

# State and Regional Systems of Accounting for and Control of Nuclear Materials Cooperation between International, Regional and States Safeguards Organizations: an Evolving Issue

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# **STATE AND REGIONAL SYSTEMS OF ACCOUNTING FOR AND CONTROL OF NUCLEAR MATERIALS COOPERATION BETWEEN INTERNATIONAL, REGIONAL AND STATES SAFEGUARDS ORGANIZATIONS: AN EVOLVING ISSUE**

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## **ABSTRACT**

Cooperation between the IAEA<sup>1</sup>, States and regional organizations is increasingly important to ensure effective accountancy and control of nuclear material in peaceful uses. The IAEA, SAGSI<sup>2</sup> and institutions such INMM<sup>3</sup> and ESARDA<sup>4</sup> have recognized the relevance and the evolving role that SSAC<sup>5</sup> and regional organizations play to this aim. In this context, it is important to take steps to ensure the effectiveness of the system and the optimal level of relationship between these organizations so as to maximize the benefits for each party, particularly in those cases where well developed systems exist.

Moreover, expansion of nuclear energy requires concerted efforts towards building competence in safeguards in all relevant States. This is also important with respect to other aspects of non-proliferation. In this scenario there is agreement on the need to have effective state organizations that fulfill international safeguards and other security obligations. However, the roles and duties of SSAC and the possible scope of cooperation between the IAEA and SSAC are still under evolution. This paper discusses possible ways and means to build competence in safeguards and how the international community could be more proactive in establishing a framework including the various dimensions of the cooperation in safeguards and other security matters between all parties concerned. The establishment of a forum and a network of interested parties under the auspice of interested organizations could be one mechanism to exchange best practices and experiences.

## **INTRODUCTION TO CAPACITY BUILDING IN SAFEGUARDS IN ALL STATES**

This paper is part of a series of essays aimed at highlighting the role of SSAC and regional organizations to ensure that the safeguards' goals are accomplished at higher standards. Previous works stressed the relevance of SSAC and regional safeguards arrangements like ABACC<sup>6</sup> to nuclear non-proliferation and international security as well as the role of all parties in furthering cooperation to address safeguards objectives fully, including the notion that the IAEA must use the 'findings' of such entities in lieu of its own. While elaborating further on the role of cooperation in modern safeguards, this piece focuses more in the need to build competence in

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<sup>1</sup> International Atomic Energy Agency

<sup>2</sup> IAEA's Standing Advisory Group on Safeguards Implementation

<sup>3</sup> Institute of Nuclear Materials Management

<sup>4</sup> European Safeguards Research and Development Association

<sup>5</sup> State Systems of Accounting for and Control of Nuclear Materials

<sup>6</sup> Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials

safeguards in all States, regardless of their status with respect to nuclear activities. It also discusses possible mechanisms that the international community, through a new approach to cooperation, may pursue to ensure such competence.

### **FACTORS INFLUENCING THE INCREASING ROLE OF SSAC**

It is evident that technically competent SSAC are increasingly important to ensure effective and efficient international safeguards and to contribute to other important state functions such as attaining a good level of protection of nuclear material and activities. One factor that is influencing this trend is the perception that a high level of safeguards globally depends on the existence in any state of legislation and regulations that contribute to ensure that safeguards are being implemented properly. Another relevant factor is the increasing awareness on the complementary benefit of safeguards, safety and security (*“3s” approach*). The benefit to develop larger and more comprehensive states authorities empowered with a legal framework, competence and tools to ensure compliance in the *“3s approach”* is being considered in countries that have recently embarked on nuclear power and other states with advanced nuclear fuel cycles.

Besides, the impact of the relationship between safeguards and security is not trivial from the side of the states having to respond to new security challenges. Discussions at certain meetings about SSAC are taking place to consider a broader role of the states organizations to address new international requirements and recommendations on the non proliferation and security areas like the requirements set up in the UNSC 1540 Resolution.

Thus, it is plausible to say that a driving force to the increasing role of SSAC and regional endeavours is the recognition that the framework and the international scenario where nuclear energy used to take place has drastically changed. Safeguards are becoming more complex; nuclear cooperation for peaceful applications has grown in a globalized world, there are new challenges due to the expansion of nuclear energy. The breaches to non-proliferation and the backdrops or lack of tangible progress in nuclear disarmament are also affecting the environment of nuclear energy developments.

All these reasons explain why there is a need to make further efforts towards increasing the level of awareness and knowledge in safeguards at the level of all states for them to respond to this complexity.

### **CAPACITY BUILDING IN SAFEGUARDS – STATES WITH SMALL OR WITHOUT NUCLEAR ACTIVITIES: A DIFFERENT PERSPECTIVE**

While certain progress has been achieved, the Safeguards Implementation Report (SIR) continues to report that there are still States that have to sign a CSA<sup>7</sup> and many states don't have yet a SSAC or a government authority in place to fulfil safeguards basic requirements. The need of legislation and infrastructure in states are in many instances absent or insufficient.

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<sup>7</sup> Comprehensive Safeguards Agreement.

Nowadays, that a state should have a minimum level of competence in safeguards is important regardless of the existence of nuclear activities. This may sound awkward for states where the least of the problems are far from being related to nuclear energy, but the transformation of the international nuclear environment and the trend in safeguards towards their implementation at the state-level concept show the increasing need for that. However, it is valid also to say that the fulfilment of the requirements foreseen in the CSA or other safeguards agreements should be clearly commensurate to the “nuclear reality” of such states (e.g., States without nuclear activities and no plans to initiate them in the foreseeable future). There is a need for further pursuing a graded and more pragmatic approach and to start the capacity building process by the establishment of a set of guidelines focused on central issues with simplified yet adequate safeguards procedures and good practices. SSAC in a country without nuclear activities should not be expected to perform all requirements noted in the safeguards agreements, but should rather be well aware of them and more importantly of the provisions related to relevant notification and reporting obligations.

This approach would favour the possibility to optimize limited resources in these countries by establishing procedures that have a greater chance to be fulfilled and by combining duties that can be relatively linked (For example: It could be satisfactory to start training in safeguards important issues for a person that works in a health government organization dealing with a radiation source, etc.).

The action plan implemented by the IAEA is obtaining good results, but more needs to be done to improve the situation. The IAEA should simplify safeguards requirements as much as possible for States without nuclear activities and should provide a simple and very handy guide that would be easy to follow.

In addition, concerted efforts from regional organizations and states’ networks, NGOs and forums like INMM and ESARDA could be made for reaching those states and to cooperate in capacity building in safeguards through informative workshops, the sharing of good practices, the elaboration of simple legislation and regulatory requirements, and the identification of a candidate institution to act as a SSAC or an equivalent concept. Priority should be given first to those states without a safeguards agreement and/or still having the old version of the SQP in place. The new comers with safeguards agreements and updated SPQ would also enjoy the same priority.

#### **CAPACITY BUILDING IN SAFEGUARDS – STATES WITH NUCLEAR ACTIVITIES AND CAPABLE SSAC (WITH OR WITHOUT A REGIONAL SAFEGUARDS SCHEME)**

As it was noted earlier, safeguards effectiveness and efficiency are based on the existence of competent SSAC. A corresponding priority should be given to develop new methods, technology and concepts to increase the cooperation between the IAEA, SSAC and regional organizations (when they are in place) in countries where a well-established safeguards infrastructure exists. In this case, the IAEA must consider ways and means to make full use of the verification activities carried out by states and regional arrangements. The existence of a

regional organization that also implements safeguards constitutes an added value to safeguards goals and more generally to non proliferation that allows expanding the cooperation further. Increasing the role of SSAC or regional schemes in a way that the IAEA can use their results more fully could only be achieved if there is a change in the current approach to cooperation.

### **SOME IDEAS TO ACHIEVE SUSTAINABILITY IN NATIONAL SAFEGUARDS CAPACITY IN EACH STATE**

There are initiatives regions like the Asia-Pacific Safeguards Network aimed at promoting safeguards good practices and exchange of lessons learnt. These endeavours should be expanded to other regions through the establishment of similar organizations or through the identification of existing bodies that could play a similar role.

A peer review mechanism where states could share information on SSAC good practices and lessons learnt could also be an option to consider. In such case, there is a need to agree on basic principles and practices that any SSAC has to address. This can take the form of a code of conduct or even a safeguards convention similar to the nuclear safety one. Despite the benefit of such mechanisms, a code or a convention and even a peer review system in an asymmetric environment (i.e., existence of nuclear weapons states) might not be realistic, unless they are developed and implemented by CSA states and then open to the participation of others under certain specific framework.

Safeguards are being subject to substantive changes both technologically and conceptually. As noted before, this more complex scenario justifies the increasing importance of SSAC. Therefore, the IAEA has also to re-visit its approach to cooperation with states to ensure that its efforts are adequate to help them in establishing and maintaining good SSAC. The IAEA should investigate and promote efforts in developing concepts and techniques to share its verification capabilities with states. In cases where regional organizations that already partner the IAEA, they should play a key role in designing the optimal frame and extent for that cooperation.

The suggestion in this area is that the IAEA redirects or expands its cooperation to develop a new partnership approach that includes the sharing of technology for better states' safeguards and to sustain robust SSAC. The sharing of equipment and other tools as well as the cooperation to develop and maintain NDA<sup>8</sup> and DA<sup>9</sup> capabilities for safeguards purposes in the states could be used by the IAEA and the states (and regional organizations where they exist). This approach to cooperation would lead to a win-win outcome. The further discussions on the potential of this new approach to technology for safeguards can take place in forums like the IAEA's MSSP<sup>10</sup>, the Next Generation Safeguards Initiative and the further development of the concept known as 'safeguards by design'. The IAEA could also promote and coordinate states-to-states cooperation (bilateral, multi-bilateral, etc.) in specific regions of interest. All can be benefited by considering technologies that can be shared in support of better safeguards through building technical

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<sup>8</sup> Non-destructive Assays

<sup>9</sup> Destructive Assays

<sup>10</sup> IAEA's Member States Safeguards Support Programme.

capacity in the states systems. The IAEA's R&D Programme for Verification includes a project in which one of the goals is to cooperate to promote good SSAC in place through training. This is an area that can be expanded or modified to include the application of this recommended approach.

The role of INMM, ESARDA and other similar organizations is important in promoting the development of new concepts and techniques that help the international community to maintain a good standard of safeguards worldwide. Moreover, they are already engaged in addressing the need of having robust SSAC and in discussing the cooperation facet of safeguards as a fundamental precondition to ensure their effectiveness. Maintaining and ideally, expanding special sessions like the one where this paper is presented is just one example of the activities these organizations could lead or promote. Institutions like INMM could not only serve as a forum to discuss this relevant topic, but could also include side events in the margins of the ISD<sup>11</sup> devoted to the exchange of good practices and lessons learnt among SSAC, regional organizations, networks associations and the IAEA.

### **THE NEED TO ENSURE ADEQUATE STAFFING AND THE ROLE OF TRAINING AND EDUCATION**

Needless to say that skilled and highly-technically qualified staff is 'the' turning point to build competence in safeguards in states, the IAEA and regional organizations. Adequate personnel are crucial to ensure effective safeguards implementation at all levels. There is a gap to address in this field. The lack of qualified people is more or less general to all nuclear disciplines, so there is a need to continue efforts towards promoting incentives and capabilities to offer educational and career opportunities to young people in all states and especially in developing countries.

From the side of the states, it is important that legislation and regulations recognize the role of the SSAC staff; both at the level of the state authority and at the level of the operator, education and training needs and programmes are identified and are in place. Safeguards are technically and multidisciplinary based on nuclear and other hard sciences. The regulatory body, when it exists, or the national point of contact for IAEA technical cooperation, should take a leading role in promoting that a career in safeguards be a matter of reward and prestige for those professionals and technicians that chose to work in this field. As part of the nuclear regulatory requirement, one possibility to consider is that the safeguards officer position at a nuclear facility would be part of the license process, and if the SSAC's duties are entrusted to the regulatory body, it should take measures to ensure a career of good prospect. In addition of having qualified staff, international safeguards need also to consider other features such as geographic distribution and participation in all positions and duties. In this regard, it is important that the IAEA keeps a constant look into this matter to ensure equal opportunities to developing countries and for all geographic regions. It could be positive that the IAEA exercises a more proactive role in promoting a safeguards career in member states. In the end, IAEA's people are recruited from them.

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<sup>11</sup> INMM International Safeguards Division

In conclusion, to fill the gap and to get high qualified people, knowledge management and human resources programmes should engage all parties concerned in a plan to promote training and education in safeguards as well as in providing a prospect of a good career. The IAEA could take a lead in designing and implementing this plan as part of the cooperation to ensure robust SSAC.

#### **OTHER REQUIREMENTS OF THE SSAC: LEGISLATION, ECONOMIC RESOURCES, INDEPENDENCY**

States should establish legislation and regulations to ensure that a SSAC or an equivalent concept is in place to fulfil basic safeguards requirements. A SSAC should not only have adequate staffing and technology to comply with its mission, but also sufficient economic resources and independence from the operators. Legislation should also address the provision of funding the state's safeguards duties. This paper is not aimed at discussing in detail this and other topics related to SSAC's competence, but to highlight areas where a fresh look into international cooperation could contribute to having good SSAC.

#### **COOPERATION AS A WHOLE: A CONCEPT TO BE REVIEWED AND REVITALIZED AS A BASIS FOR SAFEGUARDS IMPLEMENTATION**

Cooperation in Safeguards continues to be their basis and their foundation. It is for all parties the obligation to cooperate. Nowadays, a limited view that considers only the cooperation that is due from the side of states reduces the chances to optimize and expand safeguards effectiveness and efficiency.

We need to progress towards a new partnership approach in which all parties have a clear role in implementing meaningful safeguards and each party can enjoy an optimal combination of the tools and techniques available to ensure good accountancy and control of all nuclear materials in all nuclear activities. A drastic change in the safeguards culture is urgently needed. We have to build safeguards cooperation in a different direction from that of today: modern safeguards require a team-oriented and partnership approach that not only optimizes the use of existing resources but more importantly creates an environment of confidence (e.g., inspectors working together, the establishment of agreed procedures to jointly use safeguards techniques and equipment). The IAEA has a key role to play to achieve this approach fully.

Current initiatives (for example the next generation safeguards initiative) could also address this concept by including features that allow all parties to take advantage of safeguards developments. The IAEA should review its approach to cooperation with States and Regional authorities on the basis of this fresh approach.

#### **FINAL REMARKS**

Nowadays a SSAC or a state having a minimum level of competence in safeguards is important regardless of the existence of nuclear activities. However, flexibility and the notion that 'no one size fits all' are important concepts to bear in mind at establishing SSAC requirements.



The cooperation of the IAEA to assist states in building competence in safeguards should be expanded beyond current activities. Although the IAEA has increased the number of training courses, workshops and seminars to collaborate with states in ensuring the establishment and maintenance of good SSAC, a fresh look into the scope and nature of the cooperation is needed. Appraisal missions, although useful to assess SSAC competences and to identify good practices and recommendations, do not seem to be enough to build effective SSAC worldwide at the required pace.

In modern safeguards, not only the existence of scarce resources leads us in the direction of sharing technical and human resources capabilities, but more importantly, towards a high level of safeguards competence in all states in a sustainable manner. International cooperation should consider other means and ways to promote competence in safeguards and basic SSAC in all states. There is an urgent need to revisit and change the IAEA's approach to cooperation to a new team-oriented approach.

The concept of "partners looking forward to achieving the same shared safeguards values and goals" should prevail.

Exchange of experiences and the sharing of good practices can be further encouraged by the IAEA, regional organizations and other interested parties like INMM, ESARDA. The IAEA should also consider expanding the MSSP project related to SSAC so as to increase cooperation in other areas like sharing technology and helping states to install and maintain technical capabilities in safeguards.

The increasing importance that SSAC and regional organizations have in international safeguards is clear. Cooperation continues to be central for effective safeguards. The complexity of IAEA safeguards requires a high standard of competence in states safeguards. However, further efforts are needed to address the fact that still many states don't have a SSAC. A simplified and graded approach should be further investigated and established for states without nuclear activities.