. This can be a particularly tough sell for States with no nuclear activities and no plans to embark upon them, for developing countries and LDCs that rely on the IAEA for access to peaceful uses, and for countries involved in long-term regional or domestic military conflict. During one interview, a Member State representative noted that, in consultation with their head of State on amending an outdated SQP, they were met with the response: “we need protection from bullets, not radiation.”

Notwithstanding, the desire to demonstrate national commitment to the non-proliferation regime is often a successful argument in this regard, particularly when paired with the prospect of expanded access to peaceful uses. When asked what the primary motivation for taking action on safeguards was for their State, several responded that “we have nothing to hide, so why should we be opaque?”

It was the view of several of the interviewees that maintaining strong standards in safeguards was a point of national pride and a qualification to credibly participate in international negotiations on nuclear issues. Sometimes, however, the drive for stronger national safeguards implementation was less about demonstrating non-proliferation commitments to adversaries, but rather about being a model for safeguards excellence that other countries might follow.

## Recommendations

5. As demonstrating the value of taking action on safeguards can be difficult for countries that have little or no nuclear material, those conducting outreach and capacity building activities should formulate State- or region-specific strategies to provide credible answers to the question “what’s in it for us?”. More effectively demonstrating the value of safeguards for such countries would advance existing outreach activities. Moreover, sharing those strategies with others that conduct outreach and capacity building, perhaps through the establishment of a formal outreach forum that meets annually, would benefit the outreach activities of all.
6. As non-proliferation and peaceful uses comprise two of the three pillars under the NPT, States Parties to the treaty should consider outreach and capacity building activities during the review cycle. This could include a commitment in the final document of the next NPT Review Conference to support developing countries and LDCs in their efforts to establish and maintain regulatory bodies and SSACs, while also supporting expanded access to peaceful uses. Such support would need to be concrete, time-bound and involve both financial and technical contributions from a variety of States, including those that do not already conduct such activities.
7. The IAEA, States and groups of States should collaboratively explore the complementarity of safeguards with other issues in nuclear governance when planning for, implementing and evaluating the effect of safeguards outreach. Particularly for developing countries and LDCs, safeguards legislation and implementation often overlaps with such subjects as export controls, nuclear security, radiological security, nuclear safety and border control policies. Considering outreach for many of these related fields together could increase capacity across the board in a more effective and efficient way.
8. In this regard, more research should be done on how to maximise the complementarities between nuclear safety, security and safeguards (3S), in particular as concerns conditions in developing countries. Such research could be funded by national governments and carried out by non-governmental organisations. The value of non-governmental organisations doing such work is that they remain neutral of any national agenda and are likely to have the ability to dedicate time to in-depth research.

9. While the value of frequent reminders could be considered “nagging”, many Member State representatives interviewed for this study remarked on the great value of regular outreach to remind States of the need to take action on safeguards in order to fulfil non-proliferation commitments. In particular, for States with very small offices dealing with these issues, a lack of response doesn’t mean “no” – it may simply be indicative of very low bandwidth.

## IV. Leveraging Pre-existing National and Regional Structures

One way States have been able to overcome issues with capacity is through the utilisation of existing national structures, such as high-level committees or commissions, that were established for one purpose to make progress on another. The value in using such structures is that they tend to be cross-sectoral involving inter-ministerial participation by high-level officials at relevant ministries, and sometimes the ministers themselves. Often these same structures work on a number of nuclear issues, including TC, nuclear security, nuclear safety, export controls, and radiation safety. They are particularly useful when they have direct access to heads of State and meet on a regular basis.



Rafael Mariano Grossi and his Delegation, Source: Dean Calma / IAEA via Flickr

### Complementarity of Safeguards with Other Disciplines

Developing countries often have one body that handles most or all nuclear-related activities. This is particularly true for countries with little or no nuclear activities. Which body this is differs from country to country. In some cases, such as in Saint Lucia, it is an office in the Ministry of Foreign Affairs, staffed by a small number of individuals. In others, such as in Zimbabwe, the nuclear regulatory body handles the implementation of all nuclear-related treaties and conventions. Still others house nuclear-related activities in other government bodies, such as the Ministry of Defence in the case of Maldives (though requests from the IAEA still come through the Ministry

of Foreign Affairs). Several of those interviewed for the project commented that an improved understanding on the part of institutions wishing to support safeguards outreach and capacity building of internal processes for the implementation of safeguards and other disciplines, including which body is responsible for implementation and liaising with the IAEA and with other States, would be beneficial.

It should be noted that in some cases, the decision on where to house safeguards and regulatory capabilities is taken early in the process of national adoption of such commitments, at a stage where little expertise could be found at the national level. In many cases, the establishment of a separate regulatory authority came to be seen as a national goal only once a greater understanding of the issue – in both its legal and operational aspects – was attained. Even when this happens, the establishment of a separate, independent regulatory authority can take years, as it often requires major legislative changes. In the interim, the offices and officials tasked with nuclear regulatory functions within a larger ministry still carry out important work both in supporting safeguards implementation and in supporting further national action on safeguards.

It is also important to note that the legislation required for safety, security, safeguards, export controls and other related fields will touch on similar aspects of regulatory work. Particularly considering that in many cases, one office or department works on many or all of these issues, tailoring outreach to take into account the status of the State concerned in fields other than safeguards was identified as a potential improvement. For example, after the establishment of Cameroon's nuclear regulatory body in 2007 and Cameroon's accession to the Treaty of Pelindaba in 2009, the country began developing a comprehensive 3S law in the country. According to the Cameroonian interviewee, further prompted by Cameroon's ratification of the Amendment to the CPPNM in 2016, the 3S law entered into force in July 2019. While the law took a number of years to develop and achieve adoption by Cameroon's legislative system, this experience demonstrates that the complementary nature of the different disciplines as a one-house approach could be a useful lens through which to view outreach and capacity building.

In some cases, cross-sectoral and inter-ministerial commissions or committees were established in countries initially for the purpose of bringing into force or implementing other nuclear-related instruments, and were later utilised for safeguards. For example, a commission was established in Guinea-Bissau to coordinate the implementation of UNSCR 1540. The commission includes high-level representatives from various ministries, including the ministries of foreign affairs, health and energy, as well as representatives from civil society. Once that commission was established and its initial work on UNSCR 1540 had been implemented, the commission turned to safeguards. In this case, the existence of a high-level, cross-sectoral, inter-ministerial body to consider nuclear matters accelerated Guinea-Bissau's awareness of safeguards and its ability to bring into force its CSA with an SQP and an AP. While this example is specific to Guinea-Bissau, other countries interviewed noted the value of this approach.

## **Working on Several Fronts**

As alluded to above, pairing outreach on disciplines related to safeguards is an effective strategy for securing the adoption of more instruments at once. For example, the establishment of a nuclear security committee in Zimbabwe—which includes representatives from its ministries of energy, health, agriculture and foreign affairs, as well as the customs authority and representatives from industry—was aided not only through IAEA advisory services, but also through the United Nation's 1540 Committee.

Outreach and capacity building on safeguards should be extensively coordinated between departments in the IAEA, as well as with States conducting such activities. Planning, implementation and evaluation of outreach and capacity building activities should be conducted with a long-term view, in order to avoid duplication of effort or impeding future progress.

According to a representative from Sri Lanka, until 2014, the Atomic Energy Authority was responsible for both promotional and regulatory activities in the country. Following the advice of several IAEA advisory missions in the 2000s, Sri Lanka began the process of drafting legislation to separate the two portfolios. This was finalised through the 2014 Sri Lanka Atomic Energy Act No.40, which established the Sri Lanka Atomic Energy Regulatory Council in 2015. The interviewee recalled that the IAEA had approached Sri Lanka about concluding an AP at the General Conference in 2014, which at that point would have required amending the 2014 Atomic Energy Act that was soon to enter into force. While the IAEA Board approved Sri Lanka's AP in 2018, it has yet to enter into force due to legal capacity issues. The interviewee remarked that, had Sri Lanka considered the conclusion of an AP at the time the 2014 law was being drafted and considered by the Sri Lankan government, the two matters could have been achieved simultaneously. As it stands, Sri Lanka is attempting to hire and retain legal experts, but is having difficulties, as discussed in the later section on "Building Capacity for Implementation".

## **Making Bureaucracy Work for You**

One factor upon which taking action on safeguards depends is the bureaucratic processes in individual countries, which can vary significantly. Understanding on the part of outreach and capacity building providers of the relevant processes can help ease the process of entry into force, as well as help tailor outreach efforts. For example, while Yemen is currently waiting to amend its outdated SQP until its parliament is able to convene, the NLO for Saint Lucia was able to amend its SQP with approval from the Minister of External Affairs because the parliament had already approved Saint Lucia's membership in the IAEA and its CSA. Depending on the pathways that different countries must navigate to take action on safeguards, the approach required for each country may differ considerably. A country with a more robust legislative process may require more consistent or higher-level outreach than a country whose NLO has the authority to approve action.

As noted above, understanding the legislative processes for countries can be aided by the presence of a safeguards champion in the country – an official who understands the value of strong safeguards and is motivated to work towards the country's taking action on safeguards. For example, an official from Sudan who took part in a training course on nuclear non-proliferation and disarmament convened by the VCDNP was later motivated to approach officials in the capital about amending Sudan's outdated SQP. While this is not a replacement for high-level outreach, the experience demonstrates the importance of diversity in the level of outreach. While the IAEA continued high-level engagement with Sudan through letters from the Director General, the working-level official was able to approach the relevant ministries, explain the process of amending Sudan's SQP and personally deliver the physical letter from the Sudanese government to the IAEA notifying it that Sudan intended to amend its SQP.

When safeguards champions are identified, the IAEA and States that conduct outreach and capacity building activities would benefit from taking note of such individuals and learning from them the internal processes for the country concerned when tailoring outreach to that country. This would allow outreach to be more targeted to the proper officials and ministries, and for capacity building activities to be focused on the individuals responsible for implementation.

Finally, a number of regional organisations conduct outreach and capacity building activities on safeguards, including ABACC (the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials), Euratom (the European Atomic Energy Community), APSN (the Asia-Pacific Safeguards Network) and implementing bodies or secretariats of NWFZ treaties. The importance of relationships with regional bodies was noted by a number of interviewees. For example, when presented with the request from the IAEA to amend or rescind its SQP, Malta made the decision to rescind it rather than to amend it. Rescinding an SQP is usually a decision that a State takes when it no longer qualifies for the SQP under the new text, i.e. when it has taken the decision to construct or authorise construction of a nuclear facility, or when the total quantities of nuclear material in the country exceed certain thresholds as defined in the SQP. Neither of these circumstances existed in Malta, but it decided nonetheless to rescind its SQP. As noted by the Maltese interviewee, Euratom assisted in implementing some of the requirements of Malta's CSA without the SQP, thus easing the burden of this step for Malta. Providers of support should consider enhanced coordination and cooperation with regional organisations to further their own efforts in prompting States to take action on safeguards. There is precedent for this kind of activity – in 2020, the European Union conducted a global *démarche* to encourage States that had received letters from the Director General to amend or rescind outdated SQPs.

A new project funded by the European Commission and implemented by AFCONE and the Radiation and Nuclear Safety Authority (STUK) of Finland that aims to increase safeguards capacity in Africa shows great promise in this regard, and should be supported by the experience of the IAEA, States and groups of States that conduct outreach and capacity building.<sup>17</sup>

## Recommendations

10. When engaging with States on safeguards, the establishment of cross-sectoral, inter-ministerial commissions or committees on nuclear matters should be encouraged. Such bodies should meet regularly (for example, once a week or once a month) and have direct access to ministers or individuals in equivalent positions, and even the offices of the heads of State or government.
11. The establishment of a 3S regulator that potentially also deals with other disciplines such as export controls or customs policy can be useful for ensuring effective and efficient standards in nuclear governance. This practice would also help facilitate further access to peaceful uses, insofar as it is responsible for regulating arrangements between the IAEA and end users in the State. Planning, implementation and evaluation of outreach practices should consider this practice, especially for small States, developing States or LDCs with new regulatory bodies or SSACs, and for those just establishing them.
12. Regional bodies (such as Euratom, AFCONE, OPANAL, ASEAN and APSN) and groups of States (such as Friends of the Additional Protocol), should share their experiences with one another on safeguards outreach and capacity building in order to increase the impact of these activities. This could be done through the establishment of an outreach forum, as noted in the section on “Stressing Non-Proliferation Commitments”.
13. More research should be conducted on the domestic legislative processes of countries in the nuclear field in order to inform strategies for safeguards outreach for individual countries. While this practice is conducted by some, it would benefit from research conducted by non-governmental organisations that have the bandwidth to provide in-depth analysis on opportunities and challenges for encouraging States to take action on safeguards. This

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<sup>17</sup> African Commission on Nuclear Energy, “Nuclear Safeguards in Africa,” AFCONE, 2022. Available at: <https://www.afcone.org/wp-content/uploads/2020/07/Nuclear-Safeguards-AFCONE-Collaborating-Centres-Fin-Ver-29-May-2020.pdf>.

research could be funded by States and/or groups of States that already conduct outreach and capacity building already.

14. The IAEA should conduct regular, internal workshops to compare notes between the Departments of Safeguards, Nuclear Safety and Nuclear Security, Nuclear Applications, and Technical Cooperation, as well as the Office of Legal Affairs on their outreach efforts, with which countries they are liaising and what the effect of outreach has been. This would increase coordination on outreach within different departments and offices and increase the effect of such outreach.





## V. Raising Awareness at All Levels

Raising awareness about safeguards instruments and the obligations they entail is a key goal of safeguards outreach. The discussions and interviews under this project show that awareness-raising is critical to support, and in some cases can catalyse, national action on safeguards. For this to be effective, awareness needs to reach various level of government and related stakeholders.



Rafael Mariano Grossi phone call with Josep Borrell, Source: Dean Calma / IAEA via Flickr

### Considering Messaging

The core messages in supporting action on safeguards are:

- general awareness of what IAEA safeguards are and why they are important;
- awareness of specific instruments and what a nation could do to advance safeguards (such as bringing its CSA or AP into force or amending/rescinding its SQP);
- awareness of the processes required to take these actions; and
- the practical implications that may arise from them, such as new implementation duties or requirements.

Equally important in messaging is the connection between effective safeguards, regulatory capabilities and access to peaceful uses. It is also important that State be made aware of the opportunities offered by the IAEA, States and groups of States for supporting their efforts to comply with their obligations and building capacity in this regard.

All these messages are important at different levels and with different audiences, and all contribute to supporting national action.

The most common messages in safeguards outreach promote their value in building non-proliferation norms and raising awareness of what specific actions States can take for entry into force. These kinds of messages have been shown to be effective in catalysing attention and support from high-level State representatives. The main challenge in reaching out to these institution, however, is securing their attention and support in light of competing priorities, notably development-related.

## High-Level Engagement

To build this kind of support, high-level engagement by the IAEA and by States that support safeguards has proven to be effective. For many of the State representatives interviewed, direct appeals by the IAEA Director General or high-ranking State officials to ministers and heads of government have resulted in quick and meaningful action on safeguards. The outreach letters sent by the Director General were identified as having been particularly effective in this regard.

Given the lack of knowledge about nuclear issues among many high-level decision-makers, and the public at large, the peaceful applications of nuclear science and technology can be mistakenly conflated with nuclear weapons. Similarly, many stakeholders perceive peaceful uses as only involving nuclear power, rather than both power and non-power applications (such as medicine, agriculture and industry). For countries that are not considering nuclear power and are unaware of peaceful non-power applications, the entire subject of nuclear may seem irrelevant. Tailored language and resources differentiating nuclear weapons and nuclear explosive devices from nuclear power and non-power peaceful applications can be developed to support outreach to this kind of audience. Similarly, tailored resources on specific safeguards instruments (for example, on APs or the importance of amending or rescinding outdated SQPs) could itself help decision-makers understand the need for action.

## Working-Level Engagement

In parallel with building high-level support for taking action on safeguards, messaging needs to reach other government stakeholders at the working level.

Achieving the entry into force of legal instruments generally requires the input and support of multiple key stakeholders throughout government, including various ministries, NLOs and regulators.

Among the challenges faced by entities conducting safeguards outreach is how to promote understanding of the *importance* of safeguards to the State concerned, as well as the role of the State in entry into force and implementation. At the same time, State representatives need to feel confident that they understand concretely what they would be implementing, how to implement it and that they are ready to do so.

In some cases, confusion about perceived negative consequences of implementation (such as mistakes in reporting resulting in criticism of the country) can hamper entry into force. In this regard, it is important to note that the IAEA often receives reports that require follow-up; in such cases, the IAEA's role is to help the State improve the quality of its reporting rather than to vilify it. The relationship between the IAEA and the State is a cooperative one, rather than confrontational. Bringing clarity to the cooperative relationship between the IAEA and the State on safeguards can be challenging, as the stakeholders who influence decisions on entry into force can be broader than the political leadership. The mix is generally unique from State to State.

In some cases, discussions with State representatives have shown that this message was able to reach domestic stakeholders through a smaller core of already-informed and motivated domestic actors – in line with the concept of safeguards champions. Depending on the specific circumstances, these can include working-level experts within the countries, diplomatic staff at relevant missions around the world (such as those in Vienna and Geneva), and/or staff from the relevant national regulators. Because of their positions and responsibilities, these experts are often the first targets of outreach at the working level, and are able to pass on these messages to domestic stakeholders effectively. From this point of view, it is important that they have as direct access as possible to ministers and key ministerial personnel.

In some cases, these expert safeguards champions have not only been able to pass information directly, to the minister-level, but also to disseminate informational materials and create opportunities for further targeted outreach to specific stakeholders. When training needs or capacity gaps are identified during the process of considering a possible action on safeguards, training and capacity-building activities also offer occasions to socialise safeguards knowledge among national stakeholders.

The General Conference can be a very effective tool for both high- and working-level engagement. For high-level engagement, it is helpful for ministries of foreign affairs and science—ideally the Ministers themselves—to be present in the participating delegations so that policies can be explained directly to decision-makers. Ministries of foreign affairs are often the gatekeepers for these policy changes and are therefore particularly important to ensure attendance. For working-level engagement, the General Conference is an occasion both for national experts to meet with the IAEA and other assistance providers, and for other relevant officials from national authorities to be exposed to safeguards outreach directly. In this regard, it would be useful for delegations at the General Conference and other high-level meetings to include officials beyond ministries of foreign affairs and energy, such as the bodies responsible for overseeing national legislation that covers WMD non-proliferation. Such bodies often have sub-committees established for purposes other than safeguards; however, including them would help to break down “siloes” approaches to nuclear governance.

As national policy can be affected by civil society, it can also be important to raise awareness among the general public on nuclear matters – the benefits that peaceful uses can provide and the collective security that comes from effective safeguards.

## Recommendations

15. The IAEA, States and groups of States should conduct more high-level safeguards outreach events at the General Conference where countries can share their experiences.
16. Strategies for outreach on safeguards should take a “top-down, bottom-up” approach, by

which awareness is raised at the highest levels of government through direct outreach from the IAEA Director General, ministers and heads of State to their counterparts in the target country, as well as at the working level through capacity building conducted by the IAEA, States, groups of States and non-governmental organisations.

17. Further to “top-down, bottom-up” approaches, strategies should support internal exchanges between working-level staff and decision-makers. This could include designing capacity building activities such that both high- and working-level officials take part in training together with the explicit message that, while the high-level officials will have to take the decision to act on safeguards, working-level officials will be responsible for implementation. Such exchanges could also be facilitated by encouraging the highest level of participation in the General Conference.
18. Awareness raising is aided by the availability and dissemination of concise, easily digestible information across multiple languages about safeguards instruments themselves, the process of entry into force and general information, such as the difference between nuclear and other radioactive material, and the difference between power and non-power applications. This information could be produced by the IAEA, States, groups of States and/or non-governmental organisations in easy-to-access briefing packages, potentially tailored to the target country or region concerned. Potential vehicles for dissemination could be national safeguards champions, who could amplify this messaging internally and through relevant regional organisations.
19. Awareness should also be raised about the capacity building opportunities and educational resources already available. This includes the IAEA’s Safeguards Traineeship Programme, IAEA advisory services (such as the IAEA Safeguards and SSAC Advisory Service (ISSAS), the IAEA Comprehensive Capacity-Building Initiative for SSACs and SRAs (COMPASS), and the Integrated Nuclear Infrastructure Review (INIR)), and opportunities offered by national governments (such as the US Department of Energy’s International Nuclear Safeguards Engagement Program (INSEP)) and non-governmental organisations (such as the VCDNP and VERTIC).

## VI. Building Capacity for Implementation

Over the course of this project, several States expressed the view that capacity building opportunities can serve as a catalyst for States to take action on safeguards. A primary need that this capacity building should fill is basic understanding of its obligations, such as what should be reported (noting the difference between nuclear and other radioactive material, for example). Several States noted that concluding an AP can help the regulator do its job more effectively with both nuclear and other radioactive material, keep better track of all material, and implement more effective import/export regulations. Given that bringing an AP into force or amending/rescinding an SQP could involve changes in regulatory infrastructure and the need for further training for staff, funding on assistance for implementation is helpful. Finally, it was noted that it is not enough to support States only in effecting entry into force. There is a need for further outreach and capacity building activities that assist States with the continuing task of implementation.



Safeguards Comprehensive Training Exercise, Source: Dean Calma / IAEA via Flickr

### Training Across Related Disciplines

A number of interviewees, particularly from very small States and/or those with extremely limited regulatory capacities, observed that it would be helpful if capacity building activities could be

conducted on a number of issues at the same time. This is particularly true for regulators and SSACs that have few staff to work on the many related issues in the nuclear field. Not only would such a practice assist individuals working on these issues to understand the complementarity of the different disciplines, but it would also improve the efficiency of training. On the latter point, it is important to note how difficult it can be for individuals working on these issues in developing countries and LDCs to get time off to receive training. As such, combining training across different disciplines could be both effective and efficient on a case-by-case basis. The challenge to this approach is that the sheer volume of content that can be presented in a one-week training can be daunting for even a course focused on one topic – as such, organisers of such activities would need to think creatively on models for training that maximise benefits.

This practice would require that stakeholders that work in silos be open to “de-siloing” their work. For example, comprehensive training might be offered jointly by several departments at the IAEA together with national government programmes, such as the Export Control and Related Border Security (EXBS) and INSEP programmes offered by the United States. While the IAEA currently organises all of its safeguards outreach events, consideration should be given to what value may be added for co-organised outreach and training.

On this note, a significant numbers of interviewees cited support by the United States as the primary capacity building provider aside from the IAEA. While the United States has the capacity to conduct large-scale outreach and capacity building activities, sharing of the financial burden by other developed States would both diversify perspectives and increase the availability of training.

## **Being Geographically Sensitive**

The issue of small numbers of staff dealing with these issues means not only that a small group of experts are dealing with issues across multiple related disciplines. It also means that travel becomes difficult. In the case of Saint Lucia it was noted that getting authorisation for staff to take even a few days off to fly to Vienna for a training course is often difficult. While offers of such capacity building activities are highly valued, travelling across oceans takes time that small departments often do not have. As such, it was noted that the IAEA, States and groups of States should conduct more capacity building activities regionally, or even nationally, to increase attendance.

Another challenge to increasing capacity is that developing countries and LDCs often have fewer foreign embassies from fewer countries located in their capitals. The result of this is that obtaining visas can be a more difficult and more expensive process. This can require in some cases individuals to travel from their capitals to another country to apply for the visa, stay there until the visa is approved, fly back home and only then fly to the location of the training. This can exacerbate the challenge of taking time off to attend training, as well as the budgets of the organisations financing the training. While this may sound like an administrative issue, it has a real impact on developing countries’ ability to gain capacity in safeguards issues. Short of easing visa requirements or allowing individuals to apply for visas via mail or online, one way to address this is to bear the issue in mind when crafting budgets for outreach and capacity building activities.

Another observation from the interviews conducted for this project is that capacity building in safeguards (and related disciplines) should be viewed by funders not simply as a non-proliferation activity, but also as a development activity.

## Building Staff Retention into Training

Apart from providing more coordinated capacity building activities in a geographically sensitive manner, interviewees noted that they often have trouble with “brain drain” after national experts are trained. For example, Sri Lanka has been trying to develop the relevant legislation for entry into force of its AP since before it was approved by the IAEA Board in 2018. However, in 2019 the legal expert responsible for such legislation resigned and migrated to another country. This problem has been compounded by the inability since then to hire a replacement, due in part to financial constraints and the COVID-19 pandemic. When a replacement is appointed, the new legal expert will need to be trained in the nuclear field. While approval has recently been given to fill the position, it may take some time for the individual to gain the skills and experience required for Sri Lanka’s AP to enter into force. Finding ways to assist countries in increasing staff retention was noted as a priority for further cooperation in safeguards capacity building.

In this regard, representatives from multiple countries cited difficulties in getting approval to fill positions necessary for safeguards entry into force or implementation. In some cases, this was a budgetary deficit, as in the case of Sri Lanka. In the case of Saint Lucia, however, the NLA position was vacant for a time, resulting in a catch-22: there was nobody to advocate for the position being filled, so Saint Lucia’s SQP remained outdated, but without someone in the position, nobody thought the SQP amendment was their responsibility. One way that this could be addressed is for outreach on safeguards to include the sharing of best practices for staffing of departments dealing with nuclear issues, for the staff to have direct lines of communication to senior decision-makers and for the staff to be supplied with more attractive compensation packages. The challenge, then, becomes funding.

## Recommendations

20. Strategies for capacity building activities should consider the value, on a case-by-case basis, of conducting training across disciplines when the departments and offices in countries that deal with safeguards also deal with other issues such as export controls, nuclear security, nuclear safety, border controls and/or customs regulations. In any event, geographical sensitivity should be considered when planning capacity building activities. This includes conducting more training on a national and regional basis, as well as preparing related budgets to account for difficulties in obtaining visas and planning flights.
21. As most of the recommendations contained in this report require financial backing, it would be useful for States that do not already conduct capacity building activities to begin doing so. They could do so either in cooperation with established bodies that conduct such outreach or independently, albeit still in a coordinated manner. Seeking non-traditional sources of funding is also an option, including private foundations and other sectors of government that do not provide such funding today. A third option would be for interested States and groups of States to pool funds through their Member State Support Programmes (MSSPs) or coordinate démarches with the aim of convincing governments that do not today support outreach and capacity building activities, to contribute funds.
22. Those conducting capacity building activities should bear in mind the importance of continuous training and review, especially in the establishment and maintenance of SSACs. To this end, the IAEA, States and groups of States should coordinate on which training courses have been conducted in which countries and ensure that support is being offered on an ongoing basis. States that require capacity building activities should not be shy in



contacting those who have conducted training in the past to request follow-up visits. The IAEA's advisory services noted in the previous section are one option for this, as well as training conducted by governments and non-governmental organisations.

23. Capacity building for implementation consists not only of training, but also material support, such as software. During the workshop, it was remarked how helpful the further development of software such as the Regulatory Authority Information System (RAIS) and the Protocol Report 3 (PR3) had been and would be in the future.<sup>18</sup> Further efforts to make these and similar programmes easy to use, customisable to the country concerned, and in some cases able to serve as accounting for all nuclear and radioactive material in all uses in the country (rather than using two or three different databases) would be a continuous exercise to ensure that States are able to account and report effectively.
24. While much of this report has focused on outreach to and capacity building for experts located in-country, consideration should be given to ways in which country experts could spend extended time at the IAEA and then return to their capitals. This could include more funding for the IAEA's Safeguards Trainee Programme, but it could also include more temporary IAEA staff positions for developing countries with deficits in capacity to implement safeguards in their countries. Such positions (e.g. consultants or cost-free experts) would allow those who receive them an "inside view" of the Agency and serve as on-the-job training, while still contributing to the IAEA's day-to-day operations. For this to be effective, it would be important for such trainees to remain in their posts for a fixed period of time, and then return to their countries. Funding for these positions could come from interested governments or private foundations.

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<sup>18</sup> The RAIS software was "developed by the IAEA to assist Member States in managing their regulatory control programmes in accordance with IAEA Safety Standards and guides." For more information, see: <https://www.iaea.org/resources/software/rais>. The PR3 software "is a computer software programme developed and provided by the IAEA, that facilitates the preparation by Member States of declarations pursuant to Article 2 and 3 of the Protocol Additional to Safeguards Agreements (Additional Protocol or AP). The system assists in the creation of declarations to the IAEA in electronic form." For more information, see: <https://www.iaea.org/topics/assistance-for-states/software-tools>.

## VII. Conclusion and Call to Action

For more than two decades, it has been recognised that universalisation of safeguards requires joint efforts between the IAEA Secretariat and its Member States, not just on outreach but on capacity building. At the 2000 NPT Review Conference, States Parties recommended that the IAEA Director General and IAEA Member States “consider ways and means, which could include a possible plan of action, to promote and facilitate conclusion and entry into force of [...] safeguards agreements and additional protocols, including, for example, specific measures to assist States with less experience in nuclear activities to implement legal requirements.”<sup>19</sup> Later that year, the General Conference adopted its annual safeguards resolution, echoing that recommendation.<sup>20</sup> This plan of action—the very same noted in the foreword and introduction to this report—was established on that basis and has been subject to regular updates ever since.

While Member States continue to praise the action plan in the General Conference resolution on the effectiveness and efficiency of the safeguards system, relatively few bodies outside the IAEA conduct outreach and capacity building on safeguards. The efforts of those who conduct such activities are unquestionably laudable. While this report in no way seeks to criticise or duplicate those efforts, it is time for innovative thinking on ways for the international community to work collaboratively to further enhance the impact of activities in safeguards outreach and capacity building. It is particularly important to note in this regard the inherent link between safeguards and non-proliferation on the one hand and peaceful uses and development on the other. They are two sides of the same coin.

As one participant in the VCDNP-VERTIC workshop observed, “sustainable development cannot be realised without peace and security, and peace and security will be at risk without sustainable development.”<sup>21</sup>

Many participants in the workshop noted that the opportunity to share their experiences with other States was invaluable and should be an ongoing activity. Indeed, the opportunity to tell one’s story and learn from those of others can be a critical step in identifying the gaps in existing outreach and capacity building activities.

It is worth noting that the project team was not able to reach all of the States that it had hoped to – this is attributable to the lack of human resource capacity in many countries. In other words, when you are one person doing the job that multiple teams in multiple government offices do in another country, one may not have the time or bandwidth to promptly answer emails or other forms of communication.

The VCDNP and VERTIC encourage readers, particularly those who are in positions to affect funding decisions in their respective governments or international bodies, to read these case studies and learn from them, as the project team has. Funding for safeguards outreach and capacity building is not only a non-proliferation issue, but also a development issue. Bringing this truth to the

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<sup>19</sup> 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Report, Part I. Available at: <https://www.un.org/disarmament/wmd/nuclear/npt2000/final-documents>.

<sup>20</sup> IAEA, “Strengthening the Effectiveness and Improving the Efficiency of the Safeguards System and Application of the Model Protocol,” Resolution adopted on 22 September 2000 at the tenth plenary meeting, GC(44)/RES/19, 2000. Available at: [https://www.iaea.org/sites/default/files/gc/gc44res-19\\_en.pdf](https://www.iaea.org/sites/default/files/gc/gc44res-19_en.pdf).

<sup>21</sup> Remarks from an IAEA Member State representative at the VCDNP-VERTIC workshop held on 23 January 2023.

forefront of the conversation in fora like the NPT review process, the IAEA General Conference and the UN General Assembly is crucial to the successful implementation of safeguards. Active efforts to bring attention to both key decision-makers in governments as well as the general public about the linkage between safeguards and peaceful uses is critical to all countries, but in particular to less developed countries. It is in the best interest of all countries that safeguards be as strong and resilient as possible. For that to be the case, robust outreach and capacity building activities are required on a continuous basis and in a cooperative manner to include developed countries that do not already conduct such activities.

The project team hopes that the recommendations contained in this report will contribute meaningfully to these ends, and that this report brings more attention to the human stories behind these issues.

# **PART II: THE EXPERIENCE OF MEMBER STATES**



# The Experience of Member States

Over the course of the project, experts from the VCDNP and VERTIC conducted interviews with 17 States to determine: what each State's primary motivators were to taking action on safeguards; what challenges they faced and how they mitigated them; what insights they could offer into their internal processes for taking decisions on safeguards; what assistance was provided to them for entry into force and implementation, and what support would they like to have received; what challenges they continue to face; and what advice they would have for those conducting safeguards outreach and capacity building. The following case studies are a product of those interviews. While they are based on the words of Member State representatives, the VCDNP and VERTIC take full responsibility for the presentation thereof.

## Benin<sup>22</sup>

### *Digest:*

*Benin brought into force its CSA with an SQP and AP in 2019. Without a national nuclear regulator or high-level political interest, there had long been no impetus for their entry into force. However, when Benin expressed interest in radiotherapy for cancer care, it was encouraged to first establish its regulatory body. Officials also took this as an opportunity to encourage entry into force of its safeguards agreement, signed in 2005. Entry into force was the direct result of a workshop funded through the US Department of Energy's INSEP programme that convened high-level government officials and parliamentarians. The US provided further assistance with implementation of the CSA/SQP and AP. Benin needs additional support in training qualified technical staff specialised in nuclear safeguards to implement its nuclear material accountancy and control system.*

Although it had already signed all three safeguards instruments in 2005, the interviewee reported that there was no impetus for Benin to bring them into force or implement them until 2016. Two core reasons for this lack of implementation were the absence of a national nuclear regulator and of high-level political interest in safeguards.

When Benin's Ministry of Health sought to include radiotherapy in its peaceful uses activities in 2016, it was advised that Benin should first establish its regulatory body. Officials also took this as an opportunity to bring into force its safeguards instruments, which demonstrates the value of concluding multiple instruments simultaneously. Until then, TC with Benin had been limited to developing human resources and laboratory capacity for nuclear applications in health, agriculture and environmental protection. Incentives for entry into force were Benin's interest in growing its peaceful uses capacity and desire to be a responsible user of nuclear technologies.

Benin's Ministry of Foreign Affairs was charged with leading the process for entry into force. At a regional IAEA workshop funded by INSEP in 2017 in Zambia, Benin proposed a national workshop. This 2018 event, also funded through INSEP, resulted in the entry into force of 14 legal instruments, including the abovementioned safeguards instruments, as well as in the creation the National Authority for Radiation Safety and Radiation Protection. The four-day national workshop convened high-level officials from relevant ministries and parliamentarians in three committees, which

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<sup>22</sup> In person interview with a representative of Benin held in Vienna, Austria, 11 November 2022.

prepared the parliamentary documents for ratification and identified steps and resources required for implementation.

Benin received implementation support, too. The US invited officials to a meeting on capacity building for nuclear material testing with IAEA and African Union representatives in Cameroon in 2019. Officials also travelled to Los Alamos National Laboratory for training in non-destructive testing in September 2019.

Benin requires continuous support to fulfil its safeguards commitments. As its SSAC is being set up, Benin is installing focal points in relevant ministries to report to the regulator. The regulator needs two technical staff trained as safeguards inspectors to oversee these focal points, for which there are no competencies. Other needs relate to nuclear material testing, which Benin cannot yet conduct on its own.

The interviewee suggested that experts in national safeguards experiences, referred in the body of this report as “safeguards champions”, be identified in each African country to be invited to a continent-wide workshop that would form a group of experts, which could advise and share the experience with countries in the beginning stages of adopting safeguards standards. Initial advisory activities could be followed by regional workshops to support implementation.

## Cameroon<sup>23</sup>

### *Digest:*

*Cameroon amended its SQP in July 2019. The foundations for this were laid through its alignment with international standards in nuclear governance, starting with the conclusion of a CSA in 2004. Cameroon’s promulgation of a law on radiological and nuclear safety, nuclear security, civil liability and safeguards enforcement in July 2019 coincided with outreach on outdated SQPs by the IAEA Director General. This triggered discussions within the government. The decisive factor in Cameroon’s decision was IAEA awareness raising at the General Conference about the simplicity of the amendment process.*

Cameroon’s CSA entered into force with an SQP in 2004. Cameroon aligned itself with international nuclear regulatory standards, e.g. by establishing a National Radiation Protection Agency in 2002 which became operational with the nomination of its first managers in 2007, ratifying the Treaty of Pelindaba in 2010 and to the Amendment to the CPPNM in 2016. Following IAEA overtures to Cameroonian delegates at the General Conferences since 2005, Cameroon also concluded an AP in 2016.

These steps paved the way for the amendment of Cameroon’s SQP, which is substantially simpler with an AP already in force. This coincided with the receipt of a letter on outdated SQPs from the IAEA Director General, which prompted discussions within the government. Key to Cameroon’s decision was that its delegation to the General Conference received information about the simple and straightforward amendment procedure.

Leading the effort, the National Radiation Protection Agency had to prepare an explanatory memorandum presenting the content and significance of the SQP in order to secure government approval. The process was helped by the fact that the regulator seized opportunities from the US

<sup>23</sup> In person interview with a representative of Cameroon held in Vienna, Austria, 3 November 2022.

National Nuclear Security Administration (NNSA) and training offered by the IAEA, of which high representative from the Ministry of External Affairs and the Ministry of Justice took part to build a better understanding on the significance of the SQP, thus reducing the number of stakeholders to be consulted before deciding on the amendment.

The National Radiation Protection Agency was also able to build on the awareness raising it had done within the government to conclude Cameroon's AP, emphasising its benefits for peaceful uses. The entry into force of Cameroon's AP was supported by the NNSA on implementation, the World Institute for Nuclear Security on nuclear security issues, VERTIC on legislative issues, as well as by the IAEA in the form of outreach.

Officials of the National Radiation Protection Agency emphasised that continuous funding for these assistance measures, regardless of which organisation convenes trainings, is key to many Member States.

As an implication of its accession to the Treaty of Pelindaba, the AP, the modified SQP, the Amendment to the CPPNM, and other approved international instruments, Cameroon promulgated a law on radiological and nuclear safety, nuclear security, civil liability and safeguards enforcement in July 2019.

## Ethiopia<sup>24</sup>

### *Digest:*

*Ethiopia amended its SQP and brought an AP into force in 2019. This process was triggered by personal IAEA outreach to Ethiopia's delegation to the 2014 General Conference, attended by the minister overseeing its nuclear regulator. Participating in regional safeguards workshops also influenced their decision making. However, Ethiopia regrets that these steps have not led to more TC activities with the IAEA. Ethiopia also faces safeguards implementation challenges, e.g. a pronounced need for training due to hold-ups caused by prolonged or interrupted approval procedures, which require more frequent IAEA outreach to top-level officials and via permanent missions to be resolved.*

Ethiopia first moved towards updating its safeguards standards after delegates had been approached by IAEA staff at the 2014 General Conference. Their meeting was made more impactful by the presence of the Minister of Innovation and Technology, who oversees the nuclear regulator. The IAEA had also conducted outreach to the Ethiopian diplomatic mission in Geneva.

An Ethiopian official emphasised that having a diverse range of officials, including working-level staff and technical experts, as part of a delegation is key to achieving tangible outcomes from General Conferences. Officials reported that awareness raising and exchanges on national experiences during regional workshops also played an important role in Ethiopia's safeguards decision making.

With Ethiopia's nuclear regulator leading the effort, they later sought input and approval from the Ministries of Innovation and Technology and Foreign Affairs. Safeguards are also discussed within a standing committee, established by the Federal Parliamentary Assembly, that handles nuclear issues and oversees the Ministries of Innovation and Technology and Education. The Ethiopian

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<sup>24</sup> In person interview with a representative of Ethiopia held in Vienna, Austria, 10 November 2022.



Technology Authority within the Ministry of Innovation and Technology reports to this committee quarterly. The IAEA supported this process by hosting a two-day workshop on APs and SQPs with staff from the Departments of Safeguards and Legal Affairs, which was attended by representatives of Ethiopia's Ministries of Foreign Affairs, Innovation and Technology, Education and Defence. Officials have reported some disappointment following these steps, as well as challenges with safeguards implementation. They regret that, while there has been more communication with the Agency on safeguards, this has not led to an uptick in TC activities, when as asserted by the interviewee, TC and safeguards should go hand in hand. Ethiopia also has a need for more safeguards expertise.

An official emphasised that technical issues are rarely the most challenging. Rather, it is approval procedures that are often prolonged or held up. It was recommended that the IAEA send more frequent reminders to the appropriate ministerial officials and through permanent missions to ensure implementation processes are completed. From 2023, Ethiopia will receive implementation support through the five-year project "Strengthening the Nuclear Material Control Systems in Africa", organised by the AFCONE and the Nuclear Safety Authority of Finland (STUK), financed by the European Union and Finland.

## Guinea-Bissau<sup>25</sup>

### *Digest:*

*Guinea-Bissau concluded a CSA with an SQP and AP in June 2022. In the context of its implementation of UNSCR 1540, discussions on border security with neighbouring Senegal and government participation in UNODC-sponsored workshops, this decision was mainly motivated by IAEA assistance available to States with safeguards agreements. After discussions in a national commission, convening relevant ministries and civil society, a proposal was submitted to the Ministry of Foreign Affairs, which was later adopted by the Council of Ministers and ratified in the legislature. However, Guinea-Bissau is lacking the human and financial resources to fully implement safeguards, create a national regulator and set up its SSAC.*

According to one official, Guinea-Bissau first concluded its CSA with an SQP in 2013. However, they were not implemented because of a domestic political crisis. Implementation was also hindered because other issues on the political agenda in Guinea-Bissau commonly take priority.

Guinea-Bissau's pursuit of a CSA followed its efforts to implement UNSCR 1540. A key factor was the participation of government officials in regional workshops, which helped them understand the importance of concluding a safeguards agreement with the IAEA. Many of these were organised by the United Nations and sponsored by the UN Office on Drugs and Crime. Guinea-Bissau also received human resources and legislative support from Senegal while the US Department of Energy assisted with compiling Guinea-Bissau's national report to the 1540 Committee.

Guinea-Bissau's decision was chiefly motivated by the access that Agency membership is meant to provide, including technical assistance, training and equipment. Bringing into force its CSA was encouraged in this regard. Another factor was bilateral discussions on border security with Senegal, e.g. regarding the use of X-ray scanners and radiation detection at the border.

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<sup>25</sup> In person interview with a representative of Guinea-Bissau held in Vienna, Austria, 11 October 2022.

The agreement and protocols were first discussed in a national commission, created by the Ministry of Foreign Affairs, with participation from relevant ministries, including the Ministries of Health and Energy, well as civil society representatives. This commission, originally created for the implementation of UNSCR 1540, prepared a briefing for the Ministry of Foreign Affairs, which was later presented to the Council of Ministers. Following government approval, the agreement and protocols were ratified by the legislature. Safeguards implementation is managed by the Ministry of Energy, while the Ministry of the Interior is responsible for nuclear security and the Ministry of Foreign Affairs communicating with the IAEA.

Guinea-Bissau experienced some challenges in the process, i.e. the government required support from the IAEA to set up a national nuclear regulator. An Interviewee affirmed the government's strong interest in receiving assistance with this. Overall, the country lacks human resources and expertise to implement safeguards. Due to a lack of human and financial resources, Guinea-Bissau also has not yet set up its SSAC, though it has requested assistance from the IAEA in this regard. While the country possesses only radioactive materials, it is interested in nuclear energy for power generation in the future. Additionally, the government expects to require support in informing and sensitising its public for applications of nuclear energy.

## Haiti<sup>26</sup>

### *Digest:*

*Haiti amended its SQP in 2020. When officials from Haiti's Permanent Mission in Geneva participated in an IAEA workshop in 2018, they understood the need to take action on Haiti's outdated SQP and informed the Minister for Foreign Affairs. A letter sent by the IAEA Director General to States with outdated SQPs in 2018 provided an additional incentive. After consultations with Directorates of International and Legal Affairs, the Minister returned a signed letter of intent to amend the SQP to the IAEA. However, Haiti needs significant capacity building and financial support to continue implementing its safeguards agreement.*

Officials responsible for disarmament affairs at Haiti's Permanent Mission in Geneva became aware of their country's outdated SQP during an IAEA workshop in Vienna. Having briefed their capital on this issue, the mission continued to lead the process and arranged for the letter of intent (a template of which had been provided by the IAEA) to be signed by the Minister for Foreign Affairs. A letter sent by the IAEA Director General in August 2018 underlined to them the need for action.

Prior to signing, the Minister for Foreign Affairs consulted with the Directorates of International and Legal Affairs, which advised to amend their SQP. They also prepared the Minister's correspondence with the IAEA on the amendment. While Haiti has a cross-cutting governmental commission on nuclear issues, the Autorité Nationale de Sûreté Radiologique (ANSR), it was not involved in this particular decision as the commission is without a coordinator or chair.

This relates to Haiti's challenges with implementing safeguards. Haiti struggles to submit regular reports to the IAEA as ANSR has not been operationalised. According to officials, the government has to appoint a coordinator for the commission and recruit between one and three support staff. A budget for this is yet to be defined. Haiti also has not set up its SSAC as it requires technical assistance to do so.

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<sup>26</sup> Email correspondence with a representative of Haiti, 7 November 2022.

Haiti has benefited from IAEA technical assistance in the past, e.g. in drafting legislation on nuclear and radiological protection in 2003. Further support is needed for the government to establish and maintain an effective technical unit that can advise the government on nuclear issues and continue cooperation with the international community.

## Lithuania<sup>27</sup>

### *Digest:*

*Lithuania rescinded its SQP in December 2021. The SQP had never been operational and was never applied. When Lithuania concluded a CSA with an SQP 1992, there already were significant quantities of nuclear material and nuclear facilities in the country. When Lithuania joined the EU in 2008, its safeguards agreement with the IAEA was superseded by the Euratom Treaty. Recission of the SQP was triggered by a letter from the IAEA Director General. Lithuania held consultations with the IAEA's Office of Legal Affairs and among its Ministry of Foreign Affairs, Ministry of Energy and nuclear regulator before sending an official reply.*

After official recognition by the international community of its independence in 1992, Lithuania brought a CSA into force with an SQP. At this time, there already were significant quantities of nuclear material in nuclear facilities, namely the Ignalina nuclear power plant, in the country. Consequently, the SQP was never operational and never applied; nor was it amended based on the 2005 modification. In 1998, Lithuania also brought an AP into force. When it joined the EU in 2008, the suspension of its IAEA safeguards agreement was announced in INFCRIC/413/Mod.1. Safeguards have since been applied under the Euratom Treaty.

Consideration of rescinding its SQP was triggered by a letter from the IAEA Director General, dated 31 March 2021. Lithuania consulted with the IAEA's Office of Legal Affairs to determine whether the suspension of its safeguards agreement in 2008 could be considered sufficient. However, the IAEA concluded that recission was necessary; otherwise, the SQP would remain in place, albeit non-operational. Lithuania's Permanent Mission in Vienna facilitated communication between domestic authorities and the IAEA. Domestic stakeholders discussed recission too, specifically the Ministry of Foreign Affairs, the Ministry of Energy and the nuclear regulator. In December 2021, the Minister of Energy sent an official reply to the IAEA Director General, agreeing to rescind the SQP.

With no previous experience in safeguards during its time as a Soviet Republic, Lithuania benefited from IAEA capacity building and technical assistance in the 1990s. Lithuania continues to require support from the IAEA and the EU in training personnel at nuclear facilities, including reactors, spent fuel and waste storage locations. On the other hand, Lithuanian nuclear experts also provide education and training via EU outreach initiatives.

## Malaysia<sup>28</sup>

### *Digest:*

*In 2018, Malaysia rescinded its SQP, which had been non-operational for decades. Reacting to a letter from the IAEA Director General to the Permanent Mission in Vienna, officials at*

<sup>27</sup> In person interview with a representative of Lithuania held in Vienna, Austria, 27 January 2023.

<sup>28</sup> Interview with a representative of Malaysia over Zoom, 7 November 2022.

*the Department of Atomic Energy, Ministry of Science, Technology and Innovation quickly prepared a proposal to rescind the SQP. After briefings at Ministry of Science, Technology and Innovation and top-level consultations with the Ministry of Foreign Affairs, the rescission was tabled and approved by the Cabinet. Officials at Department of Atomic Energy saw the rescission as a formality but recommended that the IAEA reach out to top-level officials at the ministerial level more frequently on safeguards implementation, specifically on bringing an AP into force.*

Officials at the policy and external affairs division of the Department of Atomic Energy within the Ministry of Science, Technology and Innovation acted quickly after receiving a copy of a letter from the IAEA Director General regarding the outdated SQP, which was originally sent to the Permanent Representative in Vienna in November 2016. With a first proposal ready in March 2017, rescinding the SQP was discussed with working-level colleagues at the Ministry of Science, Technology and Innovation and then consultation with Ministry of Foreign Affairs before submitting the motion to Cabinet, where it was approved. The Minister of Science, Technology and Innovation signed the letter of intent at the 2018 General Conference.

During internal consultations on the SQP, decision-makers inquired whether rescission would entail any costs or affect the government's safeguards workload. The regulator advised that rescission would have no operational impact since the SQP had been non-operational since 1982 when Malaysia received a 1 megawatt nuclear research reactor from the United States.

The official emphasised that it was particularly important to help senior decision-makers gain maximum clarity over the contents and significance of CSAs and SQPs, as well as the implications of rescinding or not rescinding it. In doing so and to gain the attention of top-level officials, regulator staff must have detailed knowledge of safeguards and communicate well. He also noted that the reason the IAEA reached out to Malaysia to rescind its long-non-operational SQP was to encourage more States with outdated SQPs to rescind their own SQPs or to amend them if they still qualified under the 2005 modified SQP text.

While Malaysia did not receive support with rescinding its SQP specifically, it benefits from IAEA assistance on safeguards. The Agency sends training missions to Malaysia under the IAEA Safeguards and SSAC Advisory Service (ISSAS). The US National Nuclear Security Administration also provides technical and legal assistance. An interviewee noted that the IAEA and US coordinate on this to avoid duplication of effort. The official explained that the Agency communicates with them around and during General Conferences to inquire about any need for safeguards implementation assistance.

As for improvements, it was recommended that the Agency communicate more frequently with high-level decision-makers in ministries to highlight specific issues, including the entry into force of Malaysia's AP, signed in 2005.

## **Maldives<sup>29</sup>**

*Digest:*

*Maldives amended its SQP in 2021. IAEA outreach on this issue was only successful once Maldives applied to become an IAEA Member State and formulated an interest in expanding access to*

<sup>29</sup> Interview with a representative of the Maldives over Zoom, 10 January 2022.

*radiotherapy. With no history of using nuclear material, the Maldivian government lacks officials dedicated to safeguards. Therefore, initiation of the amendment relied entirely on one government official's initiative. Later leading the amendment process, the Ministry of Foreign Affairs consulted with stakeholders before the decision was approved by the President's Office. Maldives now requires substantial capacity building, financial and legislative assistance to put in place the nuclear regulatory infrastructure it needs to comply with its safeguards obligations.*

One official explained that Maldives' decision to amend its SQP was informed by its ongoing discussions with the IAEA on becoming an IAEA Member State. While the Agency had been approaching Maldives about its outdated SQP for some time before its membership application, it was the government's decision to pursue membership that led to action. Maldives' recent foray into the nuclear field is motivated by a desire to expand access to radiation medicine there.

Because Maldives does not possess any nuclear or other radioactive material, the government lacks staff dedicated to nuclear safeguards. However, once started, the procedure was straightforward. As the lead on international agreements and point of contact for the IAEA, the Ministry of Foreign Affairs consulted with other government offices, including the Ministry of Defence and Attorney General. Finally, the decision to amend was approved by the President's Office. Since Maldives' CSA had already been in force, parliamentary approval was not required.

The government official currently dealing with safeguards expressed a desire build Maldives' capacity to engage with peaceful uses and safeguards issues more meaningfully. This should entail staff training and the creation of a cross-governmental committee to coordinate on nuclear issues. The United States is in the process of organising training for Maldives; the IAEA has offered training, too. Some Ministry of Defence staff attended a 2022 workshop specifically on the SQPs in Bangkok.

Overall, interviewees identified a future need for financial support, staff training and legislative assistance to enable Maldives to benefit from peaceful uses of nuclear technology, and to prepare for the potential use of nuclear power. With no nuclear regulatory infrastructure, including the absence of an SSAC, Maldives needs capacity building support to fully implement its safeguards obligations.

## **Malta<sup>30</sup>**

### *Digest:*

*Malta rescinded its SQP in 2021. The SQP had been suspended since 2007 after Malta joined the European Union in 2004, and there had been no incentive for amending or rescinding it until outreach by the IAEA Director General to the Permanent Mission in Vienna via his Chief of Staff. In an unusual step, though Malta still qualified for the 2005 modified SQP, it determined that rescission was the more suitable option. This decision was then approved by Malta's Cabinet, following consultations with the IAEA Director General, the IAEA Secretariat, the nuclear regulator, Ministry for Foreign Affairs and Euratom.*

The rescission process was triggered by a letter from the IAEA Director General in March 2021 and outreach by his Chief of Staff to the Maltese Permanent Representative in Vienna. After in-person meetings with the Director General, the Permanent Mission investigated the history of Malta's SQP, finding that it had been suspended in 2007 after Malta joined the European Union in 2004. The

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<sup>30</sup> In person interview with a representative of Malta held in Vienna, Austria, 18 October 2022.

Permanent Mission also studied whether rescinding the SQP would be preferable to an amendment, concluding that rescission was more advantageous since Malta has no nuclear facilities or plans to construct any, and that, under the 2005 modified SQP text, Euratom would take on some of the new responsibilities, too.

This was followed by consultations between the Permanent Mission and the nuclear regulator, the Ministries for Foreign Affairs, as well as Euratom, between April and September 2021. The Permanent Mission then drafted a brief for the Maltese Cabinet, which was presented to the Minister for Foreign Affairs. The rescission necessitated no change in domestic law. An official reported that there had been no catalyst for the SQP rescission until outreach by the IAEA Director General.

## **Micronesia<sup>31</sup>**

### *Digest:*

*Micronesia's CSA and SQP entered into force in 2021. With a desire to support non-proliferation and improve access to peaceful uses, Micronesia signed the agreement in 2015 20 years after it became an NPT States Party. Micronesia's Department of Justice coordinated the agreement's ratification by Congress, raising public awareness via Congressional hearings. Micronesia still needs capacity building and legislative support for safeguards implementation and guidance on harmonising export/import regulations with its safeguards commitments.*

Although Micronesia became a State Party to the NPT in 1995, little action was taken to implement its safeguards obligations under the Treaty. In the early 2010s, the IAEA contacted Micronesia's Permanent Mission in New York, requesting the conclusion of a CSA, noting that it could also conclude an SQP to the agreement. An official reported that this was the first communication they had received on the matter of which he was aware. This helped raise awareness within the government, prompting follow-up meetings with the Agency to discuss next steps.

As one incentive for this decision, officials cited Micronesia's contribution to nuclear non-proliferation and national pride in being part of the solution to this global problem. Another incentive was furthering Micronesia's access to peaceful uses. Still, officials noted that nuclear safeguards are not a priority for decision makers, who are preoccupied with other issues.

The Chief of Law and Assistant Attorney General at the Department of Justice, responsible for reviewing treaties and international agreements requiring Congressional ratification, facilitated consultations and collaboration with the Department of Foreign Affairs and the Permanent Mission in New York on negotiations with the IAEA towards a safeguards agreement, signed in April 2015. This was followed by efforts to ensure its entry into force via according to domestic law of Micronesia.

Rather than the President submitting the agreement to Congress instantaneously, the Department of Justice recommended inter-department consultation to ensure that the ratification via a Congressional resolution becomes less difficult. For this, public hearings to raise awareness of safeguards and their significance, with input from government departments, were held. Congress ratified the agreement in September 2021.

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<sup>31</sup> Interview with a representative of Saint Lucia over Zoom, 7 December 2022.

According to officials who led efforts towards ratification, their main objective was to help decision makers understand Micronesia's obligations under the NPT and the safeguards agreement as well as measures necessary to fulfil them. The government also consulted with Micronesia's security partners, e.g. the United States.

To implement its safeguards agreement, the government has to build capacities, i.e. assembling a team to oversee compliance, training liaison officers, etc. The government briefed Congress about **the required** resources and had to demonstrate that it is able to take on this responsibility.

*Indeed, Micronesia requires IAEA assistance to comply with its safeguards agreement, particularly with drafting laws and regulations to ensure its enforcement. Micronesia is currently completing a national assessment to analyse the regulatory status quo. It also needs to better understand the safeguards agreement's implications for export and import controls and to ensure congruence with border security policies. So far, Department of Justice officials have attended an introductory safeguards workshop in Thailand.*

### *Saint Lucia<sup>32</sup>*

#### *Digest:*

*Saint Lucia amended its SQP in 2021. Though stagnated at first due to limited human resources and awareness of safeguards within the government, the process was finally started when the Ministry of External Affairs received additional staff. Following consultations with the Attorney General, the amendment was approved by the Legal Officer and the Minister of External Affairs. However, Saint Lucia continues to face challenges due to its strained human resources and requires assistance, i.e. in drafting the framework for a nuclear regulator. Officials advise that continuous IAEA outreach helps remind States with limited administrative capacity of their commitments and emphasised that IAEA training must also be offered regionally.*

The amendment process was triggered by IAEA outreach, which was unsuccessful at first. In addition to delays because of a change in government, there was a lack of understanding of what the Agency requested and which actions had to be taken. The NLO at the time was a senior official with numerous other duties. Therefore, no official assumed responsibility for the matter. Based on this experience, officials emphasised that continuous outreach and reminders by the IAEA are helpful to States with limited administrative capacities.

The IAEA Director General sent a letter in 2018, which the NLA flagged to the NLO. However, action was only taken when the Ministry of External Affairs received a legal officer, who was designated as the new NLO. They consulted with the Attorney General's Chambers, who had no objections to Saint Lucia amending the SQP. Both the NLO and the Minister of External Affairs reviewed the amendment before a letter was returned to the IAEA.

Saint Lucia continues to face challenges with nuclear governance, primarily because of limited capacities. Within the Ministry of External Affairs there are no officials dedicated to nuclear issues. The NLO and NLA roles, as mandated by the IAEA TC Programme, are performed by officials in addition to their full job description. Illustrative of the lack of human resources is that the officials dealing with the IAEA are doing so despite serving on an unrelated assignment. This is in an effort to ensure continuity of the work programme and thereby

<sup>32</sup> Interview with a representative of Saint Lucia over Zoom, 7 December 2022.

maximising its impact. One of the primary challenges identified is the government's political directorate having a limited awareness of the issues surrounding nuclear governance and its correlation to the State's obligations under International Treaties so as to prioritise resourcing in this area. For these reasons, Saint Lucia also has not yet set up its SSAC.

One method of addressing these challenges is by attempting to secure technical officers, who are less frequently reassigned to new portfolios. Saint Lucia has also started its first project under the IAEA's TC programme, which includes raising awareness for the benefits of peaceful uses of nuclear technology and increasing capacities in testing for harmful residues on plant and animal products and improving water resource management. The Ministry of External Affairs worked closely with other ministries in the development of a Country Programme Framework with the IAEA on the safe and secure use of nuclear technology.

Saint Lucia received some safeguards implementation support, e.g. their NLO attended an IAEA workshop on drafting related legislation. However, the government requires further assistance in establishing its regulatory framework and regulatory body, which is presently housed within the Saint Lucia Bureau of Standards ad interim. The government employs only a few legislative drafters, making it difficult to spare personnel to be sent on long distance training. This is why it is important for the IAEA to host capacity-building programmes nationally or regionally (in this case in Latin America), avoiding long-distance travel when practical.

## State of Palestine<sup>33</sup>

### *Digest:*

*Palestine's CSA entered into force in October 2022, together with an SQP. This was informed by an interest in demonstrating Palestine's commitment to global norms, peace and disarmament, to enhance its access to peaceful uses and to enhance its capacity to measure radiation across its territory. In leading the process towards a safeguards agreement, the Ministry of Foreign Affairs encountered difficulties. It had to demonstrate the relevance of safeguards when Palestine is experiencing challenges to security and statehood, and faced opposition to the agreement from a neighbouring State. Palestine needs further assistance to ensure that all government elements know what they must do to meet Palestine's safeguards obligations. It also struggles to access peaceful uses due to problems transporting equipment and material into the country.*

The Ministry of Foreign Affairs' department for international organisations and conventions was chiefly responsible. As their primary reason for bringing its CSA into force (with an SQP), officials cited a wish to demonstrate Palestine's interest in peace and development and its desire to be a constructive, reliable partner to the international community.

Other reasons include furthering access to peaceful uses in agriculture and healthcare, underlining the importance of disarmament and of a Middle East Zone Free of Nuclear Weapons and Other Weapons of Mass Destruction in Palestinian policy, and demonstrating its commitment to strengthening international law. Furthermore, officials noted the importance of monitoring radiation in and near Palestinian. This includes screening goods arriving via neighbouring States for radiation.

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<sup>33</sup> Interview with a representative of the State of Palestine over Zoom, 18 October 2022.



To facilitate decision making on safeguards and expand Palestine's relationship with the IAEA beyond existing TC, the President created a ministerial committee, including representatives from the Ministries of Health (leading), Foreign Affairs, Agriculture, the Environment, the Economy, Trade, the Interior, Energy and Defence, as well as NGOs and universities. This committee later collaborated with the IAEA on drafting laws to implement the CSA with the SQP. It currently also serves as Palestine's SSAC.

A major hurdle for the Ministry of Foreign Affairs has been to help all stakeholders understand the importance of Palestine concluding a safeguards agreement while dealing with challenges regarding its security and statehood. To address this, the government organised a comprehensive workshop on harmonising Palestinian law with international conventions and standards, with IAEA support. Palestine also faced opposition by a neighbouring State for its intention to conclude a safeguards agreement with the IAEA.

One official emphasised that there remains a significant need for assistance with ensuring that the whole of government understands how to fulfil the obligations it has committed to. Additionally, Palestine is interested in adopting a comprehensive law on disarmament to integrate the enforcement of all conventions it has joined. The official also noted challenges in accessing peaceful uses too, primarily driven by problems transporting equipment and material into the country. So far, Palestine has not received support on safeguards implementation from anyone except the IAEA.

## Sri Lanka<sup>34</sup>

### *Digest:*

*Sri Lanka's AP was approved by the IAEA in September 2018 but has not yet entered into force. Sri Lanka began considering adopting an AP after a meeting with the IAEA during the 2014 General Conference. After consultations between the regulator, the Ministries of Power and Energy and Foreign Affairs and the Attorney General, the adoption was approved by the Cabinet in mid-2018. However, the regulator lacks the in-house legal expertise to propose the amendment of the law needed to implement an AP. An opportunity to address this problem was missed in 2014 when Sri Lanka passed an act to reform its nuclear governance and create a new regulator. At this point, the law will need to be amended in order for the Sri Lanka to bring the AP into force.*

At a meeting between the Sri Lankan delegation and the IAEA on the side lines of the 2014 General Conference the Agency asked to consider adopting the additional protocol.

Per the Sri Lanka Atomic Energy Act No.40 (2014), Sri Lanka created the Atomic Energy Regulatory Council. This was to separate regulatory and promotional nuclear energy activities, as recommended by the IAEA during previous advisory service missions. Previously, Sri Lanka's Atomic Energy Authority had carried out both. The Council has greater implementation powers and is responsible for nuclear governance and the enforcement of relevant international agreements signed by Sri Lanka. There was a missed opportunity to integrate this reformation of Sri Lanka's nuclear governance with the entry into force of an AP. Because the Act was already approved at the time Sri Lanka was approached about concluding an AP, the Act will now have to be amended in order to bring the AP into force.

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<sup>34</sup> Email correspondence with a representative of Sri Lanka, 1 December 2022. Interview with the same individual over Zoom, 2 December 2022.

In April 2015, the regulator started consultations on an AP with superiors at the Ministry of Power and Energy and with the Ministry of Foreign Affairs. These meetings coincided with a letter from the IAEA Director General, reminding Sri Lanka of his previous request to conclude an AP. In 2017, this was followed by personal outreach by the Director General's Office to the Director General of the Atomic Energy Regulatory Council to provide comprehensive information about the adoption process.

In mid-2018, Sri Lanka's Cabinet approved a proposal, based on recommendations by the Attorney General, namely, the provisional application of Sri Lanka's AP, which had been approved by the Board the same year, until statutory requirements for its entry into force are met. The proposal also included the need to review the Atomic Energy Act to identify the amendments needed to fulfil the requirements of the AP and to study the legislative and implementation experiences of other States in the region. As of the time of writing, the law had yet to be amended.

To address this shortcoming, the International Safeguards Engagement Programme at the US Department of Energy has provided training on AP implementation and invited Sri Lankan legal officers to a regional workshop. However, the regulator has struggled to maintain its in-house legal expertise after its only legal counsel left in 2019. Due to a financial crisis, a hiring freeze and the COVID-19 pandemic, this gap has not yet been filled. Without a legal officer, the Council is unable to conduct a gap analysis and propose amendments to the Atomic Energy Act to implement Sri Lanka's AP. Moreover the legal officer, when recruited, will first need significant training to be able to move implementation along.

## Sudan<sup>35</sup>

### *Digest:*

*Sudan amended its SQP in 2021. Initiated in part after a Sudanese official attended a VCDNP training course, the amendment process was quick and clear-cut. With the nuclear regulator coordinating, the Minister of Justice decided to amend the SQP after consultations with the Ministry of Foreign Affairs. With this step Sudan intended to demonstrate its non-proliferation commitment and to prepare for employing nuclear energy in the future. However, Sudan is unable to meet IAEA accounting and reporting standards and has not yet set up SSAC. This is because of lacking IAEA capacity building support due to budget constraints. Officials stressed that IAEA outreach must not only differentiate between government departments and their divergent awareness levels, but also between the interests of high-level and working-level officials attending workshops and events.*

The Sudanese Nuclear and Radiological Regulatory Authority (SNRRA), the body responsible for nuclear safety, security and safeguards in the country, was chiefly responsible for amending the SQP. As concerns safeguards, SNRRA is charged with ensuring that all nuclear material in Sudan is used exclusively for peaceful purposes, maintaining a physical inventory, submitting reports to the IAEA, accrediting IAEA inspections, and ensuring the national implementation of safeguards, inter alia, by maintaining an SSAC and a system to evaluate measurement accuracy. The Sudanese official interviewed for the study emphasised that these and other SNRRA activities require capacity building.

The amendment was initiated in part due to Sudanese participation in training courses conducted by the VCDNP, the IAEA and INSEP. The SNRRA had previously asked for authorisation from the Ministry

<sup>35</sup> Interview with a representative of Sudan over Zoom, 22 December 2022.

of Justice to ratify several nuclear governance agreements in parallel. Once initiated, the SNRRA found the amendment process to be quick and straightforward. After consulting with the Ministries of Justice and Foreign Affairs within a small standing committee on the ratification of international agreements, the Minister of Justice informed the Ministry of Foreign Affairs of his decision to amend the SQP. Officials cited Sudan's interest in demonstrating its commitment to global norms, including the non-proliferation regime, as the primary motivation for this step. The amendment was also part of Sudan's preparations for using nuclear energy in the future, as well as an item on the action plan produced following an Integrated Nuclear Infrastructure Review (INIR) peer review mission conducted by the IAEA.

Nevertheless, interviewees reported that poor understanding of nuclear safeguards and similarly technical subject areas within the Ministry of Justice posed a challenge. For example, Ministry officials did not understand the scope or purpose of IAEA inspections or activities related to APs, which created decision-making challenges.

Sudan continues to struggle with a lack of resources to implement its CSA. Interviewees noted that budget constraints by those that do outreach and capacity building posed challenges to the availability of assistance. They cited this as the main reason that Sudan has not yet set up its SSAC. At the moment, Sudan is limited to using a registry system that does not match reporting requirements under its CSA.

However, Sudan has entered into a cooperative relationship with the US National Nuclear Security Administration, which has provided some benefits, including a 2019 safeguards workshop in Khartoum. Interviewees highlighted that the workshop helped them avoid conflating technical and political incentives/reasons for amending the SQP in briefings for senior leaders, and thus accelerate the amendment process.

## United Arab Emirates<sup>36</sup>

### *Digest:*

*The UAE rescinded its SQP in 2022. While the SQP had become non-operational in 2017 and was rescinded upon request of the IAEA (as a drive to encourage other States to follow suit), the UAE was already reporting at the standard of its full CSA and AP before this. The rescission process was quick and simple; no changes in domestic law were necessary. UAE officials advised that streamlining decision making procedures on international treaties within government departments and in cross-cutting committees was key for this. They also stressed the benefit of independent, external reviews of national regulatory structures, e.g. by IAEA review missions and under the Convention on Nuclear Safety.*

When the UAE decided to use nuclear energy for power generation, it concluded an AP in 2008 and brought it into force in 2010. In order to gain practical experience, the UAE began to provide the IAEA with reports to the standard of its full CSA and AP before it was obliged to do so considering its then-operational SQP. The latter became non-operational in 2017.

According to UAE officials, this diligence reflected the UAE's desire to apply best nuclear regulatory practices and be a role model to other countries. Aiming for high nuclear regulatory standards was key for a long-term, successful nuclear power programme, i.e. not concluding an AP can restrict a country's choice of suppliers, a UAE official said.

<sup>36</sup> In person interview with a representative of the United Arab Emirates held in Vienna, Austria, 4 January 2023.

When they had decided to embark on nuclear power, the UAE prioritised thorough regulatory preparation. The government conducted significant awareness raising and coordination work with industry, customs officials and other non-nuclear parts of the government to ensure that responsibilities for nuclear reporting and accounting were clearly understood and assigned. In 2009, the UAE published a roadmap for its nuclear power programme, based on the IAEA's Milestone Approach.<sup>37</sup> The same year, the UAE's nuclear law was adopted, establishing a single nuclear regulator, responsible for safety, security and safeguards.

The UAE eventually rescinded its SQP because the IAEA requested this with the UAE's Ambassador in Vienna. The UAE's governing procedures facilitated a swift and uncomplicated rescission. Changes to domestic law were not necessary. An official explained that action to rescind the SQP was helped by the streamlining of decision making processes on international treaties both within government departments and interagency procedures. The UAE also benefited from external reviews of its nuclear regulatory structures by the IAEA and other mechanisms, such as the Convention on Nuclear Safety.

Above all, the official warned against politicising the decision making on States' pursuit of peaceful nuclear developments and advised to instead focus on capacity building and demonstrating that users of nuclear energy should inherently have an interest in strong, effective nuclear regulations, including safeguards.

## Yemen<sup>38</sup>

### *Digest:*

*Yemen is currently considering amending its SQP. However, the consultation and decision-making process inside the government, as well as meetings of the legislature to approve the amendment, are hindered by ongoing armed conflict and political instability in the country. Officials identified this as the primary obstacle to amending the SQP.*

The process was initiated by IAEA outreach to Yemen's Permanent Mission in Vienna and taken up by its competent authority, the National Atomic Energy Commission, which recommended amending the SQP in a briefing to the Prime Minister. The briefing emphasised the benefits available to Yemen once the amendment has been adopted, such as support in capacity building, creating nuclear infrastructure, and receiving tools and equipment.

Commission officials reported that approval of the amendment by the Prime Minister has been secured. They are now awaiting feedback from legal officials to advise on the compatibility and integration of the amendment with existing laws. The work of and contact with the relevant colleagues is being hindered by fighting and related concerns around national and human security.

Another obstacle is ratification by the legislature. Officials reported that several international agreements, which have been agreed at the government level, have yet to be discussed in and voted on by the legislature, which is unable to meet due to the civil war.

The interviewees were not aware of any support provided by the IAEA in amending the SQP. However, they did mention periodic training that the Agency provides to officials at the Permanent

<sup>37</sup> IAEA, "Milestones Approach." Available at: <https://www.iaea.org/topics/infrastructure-development/milestones-approach>.

<sup>38</sup> In person interview with a representative of Yemen held in Vienna, Austria, 29 September 2022.

Mission in Vienna as well as advice on specific issues to regulator leadership. They noted that the IAEA could lend greater support to the Yemen's efforts to amend the SQP by advising the Prime Minister's Office and by briefing the legislature on its content and significance.

Other elements influencing Yemen's decision are concerns that the country should not enter into agreements, especially those concerning activities in which Yemen is not engaged, which it may not have the capacity to fulfil due to the ongoing civil war and political instability. Yemen also looks to regional stakeholders and their actions on nuclear governance to have regional consensus and integration in all agreements related to the peaceful uses of atomic energy.

## Zimbabwe<sup>39</sup>

### *Digest:*

*Zimbabwe brought an AP into force in September 2021. Initiated through IAEA outreach at General Conferences and a review of Zimbabwe's commitments under the NPT and the Treaty of Pelindaba, Zimbabwe's regulator coordinated the decision-making process on concluding an AP within the national Nuclear Security Committee. After consultations with ministries representing users of nuclear technologies, the regulator provided draft legislation to the government. Following awareness raising with parliamentarians, the AP was ratified by the legislature. Joint assistance provided by the IAEA and the US National Nuclear Security Administration was essential for Zimbabwe's implementation of reporting and accounting requirements under its AP.*

The process towards concluding an AP started in 2011 with the objective of signing and ratifying several international agreements on nuclear governance in parallel, including the CPPNM. This had been triggered by a review of Zimbabwe's implementation of commitments under the NPT and the Treaty of Pelindaba. Under the latter, there are occasional meetings for States Parties to review their nuclear accounting infrastructure and compliance with obligations. Zimbabwean representatives had also been approached by IAEA officials at a General Conference, who advised that Zimbabwe should conclude an AP to facilitate access to nuclear power in the future.

The matter was taken up by Zimbabwe's Radiation Protection Authority, responsible for radiation and nuclear safety, security and safeguards. It held consultations with relevant ministries. Their results were introduced to the national Nuclear Security Committee, which convenes users of nuclear technologies, such as industry and the ministries for health, energy, and agriculture, as well as the IAEA desk officer from the Ministry of Foreign Affairs and customs officials. The Committee was established following recommendations in Zimbabwe's Integrated Nuclear Security Support Plan, with help from the 1540 Committee. The regulator advised the Committee on the technical and regulatory aspects of the additional protocol, proposing its adoption. The Radiation Protection Authority then provided draft legislation and a justification to the government. Once the government approved, it began raising awareness with parliamentarians, with expertise contributed by the IAEA, to table a vote on ratification.

The IAEA and the US National Nuclear Security Administration provided significant support to Zimbabwe in bringing the AP into force. They organised activities to raise awareness among policymakers, workshops for senior officials, and supported technical training for experts, such as inspectors. This included regional workshops, e.g. on safeguards applications under an AP, but also

<sup>39</sup> In person interview with a representative of the Zimbabwe held in Vienna, Austria, 13 October 2022.

direct support with reporting on radioactive sources. The IAEA also provided legislative assistance through its School for Drafting Regulations on Radiation Safety.

One official expressed a desire to learn what other support from the IAEA and others is available. The officials noted that a particular challenge was the continuous awareness raising for the need to improve regulations in order to improve safeguards reporting. The lack of sufficient funding towards regulatory updates and reporting enhancements is another obstacle. Other challenges stem from the enhanced reporting and database management requirements under an AP, mostly from the use of nuclear materials in mineral processing and mining. Often, there is no record of the nuclear materials used in the past. This necessitates specially equipped safety inspections of sealed locations to verify the existence of material there.

With the exception of handling safeguards inspections, of which there are few given Zimbabwe's small amounts of material, implementing an AP itself has been challenging. It required changes to the regulator's organisational structure, new training for staff, integrating new software, and working with new types of data. This caused significant costs, for which Zimbabwe required the abovementioned external support.

Nevertheless, bringing an AP into force has also provided benefits, e.g. due to changes in the accounting system, the regulator now better understands its role and the difference between nuclear and radioactive materials. It has also helped the regulator fulfil its mandate by initiating the creation of a safety, security, and safeguards infrastructure in the first place. Furthermore, it has driven the regulator to better track materials around the country. Before, once a source was registered it could sit in the database for many years if no movement was reported. Now, the regulator has to verify the location of material regularly. Moreover, Zimbabwe's AP has strengthened import and export regulations through an uptick in relevant trade facilitated by the adoption of higher standards under its AP.



# Tables<sup>40</sup>

**Table 1 : CSA States with Nuclear Facilities and APs**

Armenia	Australia	Austria	Bangladesh	Belgium	Bulgaria
Canada	Chile	Colombia	Congo, DR	Czech Rep	Denmark
Estonia	Finland	Georgia	Germany	Ghana	Greece
Hungary	Indonesia	Iraq	Italy	Jamaica	Japan
Jordan	Kazakhstan	Korea, Rep	Latvia	Libya	Lithuania
Mexico	Morocco	Netherlands	Nigeria	Norway	Peru
Philippines	Poland	Portugal	Romania	Serbia	Slovakia
Slovenia	South Africa	Spain	Sweden	Switzerland	Tajikistan
Thailand	Türkiye	Ukraine	UAE	Uzbekistan	Vietnam
<b>Total 54 States</b>					

**Table 2: CSA States with Nuclear Facilities and without APs**

A. AP Signed but not yet in Force<sup>41</sup>

Algeria (2018)	Belarus (2005)	Iran (2003)	Malaysia (2005)
<b>Total 4 States</b>			

B. Negotiation on AP not Commenced<sup>42</sup>

Argentina	Brazil	Egypt	Venezuela
<b>Total 5 States</b>			

<sup>40</sup> Tables 1 to 4 are based on IAEA information as at 28 November 2022 –  
<https://www.iaea.org/sites/default/files/20/01/sg-agreements-comprehensive-status.pdf>;  
<https://www.iaea.org/sites/default/files/20/01/sg-sqp-status.pdf>;  
<https://www.iaea.org/sites/default/files/20/01/sg-ap-status.pdf>.

States with nuclear facilities are based on the IAEA's 2021 Annual Report, Additional Annex, Tables A35 (a) and A35 (b), <https://www.iaea.org/sites/default/files/gc/gc66-4-annex.pdf>.

<sup>41</sup> Iran implemented its AP on a “provisional” basis from 2003 to 2005. Under the 2015 JCPOA Iran had returned to provisional implementation of the AP, and committed to seeking its ratification by the Majlis (Parliament), but suspended the AP in 2021 in response to the US renouncing the JCPOA.

<sup>42</sup> In addition to these four states, Saudi Arabia has a nuclear facility nearing completion, with an original form SQP, and no AP. Saudi Arabia is included in Table 3.



**Table 3: CSA States with No Nuclear Facilities**

State	SQP		AP
	Original version	Amended or revised version	
Afghanistan			
Albania			
Andorra			
Angola			
Antigua and Barbuda			
Azerbaijan			
Bahamas			
Bahrain			
Barbados			
Belize			
Benin			
Bhutan			
Bolivia			Signed 2019
Bosnia and Herzegovina			
Botswana			
Brunei			
Burkina Faso			
Burundi			
Cabo Verde			
Cambodia			
Cameroon			
Central African Republic			
Chad			
Comoros			

**Legend**

The instrument is not in force for the State.	
The instrument is in force for the State.	

Congo, Rep			
Costa Rica			
Côte d'Ivoire			
Croatia			
Cuba			
Cyprus			
Djibouti			
Dominica			
Dominican Rep			
Ecuador			
El Salvador			
Eritrea			
Eswatini			
Ethiopia			
Fiji			
Gabon			
Gambia			
Grenada			
Guatemala			
Guinea-Bissau			
Guyana			
Haiti			
Holy See			
Honduras			
Iceland			
Ireland			
Kenya			
Kiribati			Signed 2004
Kuwait			
Kyrgyzstan			
Laos			Signed 2014
Lebanon			
Lesotho			
Liberia			

Liechtenstein			
Luxembourg			
Madagascar			
Malawi			
Maldives			
Mali			
Malta			
Marshall Islands			
Mauritania			
Mauritius			
Micronesia			
Moldova			
Monaco			
Mongolia			
Montenegro			
Mozambique			
Myanmar			Signed 2013
Namibia			
Nauru			
Nepal			
New Zealand			
Nicaragua			
Niger			
North Macedonia			
Oman			
Palau			
Panama			
Papua New Guinea			
Paraguay			
Qatar			
Rwanda			
Saint Kitts and Nevis			
Saint Lucia			

Saint Vincent and Grenadines			
Samoa			
San Marino			
Saudi Arabia <sup>43</sup>			
Senegal			
Seychelles			
Sierra Leone			Signed 2022
Singapore			
Solomon Islands			
Sri Lanka			Approved 2018
State of Palestine			
Sudan			
Suriname			
Tanzania			
Togo			
Tonga			
Trinidad and Tobago			
Tunisia			Signed 2005
Turkmenistan			
Tuvalu			
Uganda			
Uruguay			
Vanuatu			
Yemen			
Zambia			Signed 2009
Zimbabwe			
<b>Totals</b>	<b>117</b>	<b>23</b>	<b>75</b>
		<b>[19 states have no SQP]</b>	<b>80 Plus 7 signed, 1 approved</b>

<sup>43</sup> Saudi Arabia has the original version SQP which to date it has declined to amend or rescind. This situation illustrates the problem with the old SQP- Saudi Arabia has a research reactor nearing completion, but IAEA inspectors do not have access to confirm the status of the reactor. Saudi Arabia does not qualify for the revised SQP.

**Table 4: NPT NNWSs with No CSAs and No Nuclear Facilities**

Equatorial Guinea	CSA and revised SQP approved 1986.
Guinea	CSA, revised SQP and AP signed 2011.
Sao Tome and Principe	CSA, revised SQP and AP approved 2019.
Somalia	
Timor-Leste	CSA, revised SQP and AP signed 2009.

# List of Recommendations

## Access to Peaceful Uses

1. When engaging with countries who are not yet members of the IAEA or have little to no nuclear activities, the IAEA, States and groups of State should recall the challenges faced by these countries related to lack of capacity and high-level awareness of the benefits of peaceful uses. In this regard, the following outreach approaches could be considered. First, share experiences of other similarly situated States where regulatory functions are anchored in a relevant ministry (such as health or agriculture), and safety, security and safeguards are combined under one regulator. Second, facilitate national or regional events where peaceful uses and related IAEA initiatives, such as Rays of Hope (radiotherapy for cancer treatment), can be promoted to high-level policymakers.
2. More opportunities should be created to engage policymakers on health, agriculture and finance, including parliamentarians, on the benefits of peaceful uses and the States' safeguards obligations. This allows decision-makers further occasion to engage directly with experts from the IAEA and build understanding of peaceful uses and safeguards.
3. Strategies for safeguards outreach should take into account the extent to which the State uses nuclear and other radioactive material and take steps to support the State, such that the cost of implementing safeguards do not outweigh the benefits of peaceful uses, either in reality, or in perception.
4. Outreach and capacity-building efforts aiming to increase a State's regulatory capabilities should support an approach that is in step with and in proportion to its peaceful uses programme. In this regard, consideration should be given to the development of a graded "roadmap" approach to regulatory capacity building, perhaps with the support of research conducted by non-governmental organisations.

## Stressing Non-Proliferation Commitments

5. As demonstrating the value of taking action on safeguards can be difficult for countries that have little or no nuclear material, those conducting outreach and capacity building activities should formulate State- or region-specific strategies to provide credible answers to the question "what's in it for us?". More effectively demonstrating the value of safeguards for such countries would advance existing outreach activities. Moreover, sharing those strategies with others that conduct outreach and capacity building, perhaps through the establishment of a formal outreach forum that meets annually, would benefit the outreach activities of all.
6. As non-proliferation and peaceful uses comprise two of the three pillars under the NPT, States Parties to the treaty should consider outreach and capacity building activities during the review cycle. This could include a commitment in the final document of the next NPT Review Conference to support developing countries and LDCs in their efforts to establish and maintain regulatory bodies and SSACs, while also supporting expanded access to peaceful uses. Such support would need to be concrete, time-bound and involve both financial and technical contributions from a variety of States, including those that do not already conduct such activities.

7. The IAEA, States and groups of States should collaboratively explore the complementarity of safeguards with other issues in nuclear governance when planning for, implementing and evaluating the effect of safeguards outreach. Particularly for developing countries and LDCs, safeguards legislation and implementation often overlaps with such subjects as export controls, nuclear security, radiological security, nuclear safety and border control policies. Considering outreach for many of these related fields together could increase capacity across the board in a more effective and efficient way.
8. In this regard, more research should be done on how to maximise the complementarities between nuclear safety, security and safeguards (3S), in particular as concerns conditions in developing countries. Such research could be funded by national governments and carried out by non-governmental organisations. The value of non-governmental organisations doing such work is that they remain neutral of any national agenda and are likely to have the ability to dedicate time to in-depth research.
9. While the value of frequent reminders could be considered “nagging”, many Member State representatives interviewed for this study remarked on the great value of regular outreach to remind States of the need to take action on safeguards in order to fulfil non-proliferation commitments. In particular, for States with very small offices dealing with these issues, a lack of response doesn’t mean “no” – it may simply be indicative of very low bandwidth.

## **Leveraging Pre-existing National and Regional Structures**

10. When engaging with States on safeguards, the establishment of cross-sectoral, inter-ministerial commissions or committees on nuclear matters should be encouraged. Such bodies should meet regularly (for example, once a week or once a month) and have direct access to ministers or individuals in equivalent positions, and even the offices of the heads of State or government.
11. The establishment of a 3S regulator that potentially also deals with other disciplines such as export controls or customs policy can be useful for ensuring effective and efficient standards in nuclear governance. This practice would also help facilitate further access to peaceful uses, insofar as it is responsible for regulating arrangements between the IAEA and end users in the State. Planning, implementation and evaluation of outreach practices should consider this practice, especially for small States, developing States or LDCs with new regulatory bodies or SSACs, and for those just establishing them.
12. Regional bodies (such as Euratom, AFCONE, OPANAL, ASEAN and APSN) and groups of States (such as Friends of the Additional Protocol), should share their experiences with one another on safeguards outreach and capacity building in order to increase the impact of these activities. This could be done through the establishment of an outreach forum, as noted in the section on “Stressing Non-Proliferation Commitments”.
13. More research should be conducted on the domestic legislative processes of countries in the nuclear field in order to inform strategies for safeguards outreach for individual countries. While this practice is conducted by some, it would benefit from research conducted by non-governmental organisations that have the bandwidth to provide in-depth analysis on opportunities and challenges for encouraging States to take action on safeguards. This research could be funded by States and/or groups of States that already conduct outreach and capacity building already.

14. The IAEA should conduct regular, internal workshops to compare notes between the Departments of Safeguards, Nuclear Safety and Nuclear Security, Nuclear Applications, and Technical Cooperation, as well as the Office of Legal Affairs on their outreach efforts, with which countries they are liaising and what the effect of outreach has been. This would increase coordination on outreach within different departments and offices and increase the effect of such outreach.

## **Raising Awareness at All Levels**

15. The IAEA, States and groups of States should conduct more high-level safeguards outreach events at the General Conference where countries can share their experiences.
16. Strategies for outreach on safeguards should take a “top-down, bottom-up” approach, by which awareness is raised at the highest levels of government through direct outreach from the IAEA Director General, ministers and heads of State to their counterparts in the target country, as well as at the working level through capacity building conducted by the IAEA, States, groups of States and non-governmental organisations.
17. Further to “top-down, bottom-up” approaches, strategies should support internal exchanges between working-level staff and decision-makers. This could include designing capacity building activities such that both high- and working-level officials take part in training together with the explicit message that, while the high-level officials will have to take the decision to act on safeguards, working-level officials will be responsible for implementation. Such exchanges could also be facilitated by encouraging the highest level of participation in the General Conference.
18. Awareness raising is aided by the availability and dissemination of concise, easily digestible information across multiple languages about safeguards instruments themselves, the process of entry into force and general information, such as the difference between nuclear and other radioactive material, and the difference between power and non-power applications. This information could be produced by the IAEA, States, groups of States and/or non-governmental organisations in easy-to-access briefing packages, potentially tailored to the target country or region concerned. Potential vehicles for dissemination could be national safeguards champions, who could amplify this messaging internally and through relevant regional organisations.
19. Awareness should also be raised about the capacity building opportunities and educational resources already available. This includes the IAEA’s Safeguards Traineeship Programme, IAEA advisory services (such as the IAEA Safeguards and SSAC Advisory Service (ISSAS), the IAEA Comprehensive Capacity-Building Initiative for SSACs and SRAs (COMPASS), and the Integrated Nuclear Infrastructure Review (INIR)), and opportunities offered by national governments (such as the US Department of Energy’s International Nuclear Safeguards Engagement Program (INSEP)) and non-governmental organisations (such as the VCDNP and VERTIC).

## **Building Capacity for Implementation**

20. Strategies for capacity building activities should consider the value, on a case-by-case basis, of conducting training across disciplines when the departments and offices in countries that deal with safeguards also deal with other issues such as export controls, nuclear security,



nuclear safety, border controls and/or customs regulations. In any event, geographical sensitivity should be considered when planning capacity building activities. This includes conducting more training on a national and regional basis, as well as preparing related budgets to account for difficulties in obtaining visas and planning flights.

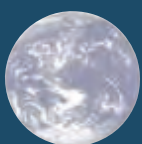
21. As most of the recommendations contained in this report require financial backing, it would be useful for States that do not already conduct capacity building activities to begin doing so. They could do so either in cooperation with established bodies that conduct such outreach or independently, albeit still in a coordinated manner. Seeking non-traditional sources of funding is also an option, including private foundations and other sectors of government that do not provide such funding today. A third option would be for interested States and groups of States to pool funds through their Member State Support Programmes (MSSPs) or coordinate démarches with the aim of convincing governments that do not today support outreach and capacity building activities, to contribute funds.
22. Those conducting capacity building activities should bear in mind the importance of continuous training and review, especially in the establishment and maintenance of SSACs. To this end, the IAEA, States and groups of States should coordinate on which training courses have been conducted in which countries and ensure that support is being offered on an ongoing basis. States that require capacity building activities should not be shy in contacting those who have conducted training in the past to request follow-up visits. The IAEA's advisory services noted in the previous section are one option for this, as well as training conducted by governments and non-governmental organisations.
23. Capacity building for implementation consists not only of training, but also material support, such as software. During the workshop, it was remarked how helpful the further development of software such as the Regulatory Authority Information System (RAIS) and the Protocol Report 3 (PR3) had been and would be in the future. Further efforts to make these and similar programmes easy to use, customisable to the country concerned, and in some cases able to serve as accounting for all nuclear and radioactive material in all uses in the country (rather than using two or three different databases) would be a continuous exercise to ensure that States are able to account and report effectively.
24. While much of this report has focused on outreach to and capacity building for experts located in-country, consideration should be given to ways in which country experts could spend extended time at the IAEA and then return to their capitals. This could include more funding for the IAEA's Safeguards Trainee Programme, but it could also include more temporary IAEA staff positions for developing countries with deficits in capacity to implement safeguards in their countries. Such positions (e.g. consultants or cost-free experts) would allow those who receive them an "inside view" of the Agency and serve as on-the-job training, while still contributing to the IAEA's day-to-day operations. For this to be effective, it would be important for such trainees to remain in their posts for a fixed period of time, and then return to their countries. Funding for these positions could come from interested governments or private foundations.

# List of Acronyms

<b>3S</b>	Safety, security and safeguards
<b>AFCONE</b>	African Commission on Nuclear Energy
<b>AP</b>	Additional protocol
<b>APSN</b>	Asia-Pacific Safeguards Network
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>CNS</b>	Convention on Nuclear Safety
<b>COMPASS</b>	IAEA Comprehensive Capacity-Building Initiative for SSACs and SRAs
<b>CPPNM</b>	Convention on the Physical Protection of Nuclear Material
<b>CSA</b>	Comprehensive safeguards agreement
<b>DOE</b>	United States Department of Energy
<b>ECOWAS</b>	Economic Community of West African States
<b>Euratom</b>	European Atomic Energy Community
<b>IAEA</b>	International Atomic Energy Agency
<b>INFCIRC/153</b>	The Structure and Content of Agreements Between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons
<b>INFCIRC/540</b>	Model Protocol Additional to the Agreement(s) Between State(s) and the International Atomic Energy Agency for the Application of Safeguards
<b>INIR</b>	Integrated Nuclear Infrastructure Review
<b>INSEP</b>	International Nuclear Safeguards Engagement Program
<b>INSSP</b>	Integrated Nuclear Security Support Plan
<b>ISSAS</b>	IAEA Safeguards and SSAC Advisory Service
<b>LDC</b>	Least-developed country
<b>MSSP</b>	Member State Support Programme
<b>NLA</b>	National Liaison Assistant
<b>NLO</b>	National Liaison Officer
<b>NNSA</b>	National Nuclear Security Administration
<b>NPT</b>	Treaty on the Non-Proliferation of Nuclear Weapons
<b>OPANAL</b>	Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean
<b>PR3</b>	Protocol Reporter version 3
<b>RAIS</b>	Regulatory Authority Information System
<b>SQP</b>	Small quantities protocol
<b>SRA</b>	State or regional authorities responsible for safeguards implementation
<b>SSAC</b>	State system of accounting for and control of nuclear material
<b>TC</b>	Technical cooperation
<b>UNREC</b>	United Nations Regional Centre for Peace and Disarmament
<b>UNSCR</b>	United Nations Security Council Resolution
<b>VCDNP</b>	Vienna Center for Disarmament and Non-Proliferation
<b>VERTIC</b>	Verification Research, Training and Information Centre
<b>WINS</b>	World Institute for Nuclear Security
<b>WMD</b>	Weapons of mass destruction



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